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MOTIVATION AND MOTIVATIONAL CLIMATE AS PREDICTORS OF PERCEIVED IMPORTANCE OF PHYSICAL EDUCATION IN SPAIN

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ABSTRACT

The aim of this research was to find out how self-determined motivation and perceived motivational climate predict the importance and usefulness of Physical Education (PE). The sample consisted of 2002 Spanish students aged between 12 and 19 years. A questionnaire was used composed of the 'Sports Motivation Scale' (SMS), the 'Learning and Performance Orientations in Physical Education Classes Questionnaire' (LAPOPECQ) and the 'Importance of Physical Education' (IPE). Descriptive statistical analysis, MANOVA and multiple regression analysis were applied. The results of this study show the importance of intrinsic motivation for both boys and girls as a predictor of the importance and usefulness of PE for the participants, although girls were affected by a greater number of variables.

Key words: Physical Education; Importance; Self-determined motivation; Motivational climate.

INTRODUCTION

Certain habits are harmful to health; among them a poor diet and lack of exercise and these are responsible for almost as many deaths as those which tobacco produces (Mokdad *et al*., 2004). In the European Union, more than 13 million deaths per year are linked to a lack of physical exercise and excess weight (Banegas *et al*., 2003), and unfortunately this situation is getting worse. In Spain, overweight among adults reached 20% in 2010, one of the highest in Europe (Franco *et al*., 2010). This fact brings with it a severe economic burden for the Spanish state in addition to the associated health risks. The rise in overweight and obesity has been responsible for increases in health expenditures in several developed countries. In the USA obesity has been responsible for 27% of the increase in real health expenditure per capita between 1987 and 2001 (Thorpe *et al*., 2004), while hospitalisation costs in Brazil due to obesity amounted to $841 273 181 (Sichieri *et al*., 2007). These alarming trends give rise to the question as to what can be done in programmes like Physical Education (PE) to improve or prevent overweight.

According to Ardoy *et al.* (2010) and Oviedo *et al.* (2013), PE has ever-greater social significance in the fight against childhood obesity, due to its role in the acquisition of physically active habits. In support of this, various studies show that the age range of 12 to 18 years is when the greatest decrease in participation in physical activity occurs (Caspersen *et al*., 2000; Gómez-López *et al*., 2010), mainly due to the lack of motivation and free time.

In the study of motivational processes related to the acquisition of healthy habits in students, the social-cognitive theory has led to great advances. Specifically, the achievement goal theory (Nicholls, 1984), and the theory of self-determination (Deci & Ryan, 1985), allow for the obtaining of very valuable information for teachers, helping them to increase the positive experiences of the learners in PE lessons (Moreno & Llamas, 2007). This would promote a greater participation in and motivation for sport activities.

The achievement goal theory (Nicholls, 1989) aims to analyse the different dispositional and environmental factors influencing the subject‟s achievement motivation and it distinguishes between personal factors (dispositional orientation), and social and situational factors (motivational climate). According to Nicholls (1984/1989), motivational climate is continuously created by parents, teachers, friends, and can be of two types: a task motivational climate; and an ego motivational climate. Thus, a student who perceives a climate task will aim to master the task that is proposed to him or her in class and achieving it will increase his or her sense of competence. By contrast, a student who perceives an ego climate (competitive climate) aims to show his or her competence in relation to others and relates failure to lack of ability (Moreno *et al*., 2013).

As established in recent work (Moreno-Murcia *et al*., 2009b; Granero-Gallegos *et al*., 2012), the self-determination theory proposed by Deci and Ryan (1985, 2000), assumes the existence of different types of motivation, which can be found in the learner: intrinsic motivation; extrinsic motivation; and amotivation. With regard to intrinsic motivation, distinctions can be made between intrinsic motivation for knowledge (interest in progress in the understanding of activity), for achievement (interest in progress in the acquisition of skills) and for stimulation (interest in the activity arising from the sensations experienced in its practice). There are also three different types of extrinsic motivation, namely identified (which refers to interest in participating in the sport to achieve goals considered relevant by the subjects for their personal development), introjected (participating in sport to avoid guilt feelings) and external regulation (interest in participating in the sport for prizes or rewards) extrinsic motivation.

Some research studies in PE (Goudas, 1998; Moreno *et al*., 2006), have studied both theories together, trying to discover the relationship between the motivational climate perceived by students and motivation. Authors such as Standage *et al*. (2003) have demonstrated that there is a positive relationship between the motivational climate surrounding the task and intrinsic motivation. With regard to motivation, Moreno and Llamas (2007) showed that motivation generated by the teacher was a determining factor in the perception of the usefulness and importance of PE by students. Others like Moreno *et al.* (2007) and Moreno *et al.* (2009d), found that students who practised more extracurricular physical activity, perceived PE to be of high importance and useful. Taking into account the urgency of the necessity to reduce obesity among school students and the need for physical activity for school children, it is

critical to know what can improve the importance and usefulness of PE as experienced by students, with a view to increasing school practice of physical activity.

Therefore, the **objective of this research** is to find out to what extent self-determined motivation and perceived motivational climate predict the importance and usefulness of PE as experienced by students.

METHOD

Participants

In this study a total of 2002 (970 boys=48.5%; 1032 girls=51.5%) students participated from 17 secondary schools in the provinces of Almeria, Cordoba, Granada, Jaen and Seville. The age range was 12 to 19 years (Mean=14.99) (SD=1.43), with the median age for boys being 15.06 (SD=1.43) and that of girls 14.93 (SD=1.43) years.

Instruments

Sport Motivation Scale (SMS)

The Spanish validated version was used by Núñez *et al*. (2006), and adapted for PE by the same authors. The original scale was called Echelle Motivation dans les Sports (EMS) (Brière *et al*., 1995), and was translated into English by Pelletier *et al*. (1995), who renamed it the *Sport Motivation Scale* (SMS). Psychometric performance similar to the French version was obtained. It consists of 28 items, which include the different types of motivation, as established by the theory of self-determination (Deci & Ryan, 1985). The theory of self- determination explains the multidimensionality of motivation: amotivation; extrinsic motivation (EM) (external regulation, introjected, identified); and intrinsic motivation (IM) (knowledge, achievement, stimulation). A total of 4 items correspond to each of the 7 motivational factors.

Students were asked to answer on a scale of politomic items with scores ranging from 1 (strongly disagree) to 7 (fully agree). Previous studies (Moreno *et al*., 2006; Moreno & Llamas, 2007), have proven the internal validity of the factor structure of the instrument, as well as its reliability in the field of PE. Internal consistency found in this study was: IM knowledge, α=0.84; IM achievement, α=0.82; IM stimulation, α=0.82; identified EM, α=0.80; imposed EM, α=0.69; external regulation EM, α=0.77; and amotivation, α=0.72. The consistency among boys‟ values was between 0.68 (introjected EM) and 0.84 (IM knowledge), while among girls the values ranged from 0.69 (amotivation) to 0.83 (IM knowledge, IM achievement and IM stimulation). Although internal consistency values of less than 0.70 (0.69–0.70) were obtained for some factors, they can be considered marginally acceptable given the small number of items on the subscale (Taylor *et al*., 2008).

Learning and Performance Orientations in Physical Education Classes Questionnaire (LAPOPECQ)

The Spanish version (Cervelló *et al*., 2002) of the original Learning and Performance Orientations in Physical Education Classes Questionnaire was used (Papaioannou, 1994).

This scale measures the student‟s perception of the motivational climate in PE classes. It is composed of 27 items and has 2 dimensions: Perception of motivational climate, which

involves learning (learning climate; 13 items); and Perception of motivational climate, which involves the performance (performance climate; 14 items). Students had to answer on a scale of politomic items with a range of scores between 0 (strongly disagree) and 10 (totally agree). Recent studies (Moreno *et al*., 2009d; Moreno *et al*., 2009e), related to adolescents in educational contexts, have shown the internal reliability and validity of the factor structure in 2 first order subscales, obtaining internal consistency values greater than α=0.75 for the dimension of motivational climate for performance, and α=0.84 for the motivational climate for learning. In the present study, the internal consistency of the subscale climate for learning was α=0.90 (α_{Boys}=0.90; α_{Girls}=0.90) and performance climate, α=0.88 (α_{Boys}=0.88; α_{Girls}=0.87).

Importance of PE (IPE)

This test measured the importance and usefulness of PE as perceived by students (Moreno *et al*., 2009c), by means of 3 items. Students had to answer on a scale of politomic items with a range of scores between 1 (strongly disagree) to 4 (fully agree). Previous studies show its internal validity and reliability in the field of PE: α=0.75 (Moreno *et al*., 2009c), α=0.76 (Moreno & Llamas, 2007; Granero-Gallegos *et al*., 2012). In the current study the reliability obtained was 0.76 (α_{Boys}=0.76; α_{Girls}=0.77).

Procedure

The management of the schools granted permission to perform the research and students were informed of the purpose of the study and their rights as participants. The tests were administered during PE lessons after agreement with the teacher. Each participant had 20 to 30 minutes to complete the questionnaires. The responses were kept anonymous.

Statistical analysis

Descriptive statistics were calculated for each of the items, mean (M) and standard deviation (SD) values. The reliability of each dimension internal consistency index was calculated through (α) Cronbach‟s alpha. A multivariate analysis of variance (MANOVA) was performed to analyse the effect of interaction of gender in the studied subscales. Then a stepwise multiple regression analysis was conducted to verify the extent to which the various subscales of the SMS and LAPOPECQ (predictor variables), predict the importance and usefulness of PE (variable criteria), as perceived by the participants, differentiating between boys and girls (variable selection). The SPSS (*Statistical Package for Social Science*) v.17.0 was used for all calculations (Gil, 2003).

RESULTS

Effects of interaction of gender on the motivation, perceived motivational climate and the importance of PE as perceived by the participants

To analyse the effects of interaction of gender on the constructs studied, multivariate analysis of variance was carried out (MANOVA), in which the independent variable was gender and

the dependent variables were the subscales of self-determined motivation, motivational climate and the importance and utility of PE as perceived by the participants. The homogeneity of covariance was examined with Box‟s M test and the null hypothesis of setting data was rejected (Box M=184.03, F=3.33, p<0.000). The suggestions of Tabachnick and Fidell (2006)

were followed regarding the use of Pillai's Trace instead of the Wilks‟ Lambda to evaluate the multivariate significance of main effects and their interactions. The multivariate contrast showed significant differences and effects of interaction of the independent variable (gender) (Pillai's Trace=0.11, $F_{(10,1998)}$=20.84, p<0.000), with the remaining variables. The tests on the inter-subject effects showed significant differences in 8 dimensions (Table 1).

***TABLE 1*: MULTIVARIATE ANALYSIS: INTERSUBJECT EFFECTS ACCORDING TO GENDER FOR SMS, LAPOPECQ AND IEF SUBSCALES**

Subscales	**Boys** (N=970)			**Girls** (N=1032)			**Significance***	
	α	**Mean**	**SD**	***α***	**Mean**	**SD**	**F**	**p**
SMS								
IM knowledge	0.84	5.09	1.29	0.83	4.62	1.35	37.86	0.000
IM achievement	0.79	5.31	1.18	0.83	4.88	1.33	38.95	0.000
IM stimulation	0.79	5.13	1.22	0.83	4.64	1.36	47.14	0.000
EM identified	0.82	4.97	1.32	0.78	4.46	1.34	51.52	0.000
EM introjected	0.68	5.08	1.21	0.70	4.82	1.27	11.77	0.001
EM external regulation	0.75	4.59	1.33	0.77	3.92	1.39	80.18	0.000
Amotivation	0.74	3.21	1.53	0.69	3.09	1.35	1.77	0.183
LAPOPECQ								
Performance climate	0.88	58.52	16.52	0.87	50.84	16.64	67.00	0.000
Learning climate	0.90	69.29	17.46	0.90	68.46	18.44	0.09	0.770
IEF								
Importance PE	0.76	3.17	0.72	0.77	2.95	0.71	36.07	0.000

*p<0.05

Significant differences were found in all the SMS dimensions: IM knowledge (p<0.000); IM achievement (p<0.000); IM stimulation (p<0.000); identified EM (p<0.000); introjected EM (p=0.001); and EM by external regulation (p<0.000), boys scored higher than girls. In the LAPOPECQ, boys showed higher values than girls in performance climate (p<0.000). No statistically significant differences in relation to the learning climate were found. On the importance and usefulness of PE, as perceived by participants, the BOYS also had higher values than the girls (p<0.000).

Stepwise multiple regression analysis

A stepwise multiple regression analysis was performed to verify to what extent the various subscales of the SMS and the LAPOPECQ predict the importance and utility of PE as perceived by the high school students. To do so, the rating of the IPE was taken as variable criteria and each of the dimensions of the SMS and the LAPOPECQ as predictor variables.

Gender was used as selection variable, to check prediction among boys and among girls. The index of tolerance and independence of the variables included in the regression equation were evaluated in addition to normal data rates. The index of tolerance produced values between 0.98 and 0.32 and variance inflation factor (VIF), produced values of 1.48 to 1.93, which indicates that the probability of error for possible colinearity is excluded (Hair *et al.*, 1999; Gil, 2003). In addition, the Durbin-Watson obtained was between 1.73 (girls) and 1.79 (boys), so

the independence of the data obtained can be confirmed (Gil, 2003).

***TABLE 2.1*: IMPORTANCE OF PE FOR BOYS: MULTIPLE LINEAR REGRESSION BY STEPS ACCORDING TO GENDER BETWEEN LAPOPECQ AND SMS SUBSCALES**

Variables	F	ß	R^2	t	p*
Step 1					
IM knowledge	179.35	0.43	0.18	13.39	0.000
Step 2					
IM knowledge	95.28	0.31	0.23	6.08	0.000
EM identified		0.16		3.06	0.002

*p<0.05
ß= Standardised beta weights R^2= Total variance explained

***TABLE 2.2*: IMPORTANCE OF PE FOR FEBOYS: MULTIPLE LINEAR REGRESSION BY STEPS ACCORDING TO GENDER BETWEEN LAPOPECQ AND SMS SUBSCALES**

Variables	F	ß	R^2	t	p*
Step 1					
IM knowledge	220.22	0.45	0.19	14.84	0.000
Step 2					
IM knowledge	120.36	0.32	0.21	7.44	0.000
EM identified		0.18		4.07	0.000
Step 3					
IM knowledge		0.29		6.65	0.000
EM identified	84.47	0.19	0.24	4.46	0.001
Amotivation		-0.10		-3.19	0.001
Step 4					
IM knowledge		0.28		6.37	0.000
EM identified	66.02	0.17	0.27	3.96	0.000
Amotivation		-0.13		-3.93	0.000
Performance climate		0.10		2.90	0.004

*p<0.05
ß= Standardised beta weights R^2= Total variance explained

The results of the analysis of stepwise linear regression, differentiating the prediction according to the gender variable, can be seen in Table 2.1 and 2.2. In general, the results show the importance of intrinsic motivation as a predicting variable for students who ascribe greater importance and usefulness to PE, although girls were influenced by a greater number of variables.

In a more detailed analysis focused on boys, it can be highlighted that a total percentage of explained variance of 19% was obtained. In the first step, IM knowledge (ß=0.43) predicts positive consideration of PE as an important and useful subject, with a percentage of explained variance of 18%. In the second step, 23% of the total variance explained was reached, with identified EM also being introduced (ß=0.16). As can be seen, the greater the knowledge IM the student has, the greater the probability that he or she will assign more importance and usefulness to PE.

Twenty-seven per cent (27%) of the total variance explained was obtained for the girls, and in the case of the boys, the variable that best predicts the importance awarded to PE is knowledge IM (ß=0.45), reaching 19% of the total explained variance. In the second step, in addition to the strong predictive relationship of knowledge IM, identified EM is added (ß=0.18), attaining 21% of the explained variance. In the third step, amotivation is included (ß=-0.10) as the predicting variable, in a negative and significant way, reaching 24% of the explained variance. In this case, amotivation among the girls predicts a lesser degree of importance and usefulness assigned to PE. In the fourth step, 27% of the explained variance was achieved and a dimension of the LAPOPECQ was added where the perception of a performance climate (ß=0.10), was the predicting variable of the importance attached to the subject. Thus, when female students perceive a performance climate in PE lessons, there is a greater likelihood of them considering PE to be a more important and useful subject.

DISCUSSION

The objective of this research was to study the predictive power of motivation and motivational climate with regard to the importance and usefulness awarded to PE. The importance of this work lies in the fact that these results provide valuable information with regard to the variables that are most likely to predict a greater importance and usefulness being ascribed to PE, which could lead to an increase in the participation in after-school physical activity and greater adherence to the practice of sport, especially among girls.

Table 1 shows how intrinsic motivation in its different typologies achieved higher values than extrinsic motivation, with amotivation getting the lowest values. These results corroborate those obtained by Granero-Gallegos *et al.* (2013), and Gómez-López *et al*. (2013), who argue that among high school students, intrinsic motivation scores higher than extrinsic motivation, while amotivation is always the lowest.

In the LAPOPECQ, boys had significantly higher values than girls in performance climate, while there were no statistically significant differences in relation to the learning climate. In this last subscale, higher scores for performance climate were obtained, supporting the results reported by Martínez-Galindo *et al*. (2009) and Moreno *et al.* (2006; 2009a; 2013). In relation to the importance and usefulness of PE, the boys showed higher values than the girls, corresponding with the findings of Moreno *et al*. (2006).

In summary, with regard to the prediction of the importance ascribed to PE, both boys and girls intrinsic motivation is the most important factor followed by extrinsic motivation. This is in agreement with the findings reported by Moreno *et al.* (2006). In relation to the former type of motivation, data from this research corroborates the contributions of Moreno *et al.*

(2006), Baena-Extremera *et al*. (2012), Granero-Gallegos *et al.* (2012) and Gómez-López *et al*. (2013), who argue that the more self-determined motivational profile matches those students who ascribe greater importance to PE. Moreno *et al.* (2013), in a study of prediction along the lines of this present investigation, conclude that a high index of self-determination positively predicts the significance and usefulness ascribed by the student to PE. In this regard, several investigations show that self-determined motivation positively relates to greater commitment and adherence to the practice of sport (Standage *et al*., 2003; Moreno *et al*., 2007), to the point of becoming a predictive value (Duda & Ntoumanis, 2003; Moreno & Llamas, 2007). More

specifically, this refers to intrinsic motivation (Koka & Hein, 2003; Moreno *et al*., 2006), which establishes a direct relationship with the practice of extracurricular physical/sport activities.

Concerning intrinsic motivation, knowledge IM had the greatest predictive value; therefore, it is clear that students doing PE sought to progress in their understanding of it. Wang and Biddle (2001) and Ntoumanis (2002), showed that more self-determined students show positive motivational impact factors towards the subject of PE, such as interest, effort, fun, satisfaction and high participation, which are essentials in the intrinsic motivation for knowledge.

The results have shown how students of both genders have a high intrinsic and extrinsic motivation in Step 2. With regard to this, Vallerand and Fortier (1998), amongst others, set out two theoretical positions. The first explains the alternation in the two types of motivation, namely when intrinsic is high, extrinsic is low. The second refers to the combination of intrinsic and extrinsic motivation, increasing motivation at the highest levels, with this being the case that has direct relevance to the present study. Similarly, Pelletier *et al*. (1995) and Vallerand and Fortier (1998), proposed this theoretical positioning at the contextual level (PE and sport), maintaining that the relationship between intrinsic motivation and non-self- determined forms of extrinsic motivation is orthogonal or slightly negative. Similarly, Vlachopoulos *et al*. (2000) used a cluster analysis in which one of the profiles is characterised by high scores in both types of motivation (intrinsic and extrinsic). Here, it was interesting to note that this group had the highest values in the practice of extracurricular physical activity, ascribing great importance to PE.

The third predictive element is amotivation. This was only present among the girls and in a negatively predictive relationship. According to Moreno *et al*. (2006), girls are usually located in an amotivation profile, ascribing less importance to PE. In the work of Baena- Extremera *et al*. (2012), the authors showed that girls had higher scores than boys in boredom, contrary to what was found in the study of Castillo *et al*. (2001). In the work by Vlachopoulos *et al*. (2000) and Standage *et al*. (2003), it was shown that amotivation relates negatively with the intention of girls to participate in physical activity in their leisure time. This suggests that while self-determined motivation predicts a positive intention to be physically active in leisure time related to the importance ascribed to PE, amotivation predicts intentions not to be physically active, corroborating the finding of other investigations (Duda & Ntoumanis, 2003). In this regard, Ennis (1996) states that girls tend to have more negative experiences regarding PE and less interest in participating in this area and doing physical activities in their leisure time than boys, which could explain the appearance of amotivation in the third step, which did not occur in the case of the boys.

The motivation performance climate appears in the fourth step of the regression analysis. It may be noted that the orientation to the task does not appear, but the performance does and, in addition, immediately after amotivation. According to Moreno *et al.* (2006), both the task and ego climate are related to the importance awarded to PE, the first generally being higher. Regarding this, studies such as those by Baena-Extremera *et al*. (2012) and Fernandez-Río *et al*. (2012), found that students who are oriented to the task tend to have fun and be satisfied with their PE classes, while for those who are oriented to the ego, it is the opposite; they get bored and they are amotivated (Nicholls, 1989; Duda *et al*., 1992), as was the case in the present study. Worst of all, and corroborating the findings of investigations by Cury *et al.* (1997) and Ginn *et al*. (2000), the orientation to the task tends to be related to a greater persistence, adherence and voluntary participation in physical activity, due mainly to the

intrinsic motivation of students (Ntounamis, 2005), while the ego orientation is often related to non-persistence, abandonment and the imposed participation in this type of activity.

CONCLUSION

In conclusion, PE students in high school have a higher intrinsic than extrinsic motivation, and there is a still greater motivation among boys than among girls. Furthermore, among students the perception of motivational climate for learning is greater than for performance, although the boys perceive a greater performance climate. Boys also ascribe greater importance and utility to PE. The results of this study show the importance of intrinsic motivation for both boys and girls as a predicting variable for greater importance and usefulness being ascribed to PE, while a greater number of variables have an effect among girls. Thus, if the level of interest and physical/sport practice among girls is to be improved, attention must be given to variables in PE, which can enhance the importance and usefulness awarded to this subject among girls. Therefore, this research information will serve to assist in the design of PE programmes that seek a better understanding of the motivation to be physically active (Coakley & White, 1992), because experiences in PE lessons become mediators in the inclusion of physical activity as a healthy lifestyle habit (Moreno *et al*., 2006).

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CONTEXTING AN AD HOC ATHLETICS UNITY IN NATAL, 1945-48

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ABSTRACT

This article examines the history of track and field athletics in Natal, South Africa, during the period 1945-1948, placing organised Black sport at the core of the narrative. The official (White) version of this athletics history is ignorant of the complexities of Black sport. This complexity includes a broad range of issues that link athletics to local and international politics, education, community, inadequate facilities, marathon running sponsorship and women. The study covers a historical time period when domestic and world events, in particular India's looming independence, influenced South African Indian leaders to be politically assertive, as their economic and residential liberties were threatened by a racist regime. This political assertiveness coincided with the Durban Indian Athletic and Cycling Union (DIACU), agitating for a national controlling body, the South African Amateur Athletic and Cycling Board of Control (SAAA&CBOC) that paralleled other sport, such as cricket and soccer. Relying largely on the newspaper, The Leader, the result is a fascinating account of how Indian political activity in Natal influenced athletics and the formation of the SAAA&CBOC.

Key words: Athletics; Black unity; Natal; Politics.

INTRODUCTION

No scholarly attention has been directed towards the South African Amateur Athletic and Cycling Board of Control (SAAA&CBOC) that was established in 1946, about the same time

as the Passive Resistance Campaign (PRC) of the Natal Indian Congress (NIC). The SAAA&CBOC was born at a time when White leaders were not scared to voice racist remarks. In 1947, J.G. Strydom, leader of the Transvaal Herenigde Nationalist Party (HNP) and later South African Prime Minister, threatened to expatriate Indians from South Africa to India and Kenya when they (HNP) came to power. Another prominent HNP figure, Ben Schoeman, urged party members to boycott Indian shopkeepers while the Party congress adopted a resolution that year to curtail Indian trading licenses (*Leader*, 1947p:9). These developments impacted on sport unity amongst Black federations.

The quest for non-racial athletics in Natal has not been so intensely analysed as cricket and soccer (Desai *et al*., 2002; Alegi, 2004). Further, athletics is neglected when the sport history of the Indians in Natal is presented (Pahad, 1972:243-244; Bhana, 1997:139). As was the case in cricket, two themes dominated the story of Black athletics after the Second World War, namely growing pressure to achieve non-racialism and the yearning for international competition (Desai *et al*., 2002). An attempt is made in this research to analyse athletics in Natal, based on these themes.

The political landscape in Natal, immediately prior to and shortly after World War Two, revealed that Durban‟s town planners squeezed African and Indian people to the outskirts of the city, leaving the best residential spots for Whites (Desai & Vahed, 2010). Naturally, well-educated and prosperous Indians started „penetrating‟[(1)] White residential areas (Maharaj, 1994:4,25). The two prominent political organisations in the Natal Indian community until 1943, were the Natal Indian Association (NIA) and NIC[(2)]. Each stated that there had been little penetration or none at all (Union of South Africa, 1942). A situation arose where White response vacillated between a fraternising paternalistic „sympathy‟ and outright official racism. Professor Mabel Palmer of the Natal University, who supported the PRC, represented the former and stated:

> "Europeans were refusing to know anything of the Indians who live amongst them and are cutting themselves off from many interesting and worthwhile experiences. The number of dignified and distinguished looking elderly Indian men is noticeable. The young girls are often lovely and admirably graceful in the brightly coloured saris. Many of the young men are educated and intelligent" (Palmer, 1957:186).

The official response to „Indian penetration‟ of White residential areas was a series of commissions and legislation. In February 1940, the government appointed the Lawrence Committee that included Indians, to talk prospective Indian buyers out of purchasing property in White areas (Desai & Vahed, 2010). Many Whites felt that the Lawrence Committee did not go far enough and the Broome Commission was appointed[(3)] to look into this matter. The commission concluded that many Whites, claiming penetration, were unable to prove it and "there is no desire on the part of Indians to live among Europeans" (Union of South Africa, 1942:75,76). After the Second World War, the state began implementing the Trading and Occupation of Land Restriction Act of April 1943, which banned White-Indian property transactions in Durban for three years. It was called the "Pegging Act" because the intention was to "peg" Indian land ownership and occupations at 22 March 1943 until further measures were introduced (Desai & Vahed, 2010:125).

Prime Minister, General Jan Smuts, announced the Asiatic Land Tenure Bill and Indian Representation Bill (commonly referred to as the „Ghetto Act‟ by Black opposition forces), in the House of Assembly on 21 January 1946. What the Land Tenure Bill sought to do was to

restrict Indians from purchasing property in certain areas of Natal and Transvaal (Union of South Africa, 1946:2). Indian response to this Bill was not a politically united one. The NIC that was established by Mohandas Ghandi in 1894 actively opposed this legislation while the Natal Indian Organisation (NIO), a breakaway body, was accused of "suspect dealings with the authorities" (*Leader*, 1947u:1; Goonam, 1991:102; Giliomee & Mbenga, 2007:193). The NIO pursued a liberal response to the Ghetto Act, and one of its spokesmen, M.D. Naidoo, claimed that it was experienced as "a weapon of oppression… but that there were many things outside the pale of politics and political rights which could be achieved by co- operation (with government)" (*Leader*, 1947t:5-7). Amidst this division, different political groupings in the Natal Indian community sought alliances to strengthen its existing structures. Individuals and their ideas within these groupings were visible (and absent) in the athletic fraternity.

RESEARCH METHODOLOGY

This study places Black South African athletics at the epicentre of research. A suitable research method for such a process is context theory. Proponents of this theory reject the need for comparison and claim "well-constructed contexts are successful because they show a coherent and internally consistent set of relationships between all the parts in a cultural or social system; in contradistinction, many historical comparisons are insignificant, muddled and pretentious" (Booth, 2005:180). During the period under review (1945-1948), track and field events, throughout South Africa were organised jointly with cycling under the same provincial controlling body. This article emphasises track and field events. Racial epithets (Bantu, Coloured, Indian) were used and accepted by Black sport bodies. These terms became offensive for the South African non-racial sport movement during the Apartheid era. Usage of these terms in this text does not imply condoning them; rather it reflects their historical location. The article uses the term, Black, oppressed or marginalised when referring to all non-white groupings. Because the history of South African Black athletics is in the outside lane, this study highlights details of names, places and events that may appear obscure. This is necessary if there is to be recognition of an obscured and marginalised history.

INTERNATIONAL AND NATIONAL POLITICAL LANDSCAPE AFFECTING SPORT IN NATAL DURING 1946-1947

International sport

When Smuts announced the „Ghetto Act", it resulted in all property transactions of Asiatic and other races being frozen, except in certain demarcated areas (*Leader*, 1946d:1). In the wake of India"s coming independence and cultural ties with South African Indians, this Bill drew international attention and was raised and criticised at the newly established United Nations Organisation (UNO) (*Leader*, 1946e:1). The *Leader* (1946n:4) alerted its readers that there was a minor but growing intolerance towards racism in international sport. It reported on the New Zealand Rugby Union who intended selecting players strictly on merit and not colour for their South African tour in 1948. Previously, the New Zealand authorities acquiesced to South African racist policies.

Many Natal Indians remained conscious of „Motherland India" and observed India"s Olympic progress. India announced its participation in the 1948 Olympic Games as an independent country and athletics was one of her codes (*Leader*, 1947j:10). The *Leader* also boasted India"s Olympic achievements. One such article broadcasted India"s „Olympic consciousness" and the

soon-to-be-completed Olympic size sport stadium in New Delhi. The All India Olympic Association came into being in 1923 with Sir Dorab Jamsett Tata, as the first president. Tata represented India on the international Olympic Committee from 1919 to 1931. India entered the Olympic Games in Antwerp in 1920 and the Empire Games in 1934 achieving great success in hockey. Natal Indians also looked to India for assistance in non- Olympic sports.

In 1946 the Durban and District Football Association (Indian) invited the Indian Football Association for representative matches (*Leader*, 1946i:4,6). The Indian government responded positively to this invitation and the words of the Prime Minister of the United

Province of India, Pandit Govind Pant, reflect this: "India as a free country hopes to succeed where as a subject country she was powerless. On this occasion India is reminded of the difficulties under which Indians suffer in foreign lands" (*Leader*, 1947n:1). India also expressed sympathy for the plight of South African Indian people when she recalled her High Commissioner in 1946, in protest against the Indian Representation Bill (Matthew *et al*., 1998:201). In return Natal Indians used athletics as a means to show support for India‟s independence struggle. The Dannhauser Indian School, for example, organised their inter-house athletics by naming the houses: Bose, Azad, Nehru and Gandhi (*Leader*, 1947u:10). These were the political leaders Subhas Chandra Bose, Azad Hind Sena, Jawaharlal Nehru and Mohandas Karamchand Ghandi.

Natal Indians seeking international recognition

The newly established UNO (24 October 1945) increasingly directed attention to the plight of South African Indians. This resulted in sport organisations growing in confidence and starting to seek international competition. In March 1946, Somasundrum Singaram, a Johannesburg teacher and president of the Transvaal Indian Lawn Tennis Association, was delegated to negotiate with the All-India Lawn Tennis Association to send a representative team to South Africa (*Leader*, 1946g:6). Similarly, an early SAAA&CBOC objective was to provide participation in international track meetings with a promise in January 1947 of the first president, J.B. Eksteen, "to do my very best to send a team overseas" (*Leader*, 1947a:6). Three months later Eksteen stated that the SAAA&CBOC will seek affiliation to the IOC "with the hope to compete in the 1952 Olympic Games" (*Leader*, 1947c:6). On 16 January 1947, the South African Olympic and British Empire Games Association (SAOBEGA), the official gatekeeper for South African representation at the Olympic Games, turned down an affiliation request by the Milo Academy of Health and Strength.

This „Academy‟ was a body-building club, probably affiliated to the International Health and Strength League, started by Milo Pillay, a Coloured weight lifter and physical culturist. The Academy stated its intention to take non-Europeans to the 1948 Olympic Games and therefore sought affiliation with the SAOBEGA. Ira Emery, the SAOBEGA secretary, replied "although the SAOBEGA has no jurisdiction over non-European sport, it has the final jurisdiction as to who will represent South Africa at the British or Olympic Games" (SAOBEGA, 1947:2). Emery implied that the SAOBEGA would not allow South African non-whites entry into the Olympic Games. Eksteen must have been aware of the futility of seeking entry to the Olympic Games while the SAOBEGA remained the official South African affiliate to the IOC. He then stated that the SAAA&CBOC wanted to invite a team from India because "that country is the only one who will compete with non-Europeans from South Africa" (*Leader*, 1947c:6).

The Black athletic fraternity, however, kept agitating for international recognition. In July

1947, S.L. Singh, in his capacity as a SAAA&CBOC official, said in the presence of the White councillor, P. Osborne from Durban that if South African European sport organisations were not prepared to recognise non-European sportsmen when it came to choosing athletes for the Olympic Games, then they would be forced to take the extreme step and apply for separate recognition and affiliation to the Olympic Games (*Leader*, 1947k:11). Singh and other SAAA&CBOC officials were, however, over ambitious in their claims that "there were

a number of non-European athletes who could hold their own against leading European athletes" (*Leader*, 1947k:11).

In search of Black political unity

During 1930, some sport administrators were also actively involved in political organisations. These organisations can roughly be divided into two camps: The Old Guard or Elite who represented the interests of the merchant class and the New Elite, who was composed of radical students, young lawyers, doctors and trade unionists. The Old Guard‟s main concern was to protect their commercial interests and protect their privileges within the segregatory framework (Goonam, 1991). A case in point is the previously mentioned S.L. Singh who was engaged in a range of community activities. These included, being secretary of the Colonial Born and Indian Settlers Association (CBISA) (established in 1933), by colonial born Indians in opposition to the merchant dominated NIC. He was also part of a South African Indian Cricket Union (SAICU) committee in 1945 that was mandated to explore the possibility of creating a national cricket body for Blacks. In 1947 this led to the formation of the South African Cricket Board of Control (SACBOC), which still maintained „race‟ boundaries in cricket (Bhana & Mesthrie, 1984:127; Bhana, 1997:38; Desai *et al*., 2002:111,214).

During the same period, Indian intelligentsia were grouping together, largely under the leadership of Yusuf Dadoo, Kesaveloo Gonarathnam Goonam and Monty Naicker, discussing progressive ideas about the best way forward (Goonam, 1991:99). The most influential of these groups were the Left Book Club and the Liberal Study Group (LSG), founded in late 1937, where a forum was created for laying the foundation for the political beliefs and actions of many members (Goonam, 1991:59; Desai & Vahad, 2010:94-95,97). Some of these members were drawn to left-wing politics in Johannesburg and joined with White communists to form the Federation of Progressive Students (FOPS) in September 1943. The FOPS in turn faced opposition from a Trotskyist inspired organisation, the Progressive Forum (PF), as well as the African National Congress Youth League (ANCYL), which had been launched at the University of the Witwatersrand in 1944. The ANCYL, FOPS and the PF members engaged in heated discussions on campus, as well as at the homes of students (Desai & Vahed, 2010:112-113).

The anti-Coloured Affairs Department (CAD) movement in Cape Town dispelled the notion of ad-hoc political unity (based on specific issues at particular times), and planned a „Call to Unity‟ conference in Cape Town on 16 December 1943. The anti-CAD movement was assisted by the Worker‟s Party of South Africa (WPSA), Fourth International of South Africa (FIOSA), New Era Fellowship (NEF) and a resurgent All-Africa Convention (AAC). The conference resolved to advance what it termed, *Principled Unity* under a federal structure, the Non-European Unity Movement (NEUM) (Hendricks, 2010:36). This meant a unity that was based on the striving after principles, such as total equality, merit selection, democracy and accountability, as opposed to the SAIC and ANC‟s focus on day-to-day issues (Van der Ross, 1986:210; Hendricks, 2010:90). The justification for the NEUM‟s approach of abstaining from

day-to-day issues, found good reason in the fact that the *Asiatic Land and Tenure and Indian Representation Bill* was merely a tightening of previous discriminatory bills. A principled unity entailed pursuing a non-collaboration policy with the state and was defined

as "a complete break with the heritage of friendly collaboration with the ruling class" (*Torch*, 1947:4).

This united front was the basis of a national movement that dispensed with racially exclusive and sectionalist organisations. Initially the South African Indian Congress (SAIC), much the same as the African National Congress (ANC), was set to join the NEUM but withdrew in the face of developments around the Land Tenure Bill with which they reached a compromise with government. Even though the NEUM saw the „Ghetto Act" as a "blow directed against the entire non-European population", the SAIC balked at the non-collaborationist strategy of the NEUM (Bagwandeen, 1991:174). An Anti-Segregation Council (ASC) was formed on 28 April 1944, under the presidency of Monty Naicker and initially joined the NEUM in January 1945 but returned to the NIC (Bagwandeen, 1983:211; Bagwandeen, 1991:114; Kayser, 2002:53; Desai & Vahed, 2010:127; Hendricks, 2010:36). The formation of the ASC was the first definite fermentation of radical attitudes towards moderate leadership in South African Indian politics (Bagwandeen, 1983). Sport organisations did not openly support the ASC. The only body to do so was the Natal Indian Physical Culture and Weight-Lifting Association (Pahad, 1972:190; Bagwandeen, 1983:355). The ASC remained within the NIC and two sides on the opposite ends of the Indian political spectrum emerged, namely the ASC (mass based) and the A.I. Kajee and P.R. Pather group (accommodationist and wealthy merchant class) (Pahad, 1972:195; Bagwandeen, 1983:250).

The two opposing ideas behind South African Black unity, from 1943 onwards, were *Principled Unity* (NEUM) and *Unity In Action* or *Ad-Hoc Unity* (ANC). Unity in action, or revitalised ANC nationalism, was fore grounded in the post-war world. It was a creed of African nationalism as a basis for national liberation (Hunter, 1993:79). The sociologist and personal friend of Nelson Mandela, Fatima Meer, writes in Mandela"s biography, „the front rank ANCYL (Bopape, Mandela, Njongwe, Mda, Sisulu, Tambo) was embarrassed by the NEUM"s non-collaboration with government and the NIC"s PR campaign while the ANC continued to support the Native Representative Councils (NRC)" (Meer, 1988:37). The moderate middle class Indian leadership, who eschewed an alliance with Africans, promoted ad-hoc unity (Desai & Vahed, 2010). According to Mandela, the PRC (ad-hoc unity) became a model for the type of protest the ANCYL were calling for (Meer, 1988; Mandela, 1994).

The ASC rejected the political principles of the NEUM, when its members ceased control of the NIC on 21 October 1945 under the presidency of Naicker and chairmanship of George Singh, who sought alliances with the ANC"s multi-nationalism[4] (Bagwandeen, 1983:256; Kayser, 2002:53). A new Indian elite replaced the old elite and formed a „Doctors Unity Pact" between Yusuf Mohammed Dadoo (NIC), Gagathura (Monty) Mohambry Naicker (NIC) and Alfred Bitini Xuma (ANC) on 9 March 1947. The „pact" grew out of the anti-pass campaign of the ANC and the PRC campaign of the NIC, but was presented as a "declaration of co-operation between the national organisations of the Non-European peoples" (Limb, 2012:325). The NEUM, on the other hand, believed in the concept of unity of all the Black sections and viewed the PRC as a "return of the reactionary NIC days of seeking concessions from the government" (Van der Ross, 1986:205; Kayser, 2002:53). Furthermore, the political activist, Neville Alexander, writing under the pseudonym No Sizwe[5], asserts that the "ideological lag

had to be bridged by means of a genuine national unity movement … that disregard the question of race as a defining characteristic" (Sizwe, 1979:57,59).

From 1945 onwards, Black sport federations sought co-operation using the Ad-Hoc approach. On 25 January 1945, at a council meeting of the South African Indian Cricket Union (SAICU) in Durban, a committee comprising M.S. Badat, M. John and E.I. Haffejee mandated S.L. Singh to explore the possibility of creating a national cricket board to cater for all Black federations (Desai *et al*., 2002:206). On 30 September 1951, the South African Soccer Federation (SASF) was established in Durban "bringing together 46 000 members of the African, Coloured and Indian national associations under one umbrella body" (Alegi, 2004:107). These were federal sport structures using „race" as a criterion for participation.

Black 'unity' in athletics

In January 1946, the president of the Western Province Amateur Athletic and Cycling Association (Coloured) (WPAACA), J.B. Eksteen and the Reverend Bernard L.E. Sigamoney of Transvaal, met officials of the Durban Indian Athletic and Cycling Union (DIACU) (from Natal), with a view to form a national body (*Leader*, 1946b:8). Sigamoney also spearheaded Black unity in cricket and soccer and was a PRC leader (Odendaal, 2003:107,109; Desai & Vahed, 2010:123). This national athletic body was intended to allow Africans, Coloureds and Indians to participate in a South African athletic championship at various centres from time to time (*Leader*, 1946b). In May, the DIACU president, C.C. Pillay, planned a visit to the Transvaal and also the WPAACA championship in Kimberley on 24 May with the "view of negotiating with various non-European athletic and cycling bodies to hold a South African Non-European Athletic championship in Durban that year" (*Leader* 1946j:7).

The Natal Indian sport fraternity imitated what politicians were embarking on at the time. Cissy Gool, the fiery Cape Town based activist, supported the PRC in Natal and was arrested during protests. Dr Xuma called for unity amongst African, Coloureds and Indians and at the same time condemned the Ghetto Act. During the PRC, Durban based Africans launched the anti-pass campaign (*Leader*, 1946m:5). Z.A.H. Kumalo, the secretary of the Zulu Society in Natal, stated: "… if the African is to achieve success in his freedom struggle, he must link with the PRC" (*Leader*, 1946t:5). In turn, the secretary of the NIC, M.D. Naidoo stated "The salvation of the Indian people in this country lay in a united front of non-Europeans" (*Leader*, 1946x:5). Unity for most Black organisations meant inter-racial harmony rather than a non- racial and classless society (Van der Ross, 1986).

The „Old elite" who associated themselves with ruling class symbols, social status and official pomp and ceremony drove this racial unity. The radical „New elite", who presented themselves as more politically daring, maintained much of „Old elite" values. Kesaveloo Goonam relates how she was "bowled over by the very sophisticated western atmosphere in the Cricket Club of India" (Goonam, 1991:87,88). When the Western Province athletic team visited Natal in July 1947, the Natal hosts arranged, amongst others, a mayoral reception, a sight-seeing tour of the Natal Estate sugar mills, a reception at the Durban International Club, a boat cruise around Durban Bay and entertainment by various Natal sport organisations (*Leader*, 1947j:11).

Black sport bodies accepted their racial tags and conducted their struggles through the official White structures. Eksteen stated, shortly after the establishment of the SAAA&CBOC, "If all (geographic) centres irrespective of race or creed affiliated to the Board then we could easily

break the Colour Bar clause and gain admission [to the SAOBEGA]. We would lay the foundation of an inter-racial Board of Control" (*Leader*, 1947c:6). The SAAA&CBOC directed attention to the development of Black athletics along the lines of „race" and Eksteen said: "In the Cape, athletics is definitely on the up-grade, while it is at low ebb in the Transvaal. There was much latent talent at Fort Hare, Lovedale and neighbouring schools and Natal would do better if they considered athletics seriously among the schools" (*Leader*, 1947c:6). Fort Hare University College and the Lovedale Institution were Higher Education Centres in the Eastern Cape, set aside but not exclusively, for African people. Shortly afterwards, Rajcoomar Bijou, chairman of the DIACU, said: "Athletics among the Indian people had come to stay, the Bantu was taking an interest and he hoped the Coloured people would soon follow suit" (*Leader*, 1947k:11).

Bijou was also president of the Natal Indian Cricket Union (NICU) in 1951 when Black cricket was organised along inter-racial lines at national and provincial level (Desai *et al*., 2002:118,207). Local Natal clubs were also pursuing the ideal of *Ad Hoc Unity* and in August 1947, the Maritzburg County Indian Sports Club declared their Annual Monster Sports Meeting "open to Indians, Africans and Coloureds" (*Leader*, 1947n:2). On 4 October an advert, placed by H. Harrypersadh, the chairman of a sport body, announced an athletics meeting on Monday 6 October at Curries Fountain "open to Indians, Coloureds and Africans" (*Leader*, 1947r:10). It is not clear if all athletic unification proceeded along *ad hoc* or *principled* unity. This uncertainty surfaced in a report in the *Leader* that claimed to be the first contact between Indian and African schools in athletics in Westville that were planned by the Westville Social Club for 30 November at the Armstrong Road Sports Ground. The programme also included open items for boys and girls not attending the participating schools and items for adults. The participating institutions were: Rooikopjes Bantu, Westville Indian, Candella Boys, Roosfontein Indian, Hindu Sangatan Indian Girls and Hill View Indian Schools (*Leader*, 1947y:10). There were a few Whites willing to assist Black athletes, such as Mrs Tempest, who offered her services for training the boys and girls for the Ladysmith Indian Secondary School Sports Day (*Leader*, 1947q:11).

Calls for Black unity (*Ad Hoc* and *Principled*) did not exclude Whites from participating in their school sport programmes. This is indirectly implied in A.I. Meer"s (a NIC official) appeal to Smuts and cabinet minister, Jan Hofmeyer, to open schools to all races (*Leader*, 1947l:10). Although Indians remained the chief organisers of Black athletics in Natal, competitions were open to all „races" and there was a growing desire to take this idea nationally. An athletic and cycling meeting was organised by an Indian body in January 1946 where nine Africans participated and one of them, Abel Enoch from the Springbok Club, won three cycling events (*Leader*, 1946c:6). Indian and Coloured athletes participated in the 1947 Natal championship (*Leader*, 1947h). The previous year the *Leader*, indicating a „race" consciousness, stated that the Natal athletic officials:

> "… can learn from the work of soccer people[(6)] and make their aim a non-European athletic meeting once a year and get the cream of South Africa"s non-White athletes together. This must be to show the rest of the country, which even in sports believes there is only one class of person here – a White one – that non-Europeans too can hold their own with the best" (*Leader*, 1946q:6).

Speeches made at the conclusion of the first post-War athletic and cycling meeting under the

auspices of the DIACU centred on Black unity. Y.R. Chetty, the Union patron, stated that the meeting was open to all non-Europeans without any prejudice (*Leader*, 1946c:6-7). The SAAA&CBOC still sought White support even if it sometimes came from quarters that behaved ambivalently to the plight of Indians. This is as a result of the „unity in action‟ method where "the office of a patron, even though hostile to your cause is desired" (Kuper, 1960:92). Therefore, the first SAACBOC patron was Abe Bloomberg, Cape Town‟s mayor (*Leader*, 1946b:6). Also, the Durban mayor, Rupert Ellis Brown took the salute at the march past at the SAAA&CBOC junior inter-provincial meeting in Durban, 1947 (*Leader*, 1947k:11).

In 1941 Brown approved the Durban City Council‟s plans for expropriating Indian land for allocation to Whites and condemned all forms of opposition to it (Bagwandeen, 1991:67). In October 1946 the (White) mayor, A.E. Slattery "after being thanked for his and the European visitors presence, eulogised the work of the Dannhauser Indian School principal, Rungaswami Loganathan and the sports master, D.S. Maharaj" (*Leader*, 1946:u:6). When the Martizburg County Indian Sports Club revived athletics in Pentrich in Natal after 17 years of dormancy, support was given by Messrs W. Jowett, du Bois and Sirakis of the (White) Midlands District Athletic and Cycling Association (*Leader*, 1946u:6). These Whites were largely ignorant of the impact of political realities on sport in Black communities. Jowett, for example, stated that he predicted a great future for Indian athletics at a time when people were facing forced removals under the Ghetto Act (*Leader*, 1946u:6).

ATHLETICS IN NATAL IMMEDIATELY PRIOR AND AFTER THE FIRST SAAA&CBOC INTER-PROVINCIAL ATHLETIC MEETING (1946-1947)

Due to the World War, athletic activity was dormant in Natal from 1942 till 1945. Early in January 1946, on a Sunday morning, the Natal based, DIACU organised an athletic meeting at the Curries Fountain Sports Complex. It was common practice to organise athletic and cycling meetings on a Sunday due to the dominant Hindu and Islam presence in Natal, unlike the Western Cape with its large Christian representation. The participating clubs were Alpine, Avondale, Baumanville, Rosebank, Rovers and Springbok (*Leader*, 1946c:6,7). Besides these clubs, there were also Hillview and Kismet Athletic and Cycling Clubs, the Plessialaer Youth Club, Prospect, Clairwood Youth Sporting League and Puntan‟s Hill Club that offered participation opportunities (*Leader*, 1947a:6; 1947b:6; 1947e:11; 1947h:11; 1947i:11).

In addition there was the Pinetown and Suburban Indian School‟s Sports Association (established 1937) (*Leader*, 1947d:6). This body had nine affiliated schools, namely Alencon, Chatsworth, Fannin, Malvern, Pinetown, Roosfontein, Shallcross, Welbedacht and Westville (*Leader*, 1947o:11). Organised school athletics was, however, in a bad state and the *Leader* (1947h:11) reported that "as usual there was a poor response from schools (for the Natal Championships in 1947)". School athletic meetings were characterised by spectacular displays of glamour rather than quality participation. When the Ladysmith Indian Secondary School held its first athletic meeting on 13 September 1947, the *Leader* (1947q:11) reported on "the flags which fluttered lustily with the cooling breeze creating a feeling of joyousness
… the presence of so many women in their brightly coloured saris and the brisk business at the stalls".

An athletic meeting, under the auspices of the DIACU, was held in Durban in April 1946. This was a prelude to an inter-provincial meeting between an 11 member representative Western Province (Coloured) and Natal (Indian) athletic side on 31 May (Union Day) in Durban

(*Leader*, 1946h:6). By September, the *Leader* (1946p:6) stated: "Athletics was shedding its reputation as the Cinderella of sports among the Indians". However, the organisation of Natal athletics was a far way off from Olympic standard. That month a club meeting was held in Durban where there was a "fairly long delay in starting and the programme included a motor-cycle race" (*Leader*, 1946p:6). In Pentrich an athletic meeting was held where the "Magnus Leagures Physical Culture Club provided a physical culture and boxing display while a donkey derby provided lighter entertainment" (*Leader*, 1946u:6). The Dannhauser Indian School‟s annual athletic day was not unusual either seeing that soccer and basketball was played alongside the 26 track and field events (*Leader*, 1947u:10). Also, the chairman of the Maritzburg Indian Sports Club, P.T. Govender, contradicted a previous statement in the *Leader* (1947r:4) and stated in October 1947 that "athletics is the Cinderella of sports in Maritzburg". Nevertheless, the DIACU accepted an invitation from the WPAA & CA (Coloured) to participate in the inter-provincial athletic meeting in Cape Town on 1 January 1947. The Griqualand West Athletic and Cycling Union (Coloured) also confirmed their participation (*Leader*, 1946p:6).

Events leading up to the first SAACBOC championship (1948)

The SAACBOC was established in December 1946 with Natal and Western Province as a founder member and the headquarters in Cape Town. It was agreed that the headquarters would rotate to whatever province hosted the national championship (*Leader*, 1947a:6). The first elected officials were: S.L. Singh[(7)] and C.C. Pillay (Natal); Councillors J. Frank and Ahmed Ismail; J.B. Eksteen (president); Dr J.M. Joshua (secretary); W.J. Fisher (treasurer); J.C. Wrankmore (record clerk) and E.H. Fisher (auditor) (*Leader*, 1947a:6). To date not much biographical information is available to historians about these individuals other than Joshua who was politically neutral while Ismail was a strong anti-Coloured Affairs Department (CAD) voice (Van der Ross, 1986:205; Kies, 2007).

In October 1946 the *Leader* announced a decision of a DIACU sub-committee meeting that Natal would be represented by 16 athletes at the 1 January 1947 inter-provincial athletic and cycling meeting in Cape Town. The team selection would be determined at the Natal Open championship on 17 November 1946 (*Leader*, 1946s:6). Rajcoomer Bijou was appointed team manager, while M.K. Tommy performed duties as trainer and masseur (*Leader*, 1946w:6). The inter-provincial meeting of 1 January 1947 was held at the Paarl Sports Ground and Western Province gained a decisive win with 95 points against Natal‟s 30 points. Raleigh Pillay was the only Natalian with prominence who tied second place with John Grimwood (Western Province) in the 100-yards; finished third in the 220-yards and won the 440-yards (*Leader*, 1947a:6).

Education, community, sponsorship, women, juniors, marathon running and facilities

Education

Most schools for Indian children were established by missionaries and had ramshackle and unsanitary facilities with underpaid teachers (Palmer, 1957). Shortly after World War Two,

many qualified Indian teachers resigned the profession because of niggardly salaries resulting in a shortage of skilled educators (*Leader*, 1946g; 1946h). This shortage affected physical education teaching, which was already in a nebulous state. A *Leader* columnist, „Faqir‟, commented on the lack of „physical culture‟ amongst „non-Europeans‟ and lamented on his primary school days when "physical jerks were for a few moments only and that depended on the headmaster, who usually did not worry much about it anyway" (*Leader*, 1946c:7).

Access to formal education is generally considered to be a stepping-stone towards an international athletic career. Black opinion dispensers in Natal, therefore, demanded decent Physical Education in their schools. When the Dundee Indian Secondary School held its first athletic meeting at the Dundee Sports Ground in 1947, the principal (K. Thumbadoo) stressed the importance of Physical Education in schools. However, Black school children in Natal learnt athletic skills from passionate but scientific lacking sport masters, such as C. Rughubar at the Dundee School (*Leader*, 1947r:5).

The Indian elite saw education as a necessity if it was to overcome increasing racist attacks. In submitting his report to the 7th annual meeting of the Maritzburg Indian Technical Students Society, L. Singarum Moodley emphasised that education was vital to the Indian community who had to fight for its existence and overcome a series of diabolic legislation (*Leader*, 1946h:3). Moodley and others propagated Indian progress through education and, therefore, took pride in the available higher education facilities and its activities.

The Sastri College was the centre of Indian cultural life in Durban and turned out large numbers of male matriculants and its teacher-training department raised the standard of teaching in Indian schools (Palmer, 1957:108). Young Indian men, unable to gain entry into the Sastri College, could gain access to the ML Sultan College, a technical institution. The Sastri College athletic inter-house competition was usually held at the Curries Fountain Sports Complex and the houses were named after personal names associated with „Indian or Asian progress‟: "Sastri, Tagore, Hussein and Reddi" (*Leader*, 1946k:6; 1947g;11). There where exceptions and the Kearsney Government School had inter-house names associated with Asian tea products: Pekoe, Orange and Souchong (*Leader*, 1946l:6).

In some cases school athletic meetings were opportunities for cultural and political affirmation and displaying signs of upward social mobility. On 17 December 1945, the Naidoo Memorial Government School in Umkomaas held its ninth annual school sports day. Besides one of the houses being named after the political activist and later Indian prime minister, Jawaharlal Nehru, the prizes were awarded by Dr Goonam whose speech was translated from English into Tamil by Mrs Amiya Rani Pillay, songs were sung by the children of the Hindi Patshala and the day was ended with the singing of the Hindu prayer song, the Arathi (*Leader*, 1946a:6). Goonam, a medical doctor, was the founder of the Indian Women‟s League (1938) and Women‟s Liberal Study Group (1942). Goonam stood apart from the traditional South African Indian woman and she was present at the formation of the ASC and belonged to the left-wing Non-European Unity Front (NEUF) (Bagwandeen, 1991:135; Bhana, 1997:63; Desai & Vahed, 2010:114,118).

Community

Athletics was part of the Natal community life, in particular the religious sacred Azalea Week Carnival of which S.V. Pillay was the secretary in 1947. The Maritzburg Indian Sports Club, under the chairmanship of P.T. Govender, took charge of organising an athletics competition at the Royal Agricultural Showground in September. The competition had standard track and field events alongside „football kick‟, „basket and potatoes‟, „running women with dresses‟, „throwing the cricket ball‟, etc. (*Leader*, 1947r:4). The following month, Deputy Mayor, Councillor R.M. Thomas opened a sports meeting for adults at the army magazine barracks. Events included nail driving, golf driving and putting. The highlights of the day were the 7- and

15-mile distance foot races where Uday Singh "ran splendidly in the 15-miles but collapsed with about 400 yards to go" (*Leader*, 1947s:10). These were amateur events that were sometimes organised with minor sponsorships.

Sponsorship

Athletic sponsorship usually took the form of trophies that were donated by prominent families that sometimes did this for familial interests. These sponsorships were usually limited to owners of small to medium business enterprises. In November 1946, V. Rajoo Chetty, owner of the Springbok Service station and patron of the DIACU, donated a floating trophy valued between £25 and £35 for a marathon road race from Inchanga to Durban. Chetty also promised trophies for all competitors who completed the course. Another patron of the DIACU, Norotham Maharaj, donated trophies for school athletic events (*Leader*, 1946u:6). The following month Chetty distributed prizes to athletes at the Greenwood Park Indian School Sports Day. Three new floating trophies were donated to the school, bringing the total amount to five. They came from Mrs K.S. Pillay (girls 100-yards); Ram Elliah (boys 100-yards) and T.V. Thathiah (girls 440-yards) (*Leader*, 1946y:6). The Pinetown and Suburban Indian Schools Sport Association offered the Kamlam Nairs Victor Ludorum and Middleton trophies at its annual competitions (*Leader*, 1947p:11).

At the ninth annual school sports day of the Naidoo Memorial Government School in Umkomaas, the Amiya Rani"s Athletic Cup, donated by Mrs Amiya Rani Pillay, was awarded to the winning house (*Leader*, 1946a:6). Jimmy Maistry donated floating trophies for the 1947 Natal Championship meeting and was presented to the athletes by his wife (*Leader*, 1947h:11). That same year, Harold Sulim, president of the DIACU, presented a trophy for the Natal athlete with the best performance at the inaugural inter-provincial junior championship (*Leader*, 1947i:10). This trophy was awarded to S. Kirsten for winning the 100- and 220-yards (*Leader*, 1947k:11). Once the ideal of *Ad Hoc* Black unity had taken root, individuals and business people, sponsored athletic meetings across the Colour Bar (*Leader*, 1947n:2). Occasionally Whites sponsored trophies as in the case of "a European who promised a trophy for the best performance at the Ladysmith Indian School Sports Day" (*Leader*, 1947q:11). Sometimes, sponsorship reflected familial interest in athletics and Dannhauser Indian School athletic meeting in October 1947 was characterised by the surname, Maharaj, featuring prominently. Here the mayor, A.E. Slatter, presented the Bhawani Memorial and Maharaj trophies to Quarchand Maharaj, the Azad House captain while the sport master was D.S. Maharaj (*Leader*, 1947u:10). The Bhawani Memorial trophy was presented to the same school as a floating trophy by the widow and sons of the late Mr Bhawani (*Leader*, 1947w:11). School boys competed for the B. Maheer Cup while girls vied

for the A. Horne trophy in the first inter-racial athletic meeting in Westville on 30 November 1947 (*Leader*, 1947y:10).

Women

Prior to 1946, there was a strong gender consciousness[(8)] towards female participation in NIC politics (Goonam, 1991:101). This was mirrored in athletic participation and there were no women competitors at the January 1946 track and field meeting organised by the DIACU (*Leader*, 1946c:6). Women were consigned to spectatorship and the *Leader* (1946u:6) reported that "a pleasing feature (of the athletics meeting) was the large number of Indian women spectators". This non-participation may be explained by Palmer"s claim that "Indian parents

upheld a tradition that girls should be kept at home under the control of their parents and especially the grandmothers" (Palmer, 1957:108). Because the Smuts regime limited formal education opportunities for Indian girls in Natal, there were few avenues for athletic participation. The Dartnell Crescent Girl‟s High School was one of these (Palmer, 1957:108). At one time, there were only six pupils at the Indian Girl‟s High (possibly Dartnell Girl‟s High) (Goonam, 1991:93).

Further, sport participation amongst South African Indian women was largely limited to the wealthier classes and the „soft sports‟ such as tennis. One example is a report in the *Leader* on the Indian Women‟s Club who held its seventh annual meeting at the Goodwill Club in September 1946 where "tennis was one of the chief attractions" (*Leader*, 1946r:8). However, some post-World War Two Indian women were moving away from being mere passive subjects in the broader society and the *Leader* noted that "more and more women are going to jail for defying the Ghetto Act" (*Leader*, 1946r:7). In 1947 women were highlighted, with photographs on the front page of the *Leader* for their part in the PRC (*Leader*, 1947v:1). At the same time, photographs of women cyclists appeared in the paper (*Leader*, 1947m:3). In India sport leaders were directing attention to women. In July 1947, the president of the Cricket Board of Control in India, A.S. de Mello, advocated a Physical Education programme for women that were to be part of a state controlled education system (*Leader*, 1947k:10).

The Natal Indian Athletic and Cycling Union (probably DIACU), introduced events for women in the Natal Club Championship meeting on 1 June 1947 (*Leader*, 1947f:10; 1947h:11). Sparkle Bunsee won the 100-yards track and 440- and 880-yards cycling events (*Leader*, 1947h:11). Women entries were allowed in the first junior inter-provincial meeting between Western Province and Natal. However, women were still not presented in the media as provincial representatives. The *Leader* (1947k:11) reported that "there was keen competition between the Indian Women‟s Friendly Circle (Natal) and the Spartan Club (Western Province)". From 1947 onwards, women athletes became more visible in the media and the *Leader* reported that Madrajh Naidoo won the 100-yards in the DIACU meeting at Curries Fountain on 6 October (*Leader*, 1947s:9). However, women athletes were always presented as supplementary to males and the *Leader* (1947y:10) reported on a "special item for ladies" at the first inter-racial athletic meeting in Westville on 30 November.

Juniors

In May 1947, Bijou announced, on behalf of the Natal Indian Athletic and Cycling Union, that a non-European junior (19 years or younger) inter-provincial triangular athletic meeting

under the auspices of the SAAA&CBOC was planned for 13 July at Currie‟s Fountain. The Griqualand-West, Natal and Western Province units were invited. The administration was simple: a 5-3-1 point system was to be used for first, second and third placing; the winning team would win the trophy outright and the entry limitations were 15 competitors per team with a maximum of three entrants for each event. The team was to be selected at the Natal Club championship meeting on 1 June (*Leader*, 1947f:10; 1947i:11). However, there was not a wide reservoir of junior athletes in Natal and the preparation for the July inter-provincial took the form of senior vs. junior competition (*Leader*, 1947i:11). At this championship, some juniors set better standards than the seniors, where only a few entries were received for the running events.

D.V. Naidoo of Sastri College was awarded the best junior athlete of the day, winning the 100-

and 440-yards, long jump and high jump events. The young College walker, V. Mareemuthu, won the junior half-mile event and then beat A.N. Archary of Avondale on the finish line in the senior two mile event (*Leader*, 1947h:11). The Natal team consisted of: D.V. Naidoo (captain), S. Kirsten, M.A. Hansa, W. Stevens, R.R. Somers, J. Vinden, V. Mariemuthoo (Sastri College); R. Bennie, Dannie Naidoo, S. Nariansamy, Bobby Naidoo,
B.S. Harripersadh (Rosebank); R. Peter (Alpine); M. Rajah, R. Jairam (Springbok); G. de Lange, M. Albert, C.P. Pillay (Pentrich); C. Kuniappen, James Buthelzi (Avondale); J. Singh,
R. Bhimsin (Prospect); K. Mudhoo; with C.C. Pillay (manager) and J.S. Naidoo (trainer) (*Leader*, 1947i:11). This team defeated Western Province 58-55 in front of an estimated crowd of 4 000 (*Leader*, 1947k:11).

Road running

Road running was more popular in Natal than other units of the SAAA&CBOC, probably due to the presence of the Comrades Marathon for Whites. Until 1943 a road race between Maritzburg and Durban was organised by Natal Indians who competed for the Suncresh Shield. The race was suspended due to the Second World War and the last winner was G. Murgasen from Durban. It was resumed again in 1947 (*Leader*, 1947f:10). In similar vein the Comrades Marathon was suspended from 1941 till 1945 (Alexander & Alexander, 1966:80). The „Indian road race", according to the *Leader*, therefore, continued two years after the suspension of the Comrades Marathon in 1941.

The Natal Open Championship on 17 November 1946 included a road race with 31 competitors running from Inchanga (Botha"s Hill) to Durban (Currie"s Fountain)[(9)], as well as motor-cycle events (*Leader*, 1946s:6; 1947w:11). This was approximately half the distance of the famous Comrades Marathon and the competitors competed for the Springbok floating trophy. L. Moonsamy of the Avondale Club was the 1946 winner in 3 hours and 10 minutes in a field of 31 competitors (*Leader*, 1947w:11). Elsewhere in Natal, road running was also popular and 44 runners participated in the Maritzburg County Indian Sports Club meeting in November 1946 (*Leader*, 1946u:6).

By 1947, road running was entrenched in Natal athletics and on 1 March the *Leader* (1947b:6) reported that Ramdass Seebran won the 20-mile marathon from Cato Ridge to Pentrich that was organised by the Kismet Athletic Club. The following month M.S. Naicker won the 30-miles junior road race, organised by the Clairwood Youth Sporting League, in a

time of 3 hours and 45 minutes (*Leader*, 1947e:11). In September the Martizburg County Club organised a 26-mile marathon, starting from the Pentrich Recreation Ground where Africans and Indians participated. M.V. Naidoo was the winner in 2 hours 52 minutes and 23 seconds (*Leader*, 1947o:11). The following month, P.T. Govender, chairman of the Maritzburg Indian Sports Club (probably the Maritzburg County Club), urged athletes at the Azalea Festival to "begin training for the road marathon over the world distance (i.e. Comrades Road Marathon) from Durban to Maritzburg, to be organized next May" (*Leader*, 1947r:4). In November a 5-mile „marathon" was planned for adults at the first inter-racial school athletics meeting in Westville (*Leader*, 1947y:10). This part of Natal history, for the period 1945-1948, is ignored in the official version of the Comrades Marathon (Alexander & Alexander, 1966:84-89).

Facilities

The major athletic facility in Natal was Curries Fountain in Durban while the Kismet Athletic

and Cycling club held their competitions at the Pentrich Recreation Grounds (*Leader*, 1947a:6). At least one school, Welbedacht Indian School, had sufficient facilities to host the annual Pinetown and Suburban Indian School Sports Association competition (*Leader*, 1947p:11) However, Black communities in Natal had inadequate sport facilities and worsened by disinterested municipalities and councillors. Occasionally a mayor, such as Councillor Rupert Ellis Brown, supported the extension of sport facilities. In October 1946 he was the guest speaker at the opening of the new tennis courts of the County Indian Tennis Club and admitted that it took seven years to convince local government to support this venture (*Leader*, 1946r:10). A major obstacle in developing sport facilities was the false promises made by White councillors. In July 1947 Councillor Osborne stated he was keenly interested in sport for the Indian and Coloured people of Durban and that the City Council had a big programme in hand for eradicating the shortage of sport facilities (*Leader*, 1947k:11). However, sport facility provision is a matter of political expediency and governments will only move on this issue if they are forced to. Nothing came of Osborne‟s statement and the nonchalant attitude of government officials continued to limit facility provision.

When officials of the NIO showed General Smuts the facilities at the outdated Curries Fountain Sports Complex, spectators voiced dissatisfaction at their presence, stating they regarded the Prime Minister‟s presence „an intrusion‟. The *Leader* reported that Smuts was told that the Durban City Council was adopting delaying tactics in developing a new Argyle Road Complex to replace the Curries Fountain. The NIO trusted Smuts words of support and one official stated "I think matters will move faster now" (*Leader*, 1947k:5). Nothing came of Smuts‟ support: he was removed from office the following year and an even more racist Re- united National Party did not show any interest in spectators who voiced their dissatisfaction at a White Prime Minister.

Preparations for the 1948 championship

The elements (education, community, sponsorship, women, juniors, road running and facilities) presented thus far were evident in the preparations for the first SAAA&CBOC championship meeting in 1948. At a SAAA&CBOC meeting held in Cape Town, in November 1947, it was decided to stage the first championship meeting since the

inauguration in December 1946 at the Paarl track outside Cape Town on 1 and 2 January 1948. The known delegates at this gathering were L.J.A. Alexander, K.S. Henry and C.H. Maggot (Natal); Norman Stoffberg[(10)] and J.B. Eksteen (Western Province and chairman) (*Leader*, 1947w:11). Griqualand-West, Natal and Western Province were invited and after much discussion, it was agreed that the same 28 events for women and men would be provided. Bijou stated in the *Leader* (1947w:11) that it was uncertain whether women would be included in the Natal team. The Natal body decided not to send women to the championship because "they only took to athletics recently". However, C.C. Pillay, president of the DIACU, was mandated to negotiate with Griqualand-West about the possibility of including women in an inter-provincial meeting in April in Kimberly (*Leader*, 1947x:5).

Each province was allowed 28 members with four named competitors of each team allowed participation in an event. Alexander proposed that the venue for the next championship meeting (1949) be in Natal but it was resolved to place the issue on the agenda for the next Annual General Meeting on 30 December. The Natal team was to be selected at the provincial championships on 30 November 1947, under the auspices of the DIACU, from amongst Indians, „Africans‟ and „Coloureds‟. The *Leader* (1947w:11; 1947y:11) announced the

championships would provide a „full programme" for junior and senior men and women. However, the only items on the programme for women were the 100- and 220-yards junior and senior ladies events (SAAA&CBOC, 1948). Pillay and J.S. Naidoo were appointed manager and trainer of the Natal team respectively while the selectors were Bijou, C.C. Pillay and S.L. Singh (*Leader*, 1947x:5; 1947y:11).

In the excitement of the upcoming 1948 championships, a record number of entries entered for the road race in 1947, "a distance of approximately 26 miles, 385 yards" was an indication of an emphasis on complying to international standards (*Leader*, 1947y:11). Despite the *Leader* (1947y:11; 1947z:11) reporting that nine provincial records were broken at the Natal championships, the performance standard was not high and most of the winning times were below the SAAA&CBOC championship qualifying times. The prominent athletes were B. Ngozi (Alpine) who broke the Natal 440-yards record for men with a time of 54.2 seconds, won the 220-yards and finished second in the 100-yards; S. Lookun was the only competitor in the high jump and cleared 5 feet and 5 inches, won the long jump with a leap of 18 feet and 11 inches and the 100-yards in 10.5 seconds (*Leader*, 1947z:11). This „poor performance" played out in a similar situation in India at the time. The *Leader* (1947za:11) reported on India"s athletic chances at the 1948 Olympic Games in London and the national secretary, N. Ahmed, stated that he was not very confident at success but participation was paramount.

CONCLUSIONS

All the developments presented thus far culminated in the first SAAA&CBOC championship meeting in 1948 outside Cape Town. The SAAA&CBOC manifested an inter-racial drive without giving serious consideration towards a non-racial society within which sport participation takes place without racial considerations. This inter-racial drive took place during the years immediately after the Second World War where two political movements operated in the midst of the peripheral mass of Indians, the „old elite" and the „new elite". The
„Old elite" safeguarded their own interests by means of polite constitutional protest. They sought political solutions through „round table" discussions. Therefore, when a writer in the

Cape Indian (1924:9) accused the Western Province Amateur Athletic Association (Coloured) of "nurturing athletics only in a certain section of the public", a suggested solution was "a round table chat". The „new elite" was the colonial offspring of indentured and ex- indentured labourers made up of professionals. They were essentially white-collar persons who became successful in their respective fields through western education (Bhana & Mestrie, 1984). The „new elite" framed a „racial unity" based on co-operation between the different „races". When the „new elite" (led by A.I. Kajee) was replaced by a more radical group, the ASC, the former was still held in high esteem by the latter (Bagwnadeen, 1983:256).

Organised sport in the Indian community was, therefore, largely left in the hands of Kajee, a cricket administrator who also donated a sponsorship trophy to Black inter-race soccer (Desai *et al.*, 2002:50; Alegi, 2004:108). A contemporary of Kajee, Bernard Sigamoney, president of the South African Indian Cricket Union in 1942, was in the forefront of the Black „unity" drive in athletics and also sponsored cricket in the same manner (Desai *et al.*, 2002:61; Odendaal, 2003:97). The political language of sport administrators and that of the Joint Passive Resistance Council[(11)] (JPRC) corresponded. Whereas the JPRC made a plea for "… the individual"s right to equality before the law, justice and fair play", Sigamoney spoke of the life lessons he learnt in England: "love one another, respect for one another and above all, discipline" (Bagwandeen,

1983:309; Desai *et al*., 2002:60).

The „new elite‟ was not prepared to go beyond local politics and remained loyal to the English empire. When the Natal team visited the Western Cape in 1947 under the management of Bijou, they concluded their visit by singing the British national anthem (*Cape Standard*, 1947:8). Odendaal (2003:108) is to the point: "Inter-racial co-operation in sport in the 1950‟s was a reflection of broader co-operation occurring in the (African National) Congress alliance in politics". The athletic „unity‟ that was framed by the formation of the SAAA&CBOC was an *Ad Hoc* one and further research should indicate whether this action was sustainable.

Notes

(1) Officially, „penetration‟ meant "the commencement of occupation or acquisition for trading or for residential purposes of sites in predominantly European areas by Indians since 1 January 1927 (Union of South Africa, 1942:1,3).

(2) The two organisations merged on 29 August 1943 (Desai & Vahed, 2010:125).

(3) Another Broome Commission was appointed in 1943 that concentrated on the „penetration‟ of Indians into the Durban municipality of Natal. It was a rushed affair that took place over a few days and the NIA withdrew from the Enquiry (Union of South Africa, 1942:1,5).

(4) Singh was an executive member of the South African Soccer Federation (SASF) in 1958 that operated as a multi-racial rather than non-racial structure until 1959 (Alegi, 2004:116-117).

(5) Neville Alexander was under house arrest in 1979 and was not allowed to publish.

(6) Black South African soccer was still organised on a „race‟ basis at the time.

(7) He was part of a South African Indian Cricket Union (SAICU) committee in 1945 that was mandated to explore the possibility of creating a national cricket body for Blacks. This led to the formation of the South African Board of Control (SACBOC) in 1947 that still maintained „race‟ boundaries in cricket with a few (Desai *et al*., 2002:214).

(8) For examples see Goonam (1991:26).

(9) There were only 22 competitors at the starting line of the Comrades Marathon on Empire Day, 24 May 1946 where eight finished (Alexander & Alexander, 1966:80; Cottrel *et al*., 2000:39; Cameron- Dow, 2011:81).

(10) Stoffberg was regarded as an outcast by the NEUM because of its involvement in the Klaasjagerberg sport camp. This was a camp organized by the CAD and elicited protest action from the NEUM (Cleophas, 2009:151-156).

(11) This refers to the coordinated work of Passive Resistance Councils in the Cape Province, Natal and Transvaal (Bagwandeen, 1983:294).

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VISUAL-MOTOR STATUS OF GRADE 1 LEARNERS IN THE NORTH-WEST PROVINCE OF SOUTH AFRICA: NW-CHILD STUDY

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ABSTRACT

The aims of this study were firstly, to determine whether gender differences influence visual-motor status and secondly, if visual-motor integration, visual perception and motor coordination of Grade 1 learners correlate in the North-West Province of South Africa. A cross-sectional design was used. The subjects consisted of 816 (419 boys and 397 girls) Grade 1 learners with a mean age of 6.78 years. The Developmental Test of Visual-motor Integration (4th ed.) was used to evaluate the children's visual-motor integration, visual perception and motor coordination. The results indicate that there were no statistically significant differences between the boys and the girls regarding visual-motor integration, visual perception or motor coordination. In addition, the results indicated that most of the learners experienced problems with visual perception, with 33% classed as below average and 26% as far below average. There was a correlation between gender and visual-motor integration. Correlations with moderate practical significance were found between visual-motor integration and visual perception (r=0.36; r=0.35), visual-motor integration and motor coordination (r=0.41), and visual perception and motor coordination (r=0.37; r=0.41 and r=0.39) for the boys, girls and the whole group separately.

Key words: Visual-motor integration; Visual perception; Motor coordination; Motor development; Gender.

INTRODUCTION

Visual-motor skills, such as visual-motor integration, visual perception and motor coordination, are necessary to plan and execute movement effectively in the environment. These visual-motor skills are, furthermore, important for academic and sport development and performance (Willoughby & Polatajko, 1995; Cheatum & Hammond, 2000; Winnick, 2005). According to Taylor (1988), during the first two years of formal schooling the development of visual-motor skills is a prerequisite for good academic progress.

Visual-motor integration can be identified as the integration of visual, perceptual and motor skills (Tseng & Chow, 2000; Exner, 2005), and is the ability to integrate visual processing abilities and fine motor abilities (Aylward & Schmidt, 1986). It requires intact visual perception and hand-eye coordination (Weil & Cunningham-Amundson, 1994), and is controlled by different areas and structures in the brain (Schultz *et al*., 1998). Bonifacci (2004) also found that there were significant differences in visual-motor integration in children with good and poor gross motor abilities.

The literature indicates a strong relationship between visual-motor integration and a variety of different learning disabilities (Kulp, 1999; Bonifacci, 2004; Lotz *et al.,* 2005; Van Hoorn *et al.,* 2010), and that poor visual-motor integration can lead to poor academic performance (Kulp, 1999; Sortor & Kulp, 2003; Tekok-Kiliç *et al.,* 2010). Several studies have shown that visual-motor integration is one of the most important activities in preparing children to learn writing skills (Gombert & Fayol, 1992; Weil & Cunningham-Amundson, 1994; Daily *et al.,* 2003; Bezrukikh & Kreshchenko, 2004; Volman *et al.,* 2006). Reading and writing problems during the initial phase of learning could be influenced by inadequate visual-motor integration (Bezrukikh & Kreshchenko, 2004).

In this regard, Lotz *et al*. (2005) reports that a group of South African children in Grades 1 and 2 achieved one standard deviation below the mean during visual-motor integration. This suggests that the visual-motor skills of these children were at a below-average level when entering school. Research by Ratzon *et al.* (2009) on writing skill problems in pre-primary schools found that children with these impairments also had problems with visual-motor integration, visual perception, motor coordination, fine motor coordination and cognitive planning, as well as self-esteem (Khalid *et al.,* 2010). Poor writing skills in these children showed a strong relationship with deficiencies in visual-motor integration, visual perception and motor coordination (Volman *et al.,* 2006; Ratzon *et al*., 2009).

Visual perception is a learnt process that converts the image obtained through visual acuity and/or sight into significant and useful information. It is also an important part of extracting and organising information from the environment (Sortor & Kulp, 2003). In other words, it is making sense of the visual stimuli that is received from the environment, and for interpreting and understanding it (Cheatum & Hammond, 2000; Sherrill, 2004). Winnick (2005) states that visual perception is important for writing, drawing, reading, spelling and mathematical skills, as well as the fundamental movement skills such as throwing, kicking, catching and hitting. Inadequacy in these skills can contribute to deficiencies in gross muscle control (Bouchard & Tetreault, 2000; Reimer *et al.,* 2000), which in turn is needed to perform the necessary motor skills to promote motor development (Willoughby & Polatajko, 1995; Cheatum & Hammond, 2000). According to Tekok-Kiliç *et al*. (2010), defects in a child's visual perception skills not only cause academic problems, but also have debilitating effects on the performance of daily activities. The literature further indicates that there is a positive relationship between visual perception skills and academic skills such as reading, writing and mathematics (Solan, 1987;

Willows, 1998; Kulp, 1999; Sortor & Kulp, 2003).

Motor coordination has been defined as the ability to coordinate vision with body movement (Lane, 2005; Winnick, 2005). In sport it contributes to the correct information being provided to the body, for instance when and how to catch or hit a ball. Motor coordination plays an important role in gross motor skills, such as hand-eye coordination and foot-eye coordination, as well as fine motor skills such as cutting, drawing, colouring-in and writing (Desrochers, 1999; Winnick, 2005). According to Erhardt *et al.* (1988) and Arter *et al.* (1996), it appears that if any problems are experienced with motor coordination, hand-eye coordination and fine motor skills will be influenced adversely, which in turn could result in motor as well as academic problems. Research by Martins *et al.* (2008) on writing and perceptual motor skills found that good motor coordination and hand-eye coordination contributed most to the readability of children's handwriting. Sufficient visual analysis abilities are important in

children who are learning to read, allowing them to differentiate between letters such as b and d or p and q and homonyms, such as fair and fare (Case-Smith, 2002).

Children must furthermore be able to differentiate between figures and mathematical signs and then to break down problems into simpler components. Some aspects of mathematical ability correlate with spatial orientation (Fias & Fischer, 2005). According to various researchers (Kulp, 1999; Kurdek & Sinclair, 2001; Mazzoco & Myers, 2003), a relationship between mathematics and visual skills, such as visual perception and motor integration, are found in the early school years.

There is still controversy in the literature regarding the role of gender in these matters. Only a few studies related to gender differences in visual-motor integration could be found. A study conducted by Singh *et al.* (2010) on 100 Indian children (50 boys and 50 girls), between 2 and 3 years old, evaluated their visual-motor skills. These researchers found that regarding visual-motor integration skills, the boys were significantly better than the girls. Another study by Makhele (2005) conducted on a group of nine-year-olds in the Free State Province of South Africa also revealed that the boys performed better in visual-motor skills than the girls. A study by Lotz *et al*. (2005) involving 339 children, between six and 15 years (171 boys and 168 girls) in the Western Cape Province of South Africa, with a mean age of 8.10 years, found that the boys once again performed significantly better than the girls in respect of visual-motor skills. Reasons provided for these differences were that boys seemed to be socialised earlier in life at home or on farms, and that the nature of the tasks given to them may be the reason for their advantage in developing visual-motor skills (Lotz *et al*., 2005).

In several international studies, girls performed better than boys in visual-motor integration skills (Harris, 1963; Aylward & Schmidt, 1986; Brown, 1990), while in other studies no gender differences were found between boys and girls in these skills (Aylward & Schmidt, 1986; Weil & Cunningham-Amundson, 1994; Beery, 1997; Tekok-Kiliç *et al.*, 2010). This indicates uncertainty about gender differences. While several studies could be found that examined gender differences in visual-motor integration, none was available that examined gender differences in visual perception and motor coordination.

This study, therefore, focused on gender differences of Grade 1 learners (6- & 7-year-olds) in the North-West Province of South Africa, because of the uncertainty in the literature about gender differences in visual-motor integration, visual perception and motor coordination.

Children usually start their schooling at this age, and it is, therefore, important for their visual-motor skills to be intact, otherwise it could be problematic for their motor development and academic performance.

In terms of the different phases of a child's development, Lotz *et al.* (2005) indicated that visual-motor skills play an important role in aspects that include academic skills, motor development and emotional well-being. The literature clearly indicates a significant relationship between visual-motor integration and reading, mathematics, writing and spelling ability (Kulp, 1999; Sortor & Kulp, 2003; Bonifacci, 2004; Son & Meisels, 2006; Volman *et al.*, 2006; Mayes *et al.*, 2008), as well as visual perception and academic skills such as reading and mathematics. Moreover, the literature points out that motor coordination also shows a relationship with reading and mathematics (Solan, 1987; Kulp, 1999; Sortor & Kulp,

2003). It is, therefore, important to assess children as early as possible, because early detection can lead to implementation of the correct intervention programme to reduce the incidence of scholastic and motor development problems (Lotz *et al.*, 2005).

There is a clear gap in the literature with regard to the effect of gender on the visual-motor integration, visual perception and motor coordination of Grade 1 learners, and the relationship between visual-motor integration, visual perception and motor coordination. Investigating these relationships could shed light on the potential role that these skills could have on academic outcomes and sport performance of children, and may contribute to a better understanding among teachers as to how to improve these skills. Thus, the purpose of this study of a group Grade 1 learners was to determine, firstly, whether gender differences influenced visual-motor status and secondly, whether there were correlations among visual- motor integration, visual perception and motor coordination in Grade 1 learners in the North- West Province of South Africa.

METHOD

Research design

A one-way cross-sectional design was used for the collection of the baseline information in 2010.

Participants

The research was part of the NW-CHILD (Child-Health-Integrated-Learning and Development) study. The target population for this study was Grade 1 learners in the North- West Province. The total number of participants identified for the study was 880 Grade 1 learners (N=880). The research group was selected by means of a stratified random sample in conjunction with the Statistical Consultation Services of the North-West University.

To determine the research group, a list of names of schools in the North-West Province was obtained from the Education Department of the North-West Province. This list of schools was grouped into 4 educational districts, each representing 12 to 22 regions with approximately 20 schools (minimum 12, maximum 47) per region. Regions and schools were randomly selected with regard to population density and school status (quintile 1=schools from poor economic sectors, to quintile 5=schools from high economic sectors).

Boys and girls in Grade 1 were then randomly selected from each school. A total of 20 schools were involved in the study, from 4 districts with a minimum of 40 children per school and with

an even gender distribution. The final total group consisted of 816 learners (419 boys and 397 girls) with a mean age of 6.78 years. Thirteen parents (1.5%) did not consent to participation, whereas 35 (4.0%) of the selected participants were absent on the day of testing or had to be excluded because of incorrect ages that were provided by the schools.

Ethical issues

Ethical approval was obtained from the Ethics Committee of the North-West University, Potchefstroom Campus (No. NWU-0070-09-A1), and permission to perform the study in the schools was obtained from the Education Department of North-West Province. A formal meeting was organised with each principal to explain the aim and protocol of the study and to request permission for collecting data during school hours.

At each school 60 Grade 1 learners were randomly selected and received informed consent forms that had to be completed by their parents. This was done to ensure that consent would be granted by the parents of a minimum of 40 learners who needed to be tested at each school. Each participant's parents were requested to give informed consent before any tests were done. The purpose of this study was verbally explained to all the participants, and each participant had the chance to ask any questions about the research procedures. The children, whose parents gave consent, were evaluated to determine their visual-motor integration, visual perception and motor coordination skills. Trained interpreters were used to convey the instructions of the evaluators to the subjects, if English was not their first language.

Measuring instruments

Developmental Test of Visual-Motor Integration 4th edition –Test battery (VMI-4)

The Developmental Test of Visual-Motor Integration [4th edition] (VMI-4) (Beery, 1997), consists of 3 subtests, which include visual-motor integration, visual perception and motor coordination. The aim of the VMI-4 is to identify children who need special assistance by means of early detection. The visual-motor integration subtest consists of 3 practice geometrical shapes and 24 increasingly complex geometrical shapes. The participants are required to copy a geometric figure with a pencil without using an eraser, and only 1 attempt is permitted for each figure. This test allows 10 minutes for completion, or is stopped after 3 consecutive mistakes are made. The complete 27-item VMI can be administered individually or in groups, takes about 10 to 15 minutes to complete and can be used for all age groups, from pre-school children to adults.

The 18-item short form edition can be used to test 3- to 7-year-old children. The visual perception subtest requires matching shapes with each other and takes 3 minutes to complete or is stopped after 3 consecutive mistakes are made. The last subtest, motor coordination, involves completing dots in a shape and takes 5 minutes to complete. The criteria for awarding marks in the VMI-4 are as follows: a "0" is awarded for figures that are wrong and a "1" is awarded for the correct figures. The test is stopped after 3 consecutive mistakes are made or when time is up, except for the motor coordination section which has a specified time limit; the test is stopped when the time elapses.

The data is read in under 3 categories: VMI; visual perception; and motor coordination. The raw score is converted to a standard score and then to a percentile. Using the standard score, children can be grouped into 5 different classes, ranging from very high (133−160) to very low (40−67). The VMI-4 was developed to measure the extent to which an individual can integrate his or her visual and motor capabilities. Poor results in the VMI-4 could be ascribed to the

inability to integrate visual-perceptual and motor abilities and not necessarily to inadequate abilities. Beery (1997) reported a validity of 0.92, 0.91 and 0.89 for the VMI-4 test battery.

Statistical analysis

The *Statistica* software package (StatSoft, 2010) of the North-West University was used to analyse the data. Data was analysed for descriptive purposes based on means (M), standard deviations (SD) and minimum and maximum values. The independent t-test was applied to determine gender differences with regard to visual-motor integration, visual perception and visual-motor coordination. The level of statistical significance was set at $p \leq 0.05$. Spearman

rank order correlation was used to determine the correlations among visual-motor integration, visual perception, and motor coordination with the girls, boys and the whole group separately. The strength of the correlations is given with $r \geq 0.1$ indicating a small effect, $r \geq 0.3$ a medium effect and $r \geq 0.5$ a large effect.

Furthermore, use was made of a Two-way frequency table to compare the classifications of the boys and girls. The Pearson Chi-square served to indicate the significance of the results and the accepted level of statistical significance was set at $p \leq 0.05$. The strength of the correlations are represented by the phi-coefficient with $w > 0.1$ indicating a small effect, $w > 0.3$ a medium effect and $w > 0.5$ a large effect (Steyn, 2002). Effect sizes (d) were calculated to determine the practical significance of the results by dividing the differences in the mean by the largest standard deviation of the test. For the interpretation of practical significance, the following guidelines were used: $d \geq 0.2$ indicated a small effect, $d \geq 0.5$ a medium effect and $d \geq 0.8$ a large effect (Cohen, 1988).

RESULTS

Table 1 shows the composition of the study population by gender and age. A total of 816 Grade 1 learners (419 boys and 397 girls) were identified as subjects for this project. The group had a mean age of 6.78 years (SD=0.49); the mean age of the boys was 6.81 years (SD=0.49), which was slightly higher than the girls' 6.74 years (SD=0.48).

***TABLE 1*: COMPOSITION OF RESEARCH GROUP ACCORDING TO GENDER AND AGE**

		Age (years)			
Group	**n**	**Mean**	**SD**	**Minimum**	**Maximum**
Boys	419	6.81	0.49	6.00	7.80
Girls	397	6.74	0.48	6.00	7.80
Total	816	6.78	0.49	6.00	7.80

***TABLE 2*: BOYS' AND GIRLS' SCORES FOR AND DIFFERENCES BETWEEN VISUAL-MOTOR INTEGRATION, VISUAL PERCEPTION AND VISUAL-MOTOR COORDINATION**

	Boys (n=419)		**Girls** (n=397)		**Group** (N=816)		**Significance of differences**			
Variables	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**	**t-value**	**df**	**p**	**d**

VMI	92.0	13.9	91.0	13.7	91.5	13.8	1.07	815	0.29	0.07
VP	80.0	23.3	78.7	22.8	79.4	23.0	0.81	815	0.42	0.06
MC	93.4	14.0	92.6	15.3	93.0	14.67	0.69	815	0.49	0.05

VMI= Visual-motor integration VP= Visual perception MC= Motor coordination
SD= Standard deviation df= degrees of freedom;
Significance accepted: * p≤0.05; * d≥0.2; ** d≥0.5; *** d≥0.8

Table 2 indicates the *visual-motor integration*, *visual perception* and *motor coordination* of the total group (N=816; 419 boys and 397 girls). The statistical and practical significance of the results for the 2 subgroups are also presented in Table 2.

With regard to *visual-motor integration*, the boys exhibited a slightly higher mean (92.0) than the girls (91.0), although there was no statistical or practical significance (p≤0.29; d=0.07) to distinguish the groups. The same tendencies were observed for *visual perception*. The mean value for the boys was also slightly higher than that for the girls (80.0 and 78.7 respectively). There was no statistical or practical difference between the genders (p≤0.42; d=0.06). The same pattern was observed for *motor coordination*. The mean value for the boys was slightly higher than the girls (93.4 and 92.6 respectively), although there was no statistical or practical significance to distinguish the 2 groups (p≤0.49; d=0.05) (Table 2).

***TABLE 3*: CORRELATION BETWEEN VISUAL-MOTOR INTEGRATION, VISUAL PERCEPTION, AND VISUAL-MOTOR COORDINATION OF BOYS (n=419), GIRLS (n=397) AND GROUP (N=816)**

Variable	VMI	VP	MC
Boys			
VMI	–	0.36*	0.41*
VP	0.36*	–	0.37*
MC	0.41*	0.37*	–
Girls			
VMI	–	0.35*	0.41*
VP	0.35*	–	0.41*
MC	0.41*	0.41*	–
Group			
VMI	–	0.35*	0.41*
VP	0.35*	–	0.39*
MC	0.41*	0.39*	–

VMI= Visual-motor integration; VP= Visual perception; MC= Motor coordination
* r≥0.3

A Spearman rank order correlation was used to determine the correlations among visual- motor integration, visual perception, and motor coordination with the girls, boys and whole group separately. The results in Table 3 indicate that the boys demonstrated only slightly higher correlations with a moderate practical significance regarding *visual-motor integration with visual perception* (r=0.36) than the girls (r=0.35) or the whole group (r=0.35). Furthermore, the girls demonstrated a slightly higher correlation with a moderate practical significance than the boys (r=0.37) or the whole group (r=0.39) during *visual perception with motor coordination* (r=0.41). The boys, girls and the whole group showed the same correlation with a moderate

practical significance for *visual-motor integration with motor coordination* (r=0.41).

Table 4 shows the *visual-motor integration*, *visual perception* and *visual-motor coordination* of the Grade 1 learners in the various categories as a total group, as well as boys and girls separately. The largest percentage of boys (74.9%), as well as girls (73.1%), fell within Class

3 (average class) in the *visual-motor integration* test. The subtest, *visual perception*, exhibited the same tendencies with the greater percentage of boys (36.3%) and girls (36.0%) in Class 3 (average class). For the *motor coordination* subtest, the largest percentage of boys and girls also fell within Class 3 (average class), with percentages of 80.4% and 80.6%, respectively.

***TABLE 4*: PERCENTAGE OF VISUAL-MOTOR INTEGRATION, VISUAL PERCEPTION AND VISUAL-MOTOR COORDINATION FOR BOYS, GIRLS AND GROUP**

Variables and study population	**Class 1**		**Class 2**		**Class 3**		**Class 4**		**Class 5**	
	%	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**
Visual-motor integration (VMI)										
Boys (n=419)	0.2	1	1.9	8	74.9	314	18.4	77	4.5	19
Girls (n=397)	0.5	2	3.5	14	73.1	290	18.6	74	4.3	17
Group (N=816)	0.4	3	2.7	22	74.0	604	18.5	151	4.4	36
Visual perception (VP)										
Boys (n=419)	0.5	2	4.1	17	36.3	152	31.5	132	27.7	116
Girls (n=397)	0.5	2	4.3	17	36.0	143	34.8	138	24.4	97
Group (N=816)	0.5	4	4.2	34	36.2	295	33.1	270	26.1	213
Motor coordination (MC)										
Boys (n=419)	0.0	0	1.2	5	80.4	337	13.6	57	4.8	20
Girls (n=397)	0.5	2	2.0	8	80.6	320	11.3	45	5.5	22
Group (N=816)	0.3	2	1.6	13	80.5	657	12.5	102	5.2	42

Class 1= Far-above-average; Class 2= Above average; Class 3= Average; Class 4= Below-average; Class 5= Far-below-average;
VMI ($p<0.64$ & $phi>0.05$); VP ($p<0.83$ & $phi>0.04$); MC ($p<0.40$ & $phi>0.07$)

There was no statistical or practical significant difference between boys and girls in the *visual-motor integration* ($p<0.64$ & $w>0.05$), *visual perception* ($p<0.83$ & $w>0.04$), or *motor coordination* ($p<0.40$ & $w>0.07$) tests. Both boys and girls performed best in the *motor coordination* exercise and the greatest difference between the genders was observed in *visual-motor integration*. It appears (Table 4), that most Grade 1 learners generally fared poorest in the *visual perception* subtest, although the girls exhibited a slightly lower percentage (24.4%) than the boys (27.7%).

With regard to the total group's *visual-motor integration*, *visual perception* and *motor coordination*, the largest proportion of the subjects fell within Class 3 (average group). It is also apparent from Table 4 that only a small percentage of the subjects fell within Class 1 (far above average) in the various sections (0.4%, 0.5% and 0.3%). It can further be noted that the largest

percentage of the group fell in Class 5 (far below average) (26.1%) in the *visual perception* subtest.

DISCUSSION

The aims of this study were to determine whether gender influenced visual-motor status and whether there were correlations among visual-motor integration, visual perception and motor coordination in a group of Grade 1 learners in the North-West Province of South Africa.

The results indicate that there were slight differences between the boys and the girls in visual-motor integration, visual perception and motor coordination, although the differences were not significant. This supports the findings of Aylward and Schmidt (1986), Weil and Cunningham-Amundson (1994), Beery (1997) and Tekok-Kiliç *et al.* (2010), who found no gender differences between boys and girls in visual-motor integration skills. These results, however, contrast with the findings of other researchers (Lotz *et al.*, 2005; Makhele, 2005; Singh *et al.*, 2010), where the boys performed significantly better than the girls, and other studies in which the girls performed significantly better than the boys (Harris, 1963; Aylward & Schmidt, 1986; Brown, 1990) in visual-motor integration. No literature was found that reported gender differences for visual perception and motor coordination.

Significant correlations were found in this study between: visual-motor integration and visual perception; visual-motor integration and motor coordination; and visual perception and motor coordination between the boys and girls, as well as in the group as a whole. The results indicate, furthermore, that the boys demonstrated a slightly higher correlation with visual-motor integration and visual perception than the girls. A possible reason for this difference is that boys start to socialise earlier in life than girls, and that the nature of the tasks given to them at home and elsewhere may give them an advantage in developing visual-motor skills (Connor *et al.*, 1978; Lotz *et al*., 2005). Research by Kulp (1999) found a strong relationship between visual-motor integration, visual perception and motor coordination and academic skills such as reading, mathematics, writing and spelling in 7- to 9-year-olds.

In certain aspects this study's results were similar to the findings of Lotz *et al.* (2005) regarding the visual-motor integration scores. The results of this study indicated that the largest percentage of boys (74.9%) and girls (73.1%) fell within the average class for visual- motor integration, whereas 22.9% of the whole group fell in the below-average and far- below-average classes. Lotz *et al.* (2005) reports that the visual-motor integration score for the Grade 1 and 2 learners in their study were at least one standard deviation below the mean, which indicated that these learners performed between average and low visual-motor functions. Problems that may occur as a result of deficiencies in visual-motor integration involve motor development (Mon-Williams *et al.*, 1996; Bonifacci, 2004; Van Waelvelde *et al.*, 2004; Lotz *et al.*, 2005) and academic ones (Kulp, 1999; Sortor & Kulp, 2003; Bonifacci, 2004; Son & Meisels, 2006; Volman *et al.*, 2006; Mayes *et al.*, 2008).

The visual perception subtest results show that 59.2% of the boys and girls fell in the below-average and far-below-average classes. The results further indicated that most of the learners struggled with visual perception, with 270 learners in the below-average class (33.1%) and 213 learners in the far-below-average class (26.1%). According to Holle (1976), visual perception, which includes shape perception, directional space and visual memory, needs a certain degree of development to enable an individual to distinguish clearly between the fore- and background.

This study's results revealed that the group's visual perception was at a lower than average level and can be ascribed to the possibility that the visual skills of these children were not fully developed when entering school. This could be a reason why this group of boys and girls performed relatively poorly in the visual perception subtest. According to Aylward and Schmidt (1986), Solan (1987), Griffin *et al.* (1993), Papavasiliou *et al.* (2007) and Tekok- Kiliç *et al.* (2010), visual perception deficiencies contribute to reading problems. Children need more complex visual perception to be able to read, because they have to connect the words and letters that they see on the black board or on their books to the words they hear and to the meanings attached to them (Griffin *et al.*, 1993; Cheatum & Hammond, 2000; Papavasiliou *et al.*, 2007). In this manner visual perception problems lead to reading and learning problems (Cheatum & Hammond, 2000).

Visual perception also includes comprehension of the differences between various forms, as well as understanding where to place the answers to mathematical questions (Cheatum & Hammond, 2000). Winnick (2005) is of the opinion that a child's faulty visual perception can also contribute to deficiencies in fundamental movement skills such as throwing, kicking, catching and hitting.

In the case of the motor coordination subtest, only 17.7% of the children fell into the below-average and far-below-average classes. Various researchers have found that if children experience problems with this skill, it could lead not only to motor deficiencies, such as coordination (hand-eye and foot-eye), spatial orientation and balance, but also to fine motor deficiencies, which could influence a child's academic as well as sporting skills (Desrochers, 1999; Winnick, 2005). Nothing could be found in the literature that indicates gender differences with motor coordination as evaluated by the VMI-4 test. Further research in this area is recommended. Answering this would help teachers to have a better understanding of how to work with boys and girls with motor coordination problems, and which remedial programme to use for these children.

CONCLUSION

The results of this study indicated that there were limited gender differences in visual-motor integration, visual perception and motor coordination, although the differences were not significant. Relationships with practical significance were found between visual-motor integration and visual perception, visual-motor integration and motor coordination and, lastly, visual perception and motor coordination. According to the literature, if any deficits are present in a child's visual-motor skills when entering school, poor motor development and academic performance could occur.

LIMITATIONS AND RECOMMENDATIONS

The study did, however, demonstrate several limitations, which could be overcome with a view to further research. The different ethnic groups and their socio-economic circumstances were not recorded in this study, thus further longitudinal research is recommended to determine the relationship between race and socio-economic conditions with visual-motor integration, visual perception and motor coordination. Given the importance of the first two years of formal education in which the visual-motor skills are important for scholastic and

motor development, assessment and early detection of visual-motor integration, visual perception and motor coordination deficits are especially important and useful. To reinforce the recommendations of Lotz *et al.* (2005), it is important to detect visual-motor skills deficits as early as possible, because without the development and implementation of appropriate intervention programmes that focus on the improvement of visual-motor skills, the number of scholastic problems and motor development difficulties will increase in the future. These intervention programmes could further be implemented by teachers, to help with the improvement of visual-motor skills deficits, which in turn could improve the children's academic and sport performance.

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PSYCHOLOGICAL CONTRACT AND PERCEIVED PERFORMANCE OF A RUGBY TEAM

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ABSTRACT

Little research has connected the psychological contract and sport. Therefore, the content of the psychological contract of rugby team members was analysed and the correlation between the psychological contract and the perceived performance of rugby team members was determined. A longitudinal research design was chosen, along with a non-probability sampling technique. The sample consisted of rugby team members from a prominent rugby playing university in South Africa. A psychological contract questionnaire and perceived performance questionnaire were used. From the research, the content of the psychological contract of rugby team members was determined. The results indicated no correlation between the psychological contract and perceived performance, however, a strong correlation was found between Institute Obligations and Player Obligations. Another factor, which remains to be investigated, is leadership and the perceived performance of a rugby team.

Key words: Psychological contract; Breach; Violation; Performance; Team; Rugby.

INTRODUCTION

> "Once upon a time, there was a boy called William. Now William wasn‟t your average sort, one could say he was a tad unconventional. In a blatant disregard for the rules and history of football, this young rascal picked up a ball usually directed by feet only and ran with it! He initiated, what is commonly accepted, the birth of a new game, *rugby*, named after the Public School he attended in Warwickshire, England" (Waterson, 2002: 1).

From the birth of the game until today, rugby has changed to a great extent. Players have become bigger, stronger, fitter and faster (Harmse, 2008). The most profound change, however, is probably professionalism, as it transformed a game played by amateurs for no compensation into a multi-million Rand business venture, where players are treated as professional employees (Waterson, 2002; Thomas, 2006). Before the introduction of professionalism, players were also required to have alternative employment (Paul, 2009). Professionalism has, therefore, changed the game of rugby profoundly.

In August 1995, the International Rugby Board (IRB) announced that the game of rugby would become professional (Mellalieu, 2008). For South African rugby, professionalism led

to team players signing formal contracts and being paid openly for playing both nationally and provincially (Nauright, 1998). It is now purely a business, competing for scarce resources, that requires its management to have a business approach and to use professional management methods (Robinson, 2008). According to McMillan (2006) television was the main cause of this shift to professionalism as a result of the explosive increase in broadcasting profits during the 1990s. Smith and Stewart (2010:9) mention that fans and spectators are willing to pay large amounts of money to see their favourite team or player in action and it is therefore the players that are "at the heart of professional sport". Even locally, club-level competitions have received a great amount of media attention, not only for the way players performed in a game, but also for what they are doing off the field (Smith & Stewart, 2010). Paul (2009:27) asserts that "[t]here are „eyes‟ everywhere peering into the darkest corners in the hope they will find the tiniest transgression".

The result is that the players are living a "fishbowl experience" where their every move is being scrutinised on a daily basis and where they are pressurised to perform to the highest standard

(Smith & Stewart, 2010). It is, therefore, apparent that players are under enormous pressure to perform, both on and off the field, not only from their coaches and managers but from the fans and spectators as well. However, professionalism occurs not only at national and provincial level, but also at university level. This is evident in the following vision and mission statement of one of the most prominent rugby playing universities in South Africa: "The vision and mission of the Tuks Rugby Academy is to identify and develop talented rugby professionals to their full potential and to equip them with the necessary skills and knowledge to enjoy a successful career in rugby" (University of Pretoria, Vision section, 2008:1).

The above-mentioned statement is a promise from the university to the player, creating certain expectations and obligations – a psychological contract. Rousseau (1995:9) defines the psychological contract as "individual beliefs, shaped by the organization, regarding terms of an exchange agreement between individuals and their organization". In other words, the player may have certain expectations regarding remuneration, and training and development opportunities, in exchange for his time, physical and psychological efforts, discipline and devotion to the team. Violation or breach of these expectations and obligations may have adverse effects on the performance and contributions of the individual (Rousseau, 1995). A substantial amount of interest has been devoted in the rugby literature to the performance analysis of teams and players from various disciplines, such as the physiological, psychological and biomechanical (Mellalieu, 2008). Over the last two decades much attention has been given to research of the psychological contract (Suazo *et al*., 2009). However, there is very little research connecting the psychological contract to sport. It was De Campos (1994) who found that an unclear psychological contract may lead to significant adverse consequences, such as being fired, quitting, changing coaches, changing sport clubs, stopping practising, poor performance, or even changing to another sport.

Therefore, 18 years after De Campos"s (1994) results, the main objective of the research on which the current article is based was to determine if the psychological contract in sport teams influences the perceived performance of the team members. In order to achieve this objective, a two-phase empirical analysis of the results of a psychological contract questionnaire and a perceived performance questionnaire was conducted.

PSYCHOLOGICAL CONTRACT

The concept and terminology of the psychological contract was first used in the early work of Argyris (1960), within the context of work organisations (Anderson & Schalk, 1998; Guest, 2004; Schalk & Roe, 2007). It was, however, Levinson *et al*. (1962) who first defined the concept as the sum of mutual expectations between the organisation and the employee (De Campos, 1994; Anderson & Schalk, 1998). Many definitions of the concept followed, but it was Rousseau (1995) who provided the key developments leading to its current use as an analytic framework (Guest, 2004). This analytic framework contains certain elements underlying the psychological contract. According to Rousseau (1995), the psychological contract is in essence a subjective perception, which will differ from one individual to another and, therefore, each individual will perform according to his or her perceived obligations and perceived expectations (De Campos, 1994). Parties to this exchange agreement are thus likely to hold rather different and possibly unique beliefs about what each owes to the other (Robinson & Rousseau, 1994).

The psychological contract furthermore involves a dynamic process (De Campos, 1994), which means that it is subject to change as the relationship between the employee and the employer

evolves (Anderson & Schalk, 1998). According to Schalk and Roe (2007), psychological contracts are created at a certain point in time and they are assumed to be changeable over time. Another element underlying the psychological contract is that it is concerned with mutual obligations, based on certain promises, in which the parties will invest in their relationship with the prospect of an optimistic outcome (Anderson & Schalk, 1998). Therefore, the type of relationship that exists between the employee and the employer will have an impact on the psychological contract (De Campos, 1994). A fundamental component of the psychological contract is the concept of breach (Dulac *et al*., 2008). Morrison and Robinson (1997:230) define psychological contract breach as "the cognition that one"s organization has failed to meet one or more obligations within one"s psychological contract in a manner commensurate with one"s contributions". For instance, a rugby player expects that if he performs well, then he will be playing for the first team in the next game. It is, however, necessary to keep in mind that this is a subjective experience based not only on an employer"s action or inaction, but on the individual"s perception of what that action or inaction may be (Kramer, 2006).

According to Rousseau (1995), there are three main reasons for the occurrence of perceived psychological contract breach: *reneging*; *disruption*; and *inadvertent violation*. Firstly, *reneging* occurs when the organisation is aware that an obligation exists but consciously fails to meet that obligation (Robinson & Morrison, 2000). For example, a coach explicitly promised a player that he would play for the first team on Saturday and then chose another player. Secondly, *disruption* takes place when the organisation is unable to fulfil its obligations due to changing economic or environmental factors (Lester *et al*., 2002). According to Lester *et al*. (2002), this type of psychological contract breach will transpire when an organisation is suffering financially or when unforeseen changes require it to adjust existing practices. For instance, the coach has promised the team a practice tour, but unexpected financial constraints subsequently make this impossible. The last reason for psychological contract breach is *inadvertent violation*. This can occur when an employee has a certain perception of a given promise that differs from the perception of the organisation

regarding that particular promise (Morrison & Robinson, 1997). In other words, it is when an employee and organisation have different understandings regarding either whether a given obligation exists or about the nature of that obligation (Robinson & Morrison, 2000). For example, the rugby administrators promised training and development with the onset of the season. The player, in this scenario, perceived this as a promise of a personal trainer, whereas the administrators only meant that they would provide gym facilities.

Accompanying the concept of psychological contract breach is the concept of violation. Early writings regarding the psychological contract regularly used the terms „breach" and „violation" interchangeably (Sparrow & Cooper, 2003). However, according to Robinson and Brown (2004), psychological contract breach refers to an individual"s perception that another has failed to meet his or her obligations to that individual, whereas psychological contract violation refers to the emotional reaction to the interpretation of a breach experience. Sparrow and Cooper (2003:43) define psychological contract breach as "strong affective responses to more extreme breaches of contract, such as feelings of injustice, betrayal and deeper psychological distress, whereby the victim experiences anger, resentment, and a sense of wrongful harm". Thus, there is a distinction between the violation of the psychological contract and unmet expectations and perceptions of inequity (Robinson & Rousseau, 1994). When the psychological contract has been breached it produces a cognitive response, where an employee might make alterations to their own contributions in two ways (Holbeche, 2006). They may

either decrease what they give, such as reducing the amount of effort they put into their work thus withdrawing psychologically, or they may increase what they get by taking more sick leave or commit petty theft to increase untaxed benefits.

In the case of the rugby player, he might reduce the effort he exerts on the field and become prone to absenteeism. However, when the breach develops into a violation, an employee‟s behaviour becomes more extreme, accompanied by emotional responses such as frustration, feelings of betrayal, leaving the organisation, sabotage and revenge, and physical symptoms such as high blood pressure (Holbeche, 2006). Rousseau (1995) states that the violation of a contract will therefore erode trust as it undermines the employment relationship, yielding lower employee contributions such as performance and attendance, as well as lower employer investments such as retention and promotion. Thus, when a player feels that an expectation or obligation was violated, it could do great damage to the coach-player relationship because the player could lower his performance and ultimately lead to the player quitting the team.

Psychological contract in the professional sporting environment

A fundamental aspect of the labour process is the employment relationship that is defined as the exchange relationship that exists between the employer and the employee in the workplace (Armstrong, 2006). Similarly, the relationship between the coach and the athlete plays a significant role in shaping the athletic endeavour (De Campos, 1994). According to Jowett and Poczwardowski (2007), coaches and athletes normally develop relationships through which athletes receive instruction, guidance and support. They work closely together, form close relationships and have a high level of interaction and reliance upon one another (Lorimer & Jowett, 2009). The coach, for example, may rely on the athlete on issues such as to be on time for practice sessions, to perform during games and to conform to the rules of the sport, whereas the athlete will rely on the coach to teach new techniques and skills, to extend

emotional support, to motivate the athlete and to evaluate the game of the athlete. When parties in a relationship experience that they are obliged to behave or perform in a particular manner, and that the other party has certain obligations towards them, such feelings can be regarded as the inception of a psychological contract (De Campos, 1994).

Wellin (2007:17) states that “the psychological contract essentially refers to the mutual expectations people have of one another in a relationship, and how these expectations change and impact our behaviour over time”. Within the coach-athlete relationship, the athlete starts to create expectations regarding the coach as early as when he or she starts thinking about practising a sport, whereas a coach can form expectations before he or she has met an athlete (De Campos, 1994). Due to the dynamic nature of the psychological contract, it will change and develop as time goes by through accumulating experiences, changing employment conditions and the parties re-evaluating their expectations (Armstrong, 2006).

However, not all expectations may be met, neither those of the employee nor those of the employer (French *et al*., 1985). As previously mentioned, unmet expectations may lead to a breach and violation of the psychological contract. An employee‟s perception of psychological contract breach can have harmful consequences for an organisation; including lowered performance, commitment and satisfaction, as well as lower actual turnover (Robinson & Rousseau, 1994; Robinson, 1996; Robinson *et al.*, 1994). Lanning (1979) argues that the athlete‟s performance could be considerably affected by the nature of the relationship between the coach and the athlete. Therefore, if the athlete should feel that the coach has not met certain

expectations, it may lead to lowered performance from the athlete.

EMPIRICAL ANALYSIS

The empirical analysis of the research was conducted in two phases. The objectives were: to determine the reliability and validity of the psychological contract questionnaires that were used; to determine the content of the psychological contract of rugby team members; and to determine how the psychological contract correlated with the perceived performance of the rugby team members.

Participants

The general objective of the research was to determine the influence of the psychological contract on the perceived performance of a team. In this article, *team* refers to any team playing semi-professional rugby with team members getting paid for playing for the particular team and thus being regarded as employees. Semi-professional rugby teams are defined as the theoretical population. The study population was university rugby teams that participated at club level. In order to choose the participants for the study, a non-probability sampling method (convenience sampling technique) was used to select a sample from the study population. With non-probability sampling, the chance that any one particular person from the population will be chosen is unknown (Stead, 2001). A convenience sampling technique such as this selects respondents because they are easily accessible and should only be used if the universe is homogeneous (Stead, 2001).

Measuring instruments

Psychological contract questionnaire (Phases 1 and 2)

The psychological contract of team members consists of certain obligations of the institution towards the team members and certain player obligations towards the institution. In order to determine the content of these obligations, a psychological contract measure was used. This measure consisted of 40 items that are rated on a 6-point Likert-type scale. Thirty items represented a promise made to the player by the institution and 10 items represented promises made by the player to the institution. If the promise was not made, then the player would choose 0 – No, „the promise has not been made“. If the promise was made, the player could choose between 1 – Yes, but „promise not kept at all“, to 5 – Yes, for „promise fully kept“. Two sample items of the institute obligations are: „to provide you with challenging tasks“ and „to ensure fair treatment by coaches and managers“. Two sample items of the player obligations are: „to give good performances as a player constantly“ and „to be committed to the improvement of your team“s performance“.

Perceived performance questionnaire (Phase 2)

This questionnaire measured the level of performance that each team member experienced during each game. The questionnaire consisted of four items (yourself, your captain, the team, the coaching staff) that were answered through a rating scale ranging from 0 to 10. Before and after each home game each team member had to rate the perceived performance of himself, his captain, the team, and the coaching staff from 0 to 10.

Procedure

Phase 1

In order to determine the validity and reliability of the psychological contract questionnaire and the content of the psychological contract, 3 teams were chosen who participated in the U/19s, the U/21s and the first team of a prominent rugby playing university in South Africa. Psychological contract questionnaires were handed out at the onset of the season in order to determine the content of the psychological contract of these team members.

Phase 2

To determine the correlation between the psychological contract and the perceived performance, the first rugby team of a university in South Africa was used. The team chosen took part in an extremely well organised and professional university rugby competition. The competition consisted of 31 matches in total and was played every Monday evening for 2 months. These matches were broadcast live on national television. The psychological contract questionnaires were handed out at the onset of the season and perceived performance questionnaires were handed out on a regular basis – before and after each home game – in order to determine the satisfaction with the teams‟ preparation or game, as well as the perceived performance of the team.

The samples in both phases were also deemed to be valid samples of the study population due to their participation in all of the important club level competitions in South Africa.

Statistical analysis

The data obtained from the above questionnaires were statistically analysed using the SPSS program 17.0.

Phase 1

In order to determine the content of the psychological contract, exploratory factor analysis was used. Prior to this, item extraction was done in order to determine the frequencies of promises not made and promises made. Descriptive statistics (means, standard deviations, skewness and kurtosis) of the factors were also computed to analyse the data obtained from the questionnaires. Cronbach‟s alpha (α) coefficients were also computed in order to determine the internal consistency of the constructs.

Phase 2

In order to determine the correlation between the psychological contract and perceived performance, exploratory factor analysis was done to determine the factors underlying the psychological contract and perceived performance questionnaires. Thereafter, a Pearson‟s product-moment (2-tailed) correlation was done to measure the strength of the relationship between the psychological contract and perceived performance (Field, 2005).

RESULTS

Phase 1

Exploratory factor analysis was used to assess the items of the psychological contract questionnaire. As a result, 2 factors were extracted and were labelled Institute Obligations and Player Obligations. Seven factors with inadequate loadings were excluded. These were housing, opportunities for development as a player, accommodating team and academic demands provided by university to match team and academic demands, team captain regulating

emotional behaviour, accepting selectors‟ decisions, and reaching expectations of team supporters. Factor 1, Institute Obligations, had an eigenvalue of 7.291 and explained 27.01% of the variance. Table 1 shows the items grouped under Factor 1, Institute Obligations, with their loadings that ranged from 0.436 to 0.643. The Kaiser-Meyer-Olkin value measured at 0.77 and the Bartlett‟s test of Sphericity was lower than 0.01.

Table 2 shows the items grouped under Factor 2, Player Obligations, with their loading ranging from 0.411 to 0.848. Factor 2 had an eigenvalue of 5.792 and explained 44.57% of the variance. The Kaiser-Meyer-Olkin value measured at 0.89 and the Bartlett‟s test of Sphericity was lower than 0.01.

***TABLE 1*: RESULTS OF EXPLORATORY FACTOR ANALYSIS FOR INSTITUTE OBLIGATIONS (F1)**

Items	F1	Communalities
Challenging tasks	0.496	0.735
Financial assistance	0.506	0.605
Opportunities for development	0.578	0.646
Participation in decision-making	0.454	0.582
Career opportunities	0.610	0.588
Good working atmosphere	0.567	0.703
Fair treatment	0.580	0.771
Growth opportunities	0.643	0.745
Taken care of	0.594	0.741
Accommodated with long-term injury	0.632	0.799
Help with personal problems	0.485	0.750
Honest about performance	0.593	0.773
Clear and consistent with performance appraisals	0.636	0.724
Quality training facilities	0.497	0.777
Task-orientated team	0.572	0.669
Committed team performance	0.562	0.726
Loyal team members	0.565	0.757
Team members accepting norms and standards	0.584	0.677
Good team captain	0.480	0.600
Team captain leading by example	0.553	0.780
Team captain providing feedback	0.576	0.769
Team captain taking responsibility	0.436	0.600

***TABLE 2*: RESULTS OF EXPLORATORY FACTOR ANALYSIS FOR PLAYER OBLIGATIONS (F2)**

Items	F2	Communalities
Loyal to Rugby Institute	0.723	0.595
Constantly good performance	0.789	0.664
Constantly good academic performance	0.411	0.663
Supporting image	0.844	0.752
Honesty	0.799	0.701
Task-orientated	0.722	0.523
Commitment to improvement	0.848	0.756
Loyal to team	0.675	0.679
Accepting team norms and standards	0.693	0.492

Innovative suggestions for improvement	0.690	0.498
Accepting captain"s authority	0.606	0.548

Table 3 shows the descriptive statistics of the aforementioned factors, as well as the 7 items that were dropped from the factor analysis. Also indicated in Table 3 is the Cronbach"s α for the 2 factors. Cronbach"s α value for both factors were above the recommended 0.7 that indicates that the constructs are reliable.

***TABLE 3*: MEANS, STANDARD DEVIATIONS, SKEWNESS, KURTOSIS AND CRONBACH'S ALPHAS**

Variables	Mean	SD	Skewness	Kurtosis	α
Institute obligations (F1)	4.38	0.37	-0.43	-0.14	0.882
Player obligations (F2)	4.56	0.43	-1.88	6.00	0.897

As shown in Table 3, the means of Institute Obligations and Player Obligations were 4.38 and 4.56 with standard deviations of 0.37 and 0.43. The kurtosis of Player Obligations is 6.00, which indicates that the distributions were relatively pointy (Field, 2005).

Phase 2

Exploratory factor analysis was done and 4 factors were extracted: Before Game Performance, After Game Performance, Institute Obligations and Player Obligations. Both Before Game Performance and After Game Performance grouped successfully with Kaiser- Meyer-Olkin values higher than 0.60 (BGP=0.81; AGP=0.82) and the Bartlett"s tests of Sphericity were lower than 0.01 in both cases. These factors measure acceptable Cronbach"s alpha coefficients, to confirm their reliability (α_{BGP}=0.81; α_{AGP}=0.83). Pearson"s product- moment (2-tailed) correlation was done for the 4 factors and the results are indicated in Table 4.

***TABLE 4*: CORRELATION COEFFICIENTS BETWEEN CONTENTS (*n* = 27)**

Items	1	2	3	4
1. Before game performance	—	-	-	-
2. After game performance	0.479 * +	—	-	-
3. Institution obligations	0.183	0.028	—	-
4. Player obligations	0.238	0.062	0.749 ** ++	—

* Statistically significant correlation: p<0.05 ** Statistically significant correlation: p<0.01
\+ Practically significant correlation: r= 0.30 (medium effect)
++ Practically significant correlation: r= 0.50 (large effect)

Table 4 indicates that there were strong correlations between Before Game Performance and After Game Performance (0.497) and between Institute Obligations and Player Obligations (0.749). The correlation between Before Game Performance and After Game Performance was statistically significant at a confidence level of 95% and was practically significant with a medium effect (r=0.30). The correlation between Institute Obligations and Player Obligations was statistically significant at a confidence level of 99% and was practically significant with a

large effect (r=0.50). There was, however, no correlation between the 2 factors for performance and the 2 factors for the psychological contract.

DISCUSSION

The general objective of the research was to determine how the psychological contract influences the perceived performance of rugby team members. The first phase of the study investigated the content of the psychological contract of the members of three rugby teams. According to the literature, the psychological contract is in essence a subjective perception; therefore, parties to this exchange agreement are likely to hold different beliefs about what each owes the other.

It was indicated in the descriptive statistics that the team members‟ perceived obligations of the institute was high (mean=4.38). In general, this is an experience of a fulfilled psychological contract and much higher than the average experience of perceived obligations by employers. Isaksson (2006) indicates an average mean of 3.69 on the same scale for perceived employment obligations in eight European countries and Linde and Schalk (2008) report a mean of 3.60 in a South African sample. In both of these studies, there was a significant difference between the perceived employer obligations and the employee obligations, where the perceived employee obligations were much higher than the perceived employer obligations. Thus, the participants of the Isaksson (2006) and Linde and Schalk (2008) studies, perceived that they kept much more promises than the organisation. In this study, the fulfilment experience of the team members were much more balanced with a similar experience of perceived promises kept. These two factors of the psychological contract measured as a significant correlation with a large practical effect. The high level that the institute‟s obligations were fulfilled had a strong influence on the way that the team members fulfilled their obligations.

This indicates that the team members were not only satisfied with the manner in which the institution kept its promises, but also kept theirs. Maritz (2012) confirmed that a balanced psychological contract, as the team members, has a strong impact on the well-being of the employee, including job satisfaction, job security and physical well-being. Most importantly, such a fulfilled and balanced psychological contract reflects on the perceived and actual performance of the employee.

The current study could not confirm such a direct relationship between a balanced and fulfilled psychological contract with perceived performance. This result does not eliminate such a correlation, since the evaluation of the psychological contract was not measured before and after each match, but at the onset of the season. Furthermore, according to the Job Demands-Resources Model (Bakker & Demerouti, 2007), the fulfilment of promises by the employer creates an environment where well-being is achieved that sets the scene for own fulfilment of promises. This will have an influence on perceived performance. Even though a direct link was not found in this study, it can be deduced that high levels of perceived performance will not easily be reached without a fulfilled and balanced psychological contract, since it is part of hygiene factors for performance.

A correlation was achieved between perceived performances in the preparation for a match, with the perceived performance in that match. Various researchers confirmed that team cohesion (Gully *et al.*, 1995), mental and physical well-being (Smith *et al.*, 1992) and the

exchange relationship (Seers *et al.*, 1995), within teams can predict perceived performance in sporting events.

This study also included the experience of performance in the preparation for the actual sport event as a predictor of the perceived performance in the match. The findings confirmed such a correlation, which indicates that similar experiences of performances were experienced before and after the match. The above-mentioned past studies of antecedents for perceived performances in matches excluded the experience of the training for the specific event. It is proposed that this perceived performance of the preparations of the match can be used as a mediator between the exchange relationships, well-being and team cohesion with the perceived performance in the match.

CONCLUSION

Through this study it can be concluded that a valid and reliable psychological contract measurement can be used for sport teams that will measure the obligations of the team members to the team, management and institution. This measurement can also measure the obligations of the institution to the team member, as perceived by the team member. Certain items were dropped from the factor analysis due to their low loadings towards the two factors. These items included the promise of housing for the players, opportunities for the development of players, accommodating team and academic demands, team captain regulating emotional behaviour, accepting selectors‟ decisions, and reaching expectations of team supporters. Thus, rugby team members did not perceive the afore-mentioned items as promises either made by the institution or to the institution.

It was also confirmed that the team members experienced a balanced and fulfilled psychological contract, which seemed to be quite unique to this form of relationship, since an unbalanced psychological contract was measured in employment relationships in the past. This establishes a favourable situation for team members to achieve their goals and reach high levels of performance. Even though the researchers could not link the balanced and fulfilled psychological contract with perceived performance, they did identify the importance of the measurement of perceived performance in the preparation to the match, since it is linked with the match‟s perceived performance.

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RESTING HORMONE LEVEL RESPONSE TO A 16-WEEK DYNAMIC AND STATIC EXERCISE PROGRAMME

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ABSTRACT

The aim of the study was to evaluate hormonal responses of serum cortisol, growth hormone (GH), testesterone and insulin-like growth factor-1 (IGF-1) levels during dynamic and static stress exercises in 20 male volunteer student athletes. The serum fasting hormonal levels of the participants were measured after six weeks of general resistance exercise. Subsequently, nine of the participants performed static exercises and 11 participants performed dynamic exercises for an additional 16 weeks and the serum hormonal levels were measured again. The cortisol level significantly decreased in participants from the static group compared to participants from the dynamic group ($p<0.05$). However, the other parameters measured in the participants of the study group, as well as the cortisol level in the participants of the dynamic study group, did not change significantly.

Key words: Exercise; Cortisol; Testosterone; Growth hormone; IGF-1.

INTRODUCTION

Exercise performed against body weight, free weight and various weight systems is known as resistance exercise and this type of exercise causes specific changes in the body. These changes are mainly stress adaptations of the body that usually have general common findings, although they are affected by several factors such as age, gender, genetic predisposition, nutrition and circadian pattern. The most prominent adaptations are in the neuromuscular and endocrine systems. The hormones of the endocrine system are the regulators of metabolic functional changes of the body during restructuring of tissues by resistance exercise. The catabolic process causes tissue destruction within the body during resistance exercise, while the anabolic process predominates and leads to growth and tissue repair during the rest period (Viru & Viru, 2004; Kraemer & Ratamess, 2005).

The hormones that are related to exercise include glucocorticoids (cortisole and corticosterone), catecholamines, testosterone, growth hormone (GH), insulin and insuline-like growth hormone-1 (IGF-1). Among these hormones, testesterone, GH, insulin and IGF-1 have complex anabolic effects and are important regulators during reshaping of muscles. The glucocorticoids have a direct catabolic effect and trigger destruction of muscle proteins. Expression of catecholamines, glucocorticoids and glucagon, which are all stress hormones,

leads to muscle catabolism when they act together (Kraemer *et al*., 1998; Viru & Viru, 2004; Kraemer & Ratamess, 2005; Crewther *et al*., 2006).

The hormonal response to exercise is altered by many factors, such as the type and duration of exercise, age, gender and muscles used during the exercise (Gray *et al*., 1993; Viru & Viru 2004; Uchida *et al*., 2009; Widdowson *et al*., 2009; Wahl *et al*., 2010). In static exercise, the working muscles are not getting shorter, and lengthen by contraction opposing the dynamic exercises in which the muscles contract, changing their length during the exercise. The static exercise is based on tension and does not produce work, while the dynamic exercise is based on contraction of muscle fibres and produces work. The purpose of this study was to evaluate resting levels of cortisol, testesterone, GH and IGF-1 following dynamic and static exercises performed by a group of 20 male sport students enrolled at the school of physical education and sports.

METHODOLOGY

The aim of this study was to evaluate the effects of static and dynamic exercise on the levels of cortisol, testesterone, GH and IGF-1. Twenty-two (22) male volunteer student athletes with a mean age of 21.96±1.80 years, height of 177.09±6.22cm and body mass 72.83±9.37kg participated in this study. All study group members performed resistance and power exercises for 6 weeks, such as push-ups, sit-ups, jumping and step-by-step running, before being divided into 2 groups who would participate in static or dynamic stress exercises.

The purpose of the initial 6-week general resistance exercise regimen was to ensure the study group members adapt to resistance and to minimise the risk of injury. The participants performed the same exercises in terms of mobility, power, time, repetition, rest and number of sets. Following this general adaptation period, the study group was randomly divided into 2 groups: a dynamic; and a static exercise group. Dynamic exercise keeps joints and muscles moving. It usually involves active full range of motion movements. The dynamic stress exercise group consisted of 11 athletes at the beginning, but 2 were later excluded from the study due to injury. Static exercise, which is also known as isometric exercise, involves muscles at high intensities without movement of the joints. The static stress exercise group consisted of 11 participants for the duration of the study.

The 2 groups were taken to the sport hall at different times and days for the 16-week stress exercise regimen. Before the stress exercises were started during each session, the participants performed 20 minutes of warm-up exercises including 15 minutes of stretching, and 7 or 8 times of 30 to 50m running with increases in speed as the warm-up progressed. Hypertorphy and power training for the upper and lower extremity muscles, pylometric training for jump power, station training for general power increase, and circuit and interval training for increases in power sustainability were also performed.

The study protocol exercises were performed 5 days a week for a 16-week period consecutively. In the dynamic study group, maximum studies were performed at 85 to 100% loading, 8 to 1 repeats with 3 sets and 3 to 5 minutes rest intervals for the 5 weeks; optimal studies were performed as 15 repeats at 65% and 8 repeats at 85% loading with 3 sets and 3 to 5 minutes rest intervals for the 5 weeks. Strength endurance studies were performed as 20

repeats at 65% and 40 repeats at 40% loading with 3 sets and 3 to 5 minutes rest intervals for 6 weeks. In the static group, the exercises were performed with the same loading protocol except replacing the repeats with 1 to 10 seconds, 11 to 20 seconds, and 21 to 40 seconds loading times for the maximum, optimal and strength endurance studies consecutively.

Before starting the study protocol (following the adaptation exercise period), 5ml venous blood samples were obtained from the participants at 09h00 after at least 9 hours of fasting. The second blood samples were obtained following the 16-week exercise period at 09h00 with fasting. The blood samples were centrifuged at 400rpm for 10 minutes and then stored at –80°C until biochemically assessed. The GH, testesterone and cortisol levels were measured with a Roche Hitachi 170 hormone analyserusing, an immunocytochemical method. The IGF- 1 levels were measured with Dynex-Dsx/Virion ELISA unitusing, an immuno-diagnostic systems study kit.

Statistical analyses were performed using the SPSS v15.0 software (SPSS, Chicago, IL, USA). The Wilcoxon test was used to evaluate significance in differences between the pre- and post-exercise intervention measurements of the hormone levels within the dynamic and the static

exercise study groups. The Mann-Whitney-U test was used to evaluate significance in differences between the pre- and post-exercise intervention measurements of the hormone levels within each of the 2 groups. A p-value of <0.05 was considered to be statistically significant.

The University Human Research Ethics committee approved this study before it was initiated and informed consent was obtained from all participants.

RESULTS

The pre- and post-exercise intervention measurements of the hormone levels from participants in the dynamic study group are shown in Table 1. The GH levels were 0.17 and 0.11ng/ml; cortisol levels were 16.37 and 16.15µg/l; IGF-1 levels were 218.34 and 210.06µg/l; and testesterone levels were 628.24 and 657.68mg/dl, respectively. No statistically significant difference was found in any hormonal level between the pre- and post- exercise intervention measurements in the dynamic exercise group.

***TABLE 1*: PRE- AND POST-EXERCISE INTERVENTION MEASUREMENTS OF HORMONAL LEVELS IN DYNAMIC EXERCISE GROUP**

Variable	n	Mean Pre	Mean Post	p-Value
GH ng/ml	9	0.17	0.110	0.735
IGF-1 µg/l	9	218.35	210.065	0.678
Cortisol µg/dl	9	16.37	16.150	0.314
Testosterone mg/dl	9	628.24	657.640	0.767

Table 2 shows the pre- and post-exercise intervention measurements for the static exercise group. The GH levels were 0.21 and 0.16ng/ml; IGF-1 levels were 229.62 and 218.79µg/l; cortisol levels were 15.85 and 13.11µg/dl; and testesterone levels were 573.03 and 568.60mg/dl, respectively. No statistically significant difference was detected between the pre- and post-exercise intervention measurements of the static exercise group, with the exception of the cortisol levels, which decreased from 15.85 to 13.11µg/dl (p=0.026).

***TABLE 2*: PRE- AND POST-EXERCISE INTERVENTION MEASUREMENTS OF HORMONAL LEVELS IN STATIC EXERCISE GROUP**

Variable	n	Mean Pre	Mean Post	p-Value
GH ng/ml	11	0.21	0.16	0.260
IGF-1 µg/l	11	229.62	218.74	0.424
Cortisol µg/dl	11	15.85	13.11	0.026
Testosterone mg/dl	11	573.03	568.60	0.657

***TABLE 3*: PRE-EXERCISE MEASUREMENT OF HORMONE LEVELS IN THE DYNAMIC AND STATIC EXERCISE GROUPS**

Varıable	Mean Dynamic	Mean Static	p-Value
GH ng/ml	0.17	0.21	0.400
IGF-1 µg/l	218.35	229.62	0.342
Cortisol µg/dl	16.37	15.85	0.761
Testosteron mg/dl	628.24	573.03	0.470

***TABLE 4*: POST-EXERCISE MEASUREMENT OF HORMONE LEVELS IN THE DYNAMIC AND STATIC EXERCISE GROUPS**

Varıable	Mean Dynamic	Mean Static	p-Value
GH ng/ml	0.11	0.16	0.503
IGF-1 µg/l	210.07	218.74	0.732
Cortisol µg/dl	16.15	13.11	0.270
Testosteron mg/dl	657.64	568.60	0.382

No significant differences were observed in hormone levels between the 2 exercise groups prior to the start of the regimen (Table 3). In addition, no significant differences were observed in the hormone levels between the 2 exercise groups at the end of the study (Table 4).

DISCUSSION

It has been reported that exercise has a significant impact on the levels of several hormones, and can increase resistance and performance, as well as muscle mass. Hormone levels can change according to several parameters, including the type and length of exercise, the duration of time following exercise, the age and gender of the athletes, among others (Kraemer & Ratamess, 2005).

In the present study, blood hormone levels were measured prior to the start of the static or dynamic exercises in the 20 participants. The response of serum hormone levels to exercise and sport activities have been reported in other studies with different results. The reasons for the different results could be due to experimental design, composition of the study groups, type and length of the exercise, blood sampling time, and the time between the exercise and the sampling (Gray *et al*., 1993; Viru & Viru, 2004; Kraemer & Ratamess, 2005; Uchida *et al*., 2009; Widdowson *et al*., 2009; Wahl *et al*., 2010). Several studies have indicated that anabolic hormones, such as insulin, GH, testesterone and IGF-1, stimulate neural tissue and muscle development during resistance exercise (Karagiorgos *et al*., 1979; Kraemer & Ratamess, 2005; Crewther *et al*., 2006).

The serum concentration of anabolic hormones is elevated during and following resistance exercise compared to the level at rest, which leads to hypertrophy and remodelling of muscles (Widdowson *et al*., 2009). Different training intensities, such as high-intensity training and high volume, low-intensity training may have a different impact on hormone levels. Wahl *et al*. (2010) reported that cortisol levels are elevated at 10 and 60 minutes after high-intensity exercise compared to pre-exercise values. The cortisol concentration then decreases to a level that is lower than the pre-exercise level 240 minutes after the exercise period is complete. In addition, they reported that with high-volume and low-intensity exercise, the cortisol concentration decreases to a level that is lower than that of the pre-exercise level at 60 and 240 minutes after the exercise period is complete (Wahl *et al*. 2010). However, their study protocol was different from the present study's protocol, and they measured hormone levels during the early post-exercise period.

In the present study, the hormone levels were measured in the blood samples obtained at 09h00 following at least nine hours of fasting before and after the 16-week exercise period. The cortisol levels decreased significantly after static high-intensity exercise. However, the cortisol levels following dynamic exercise, as well as GH, IGF-1 and testosterone before and after the static and dynamic exercise periods had no significant changes. In contrast with these findings, several studies reporting increased hormonal levels with exercise found that elevation persists for a long period of time (Gray *et al*., 1993; Hakkinen & Pakarinen, 1993). Koziris *et al*. (1999) reported that increased hormonal response to exercise occurs for up to six months after the exercise. If the exercise intensity is above a certain threshold, then the blood level of cortisol increases with short-term exercise, which may be lower or may disappear with endurance training due to the threshold elevation.

It has been reported that with supramaximal exercise, which is higher than the threshold intensity, the cortisol response can be more prominent in endurance-trained athletes. During prolonged exercise, the cortisol response is variable. An increase in the level of cortisol occurs in the beginning of exercise due to increased adrenocortical activation, which returns to normal levels as a result of feedback mechanisms, and increases again due to increased muscle mass at work if exercise is maintained for a long enough period of time (Viru & Viru, 2004).

In the present study, the participants performed six weeks of adaptation training and the blood samples were obtained as a prestudy measurement. The participants' basal level of hormones could be increased compared to the hormone levels of non-trained athletes. In addition, a 16-week study protocol may not have any further effects on the hormone levels of participants who had previously received six weeks of training. Obtaining blood samples prior to the adaptation training could have assessed this possibility; however, pre-adaptation blood samples were not obtained. Nevertheless, the present study can conclude that dynamic or static power exercises do not affect the hormonal response in trained athletes who receive a certain threshold adaptation period. Diurnal rhythm has specific effects on the release of cortisol and IGF-1 in the body, where the hormone levels are higher in the morning and lower in the afternoon (Hayes *et al*., 2010). The blood samples were obtained at 09h00 from all participants in order to minimise the effect of diurnal variations in the hormonal levels.

Increased, decreased or unchanged IGF-1and GH hormonal responses to exercise have been reported (Karagiorgos *et al*., 1979; Gray *et al*., 1993; Hakkinen & Pakarinen, 1993; Hakkinen *et al*., 1998; Zaccaria *et al*., 1999). However, the study protocols of these reports varied. Linnamo *et al*. (2005) reports that GH levels are increased in response to submaximal and maximal

heavy resistance exercise. However, the prominent increase was detected just after the exercise session was completed, and the response returned to normal level two hours post- exercise. The hormonal response can also be affected by the age, gender, training experience and fitness level of the athletes (Kraemer *et al*., 1991; Kraemer & Ratamess, 2005; Linnamo *et al*., 2005; Kraemer *et al*., 2006).

Testesterone is an anabolic hormone that induces protein synthesis and decreases protein catabolism caused by heavy exercise (Karagiorgos *et al*., 1979; Tarpenning *et al*., 2001; Martinez *et al*., 2010; Vingren *et al*., 2010). The response is more prominent after puberty and decreases with age. A weaker response to exercise in middle-aged athletes has been reported (Cadore *et al*., 2008). The unchanged response of IGF-1, GH and testesterone levels after exercise in the two study sub-groups in the current study could be explained by the adaptation of the participants after the six-week adaptation training period or the relatively late measurement time point, which occurred at least 15 hours after the last exercise session.

Wahl *et al*. (2010) investigated different intensity exercises, including high-intensity and high-volume low-intensity exercises, with nearly the same total volume. The study detected increased cortisol levels 10 minutes after exercise in the athletes receiving high-intensity training. The cortisol levels decreased to a level that was lower than the pre-exercise level in the low-intensity group at 60 minutes. At 240 minutes post-exercise, they detected a lower level of cortisol than that of the pre-exercise measurement in both groups. In the present study, a similar process may explain a decreased level of cortisol in the static group on the

day following the last exercise. The measurement was performed after the 240-minute post-exercise resting period.

CONCLUSION

A decreased cortisol level was observed in response to static exercises. All of the other hormones tested in participants of the static and dynamic exercise groups, as well as the cortisol levels in the participants of the dynamic exercise group had no significant change after a 16-week exercise regimen. Importantly, the blood samples were obtained the day after the end of the exercise sessions, and therefore it is possible that some hormonal responses could occur in the acute period following the exercises.

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COMPARATIVE ANALYSIS OF ISOKINETIC LEG STRENGTH IN PROFESSIONAL SOCCER AND BASKETBALL PLAYERS

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ABSTRACT

This study aimed to compare and analyse flexion and extension peak torques and hamstring to quadriceps peak torque muscle ratio of the knee joints by measuring isokinetic knee strength in professional soccer and basketball players. Twenty-two players were recruited, which included 12 soccer players (age: 15.8±1.0 years) and 10 basketball players (age: 15.7±0.9 years). After recording the stature, body mass, body mass index, body fat percentage, body fat mass and vertical jump measurement of each participant, lower extremity knee-joint measurements were conducted using an isokinetic dynamometer at angular velocities of 60°·s^{-1} and 240°·s^{-1}. Peak torques of the hamstring and quadriceps muscles at 60°·s^{-1} and 240°·s^{-1} were significantly higher in basketball than soccer players ($p<0.05$ to $p<0.01$). When the hamstring to quadriceps peak torque muscle ratios were compared between soccer and basketball players, the only significant difference was found in the left knee of basketball players at 60°·s^{-1}. However, the relative strength of the hamstring and quadriceps muscles did not differ between soccer and basketball players at 60°·s^{-1} and 240°·s^{-1}. In conclusion, body mass has a decisive effect on the production of peak torque values of quadriceps and hamstring muscles in soccer and basketball players.

Key words: Hamstring; Quadriceps ratio; Peak torque; Knee flexion; Knee extension; Isokinetic strength.

INTRODUCTION

Muscle strength is one of the key factors in successful sport performance and is an important indicator of the effectiveness of injury rehabilitation in athletes (Croisier *et al.*, 2002). To

monitor the performance of athletes, as well as the rehabilitation progress of injured players, various lower limb strength indices have been investigated. Among these, hamstring-to-quadriceps muscle peak torque muscle ratio (H:Q muscle ratio) is one of the most commonly evaluated. This ratio of strength of agonist to antagonist leg muscles has been used to examine functional ability, knee joint stability and muscle balance between hamstring (H) and quadriceps (Q) muscles during velocity-dependent movements (Aagaard *et al.*, 1995; Zakas *et al.*, 1995; Li *et al.*, 1996; Orchard *et al.*, 1997; Clanton & Coupe, 1998; Hewett *et al.*, 1999). An injury may occur during rapid leg extension if the hamstrings fail to generate effective eccentric counteraction to decelerate the movement (Croisier *et al.*, 2008). Further, when the hamstrings act to extend the hip, muscle strains may occur during rapid alterations between flexion and extension (Petersen & Holmich, 2005). The anterior cruciate ligament, assisted by the hamstring muscles, stabilises the knee by preventing anterior translation of the tibia on the femur (Kannus, 1988; Moore & Wade, 1989; Pettitt & Bryson, 2002), which can

occur during pivoting movements, such as landing from a jump and sudden changes in direction in field (soccer) and court (volleyball and basketball) athletes (Griffin *et al.*, 2000).

One of the most important motor skills in sport is referred to as the vertical jump (Barnett *et al.*, 2008). Thissen-Milder and Mayhew (1990) hypothesise that the jump is an important factor for most athletes in sport, because jumping is a major part of attack and defence movements in all sport games. The vertical jump is described as a ballistic movement and consists of rapid eccentric muscle activity followed by maximal concentric actions. Performing the motor movements requires the ability to strengthen the muscles and dynamic stabilisers of the knee. The extensors, dynamic knee stabiliser muscles based on the requirements of the sport, function mainly in the impulsive phase of the jump and the landing phase (Panni *et al.*, 2002).

The demands of certain sport on the knee joint may be related to the high incidence of injury in that joint (Richards *et al.*, 1996), and may cause imbalances in muscle strength between antagonistic dynamic knee stabiliser muscles. These muscle imbalances in muscle force production may increase the risk of injury because of the resultant high levels of stress in tissues (Oberg *et al.*, 1986). The isokinetic dynamometer provides fast and reliable quantification of variables related to muscle performance at different angular velocities, including the maximum torque, total work, reciprocity between agonist and antagonist muscles and fatigue index (Perrin *et al.*, 1987). Isokinetic assessment allows the identification of muscle strength deficit between bilateral muscle groups and between reciprocal muscle groups (agonist and antagonist) (Siqueira *et al.*, 2002).

There are several studies that used isokinetic dynamometer measurements in different populations (Kazazovic *et al.*, 2008). However, there is little information about the measurements used for athletes in team sport, especially in research of the lower extremities (Kazazovic *et al.*, 2009). Basketball and soccer are among the most popular sports. Both sports use the lower extremities and consist of some complex movements which require strenuous efforts, such as sudden feints, stops, starts, duels, sprints and jumps (Reilly & Thomas, 1976). These efforts depend on the strength of the neuromuscular system, especially in the lower limbs (Cometti *et al.*, 2001).

The aim of this study, therefore, was to compare and analyse the maximal voluntary peak torques of the quadriceps and hamstring muscles, and the torque ratio between these muscle groups of the right and left legs in professional basketball and soccer players by using

isokinetic tests.

MATERIALS AND METHODS

Participants

The study included 12 male professional (division III) soccer players (age: 15.83±1.03 years; body mass: 59.25±6.43kg; stature: 171.50±4.89cm) and 10 male professional basketball players (division III) (age: 15.67±0.87 years; body mass: 75.68±13.27kg; stature: 185.67±8.93cm). All of the participants were fully informed of the goals and methodology of the test and provided signed consent. The participants agreed with the testing process and the

use of the data for further research. The day before testing, the players were not subjected to any intense training.

Prior to participation in the study, the players were interviewed about their medical records and completed an injury questionnaire. Participants were excluded from participation in the study if they had any current hip, knee, or ankle injury or any other leg injury. The participants were all right-leg dominant.

Physical measurements

Stature and body mass were measured with an electronic scale (708 Seca, Hamburg, Germany). Body mass index (BMI), body fat percentage and body fat mass were measured with a Tanita Body Composition Analyser BC-418, using the bioelectrical impedance analysis method. The vertical jump test was also performed using a specialised apparatus called the Vertec. Before the testing session started, the participants were allowed a 15- minute warm-up at a light intensity on the leg curl and leg extension machine.

Isokinetic measurements

Participants were tested in the sitting position on IsoMed 2000 isokinetic dynamometer. Participants were seated for testing in the chair of the dynamometer with the backrest angle at 90°. The axis of rotation of the right knee was aligned with the axis of rotation of the dynamometer's armature, and the ankle cuff was attached approximately 3cm above the dorsal surface of the foot. Gravity correction was performed before the test. Stabilisation straps were placed over the pelvis and chest, and participants positioned their arms across their chests during familiarisation and testing. To synchronise themselves with the testing device, participants were instructed to perform 3 active repetitions of knee movement ranging from maximal flexion to maximal extension.

To adapt to the test conditions, participants were allowed 3 sub-maximal contractions of the quadriceps and hamstring muscle groups at the beginning of the tests. Standardised verbal motivation techniques were used to encourage maximal work from the test participants. All participants performed 10 maximal (the first and the last of the 10 were dismissed) concentric contractions (knee flexion and extension) of both legs at velocities of $60°\cdot s^{-1}$ and $240°\cdot s^{-1}$ (Brockett *et al.*, 1999). A rest period of 3 minutes was allowed between test speeds, and 5 minutes were allowed between test limbs.

Statistical analysis

The data were processed with SPSS 15.0 for Windows (SPSS Inc., USA). Statistical parameters were calculated for all of the variables, and one-way analysis of variance (ANOVA) was applied to determine the statistically significant differences between basketball and soccer players. Statistical significance was set at the level of $p<0.05$.

RESULTS

Age and physical characteristics of the participants are presented in Table 1. No significant between-group differences in age, BMI and vertical jump were noted. However, the mean of

stature, body mass and body fat mass were significantly ($p<0.01$) lower in soccer players than basketball players. Further, body fat percentage was also significantly ($p<0.05$) lower in soccer players than basketball players (Table 1).

***TABLE 1*: MEAN ± SD FOR AGE AND PHYSICAL CHARACTERISTICS OF PARTICIPANTS**

Parameter	**Soccer** (n = 12)	**Basketball** (n = 10)
Age (years)	15.8±1.03	15.7±0.9
Stature (cm)	171.5±4.9	185.7±8.9**
Body mass (kg)	59.3±6.4	75.7±13.3**
Body mass index (kg/m^2)	20.1±1.8	22.1±4.3
Body fat (%)	11.0±4.5	15.5±5.1*
Body fat mass (kg)	6.6±2.8	12.1±5.9**
Vertical jump (cm)	42.8±3.2	48.4±7.9

Significant differences: * $p<0.05$; ** $p<0.01$

***TABLE 2*: MEAN VALUES (±SD) OF HAMSTRING AND QUADRICEPS PEAK TORQUES AT VELOCITIES OF 60°·S^{-1} AND 240°·S^{-1}**

Variable	**Angular Velocity LEFT**		**Angular Velocity RIGHT**	
	Soccer (n=12)	**Basketball (n=10)**	**Soccer (n=12)**	**Basketball (n=10)**
PT Hamstring (Nm)				
60°·s^{-1}	96.8±16.5	138.0±24.8**	103.8±10.0	138.8±27.1**
240°·s^{-1}	82.4±21.2	115.1±27.8*	85.7±12.0	118.7±28.9**
PT Quadriceps (Nm)				
60°·s^{-1}	203.3±33.4	244.0±37.2*	199.2±33.0	252.8±40.5**
240°·s^{-1}	125.3±17.0	168.6±40.3*	123.6±24.7	168.7±31.2**
PT Hamstring: Quadriceps (%)				
60°·s^{-1}	48.4±7.7	56.7±4.8*	53.2±7.0	55.1±6.0
240°·s^{-1}	66.3±16.5	69.0±9.9	70.8±10.3	70.9±7.2
PT Hamstring/Body Mass				
60°·s^{-1}	1.6±0.2	1.8±0.3	1.8±0.2	1.9±0.3
240°·s^{-1}	1.4±0.4	1.5±0.4	1.45±0.2	1.6±0.3
PT Quadriceps/Body Mass				
60°·s^{-1}	3.4±0.4	3.3±0.5	3.4±0.5	3.4±0.5
240°·s^{-1}	2.1±0.2	2.2±0.4	2.1±0.3	2.2±0.3

Significant differences: * $p<0.05$; ** $p<0.01$ Nm: Newton meter PT: Peak Torque

Mean peak torque of the hamstring muscle of the left and right knees was significantly lower in soccer players compared with basketball players at $60°\cdot s^{-1}$ ($p<0.01$). Furthermore, mean peak torque was significantly lower in soccer players than basketball players at $240°\cdot s^{-1}$ in the right knee ($p<0.01$) and in the left knee ($p<0.05$) (Table 2). Mean peak torque of the quadriceps muscle of the right knee was significantly higher in basketball players compared

to soccer players at $60°\cdot s^{-1}$ and $240°\cdot s^{-1}$ in the right ($p<0.01$) and the left knee ($p<0.05$) (Table 2).

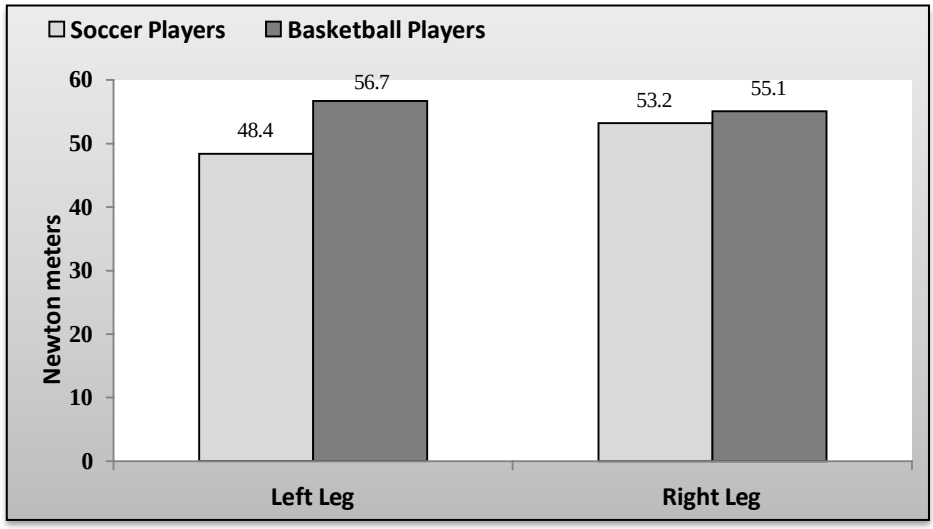

***FIGURE 1*: HAMSTRING AND QUADRICEPS MUSCLE RATIO (%) AT PEAK TORQUE AT A VELOCITY OF $60°\cdot S^{-1}$**

There was only 1 significant between-group difference in peak torque H:Q muscle ratio. The left knee ratio at $60°\cdot s^{-1}$ (Figure 1) was significantly higher in the basketball players ($p<0.05$). There were no significant differences between soccer and basketball players in peak torque flexion/body mass ratio and in peak torque extension/body mass ratio (Table 2).

DISCUSSION

The study was conducted to determine and compare the maximal voluntary peak torques of the quadriceps and hamstring muscles, as well as on the reciprocal relationship between agonist and antagonist muscles of the right and left legs in professional soccer and basketball players. There were observed differences between soccer and basketball players. When these results were compared with those of other studies regarding peak torque of H and Q muscles, both similarities and differences in isokinetic peak torque H:Q muscle ratio and peak torque extension and flexion/body mass ratios were observed.

Regarding left and right knee extension and flexion, hamstring and quadriceps muscle peak torques were higher in basketball players than soccer players. Similar results have been found in previous studies (Zakas *et al.*, 1995; Metaxas *et al.*, 2009; Kazazovic *et al.*, 2010; Ozkan &

Isler Kin, 2010; Alemdaroglu, 2012), that investigated maximal voluntary peak torques of the Q and H muscles and the torque ratio between these muscle groups in basketball and soccer players participating in teams of different divisions. Zakas *et al.* (1995) and Metaxas *et al.* (2009) found that peak torque expressed in absolute terms was significantly higher in basketball than soccer players at velocities of $60°\cdot s^{-1}$ and $180°\cdot s^{-1}$.

Kazazovic *et al.* (2010) used isokinetic dynamometer measurements to evaluate maximum torque, total work and agonist–antagonist reciprocity of the knee joint in professional and amateur athletes at angular velocities of $60°\cdot s^{-1}$ and $180°\cdot s^{-1}$. Their results revealed that professional athletes presented significantly higher values for total work and maximum torque of the knee flexors at an angular velocity of $60°\cdot s^{-1}$. Moreover, peak torque H:Q muscle ratio was much higher in the basketball players' left leg than the soccer players' left leg at $60°\cdot s^{-1}$ (Dauty *et al.*, 2007). Metaxas *et al.* (2009) examined and compared cardio- respiratory performance and isokinetic muscle strength at angular velocities of $60°\cdot s^{-1}$, $180°\cdot s^{-1}$, and $300°\cdot s^{-1}$ between Greek soccer and basketball players of different divisions before starting the training season. Regarding peak torque, only basketball players in the IIIrd and IVth divisions showed significantly higher values at $60° s^{-1}$ in the hamstrings.

When the average peak torque H:Q muscle ratios were compared between basketball and soccer players, no significant differences were found between the groups except for the left leg at a velocity of $60°\cdot s^{-1}$ (Table 2). Peak torque H:Q muscle in the left limb at $60°\cdot s^{-1}$ was significantly greater in basketball than soccer players. Similar studies (Zakas *et al.*, 1995; Masuda *et al.*, 2003; Patricia & Vassilios, 2003; Ergun *et al.*, 2004; Magalhaes *et al.*, 2004; Egan *et al.*, 2006; Zakas, 2006; Tabakovic *et al.*, 2009; Brughelli *et al.*, 2010), yielded the same results. Brughelli *et al.* (2010) researched the effects of eccentric exercise on optimum length of the knee flexors and extensors during the preseason in professional soccer players. They reported that peak torque levels and H/Q ratios were not significantly altered throughout their study and that eccentric exercise could also increase the optimum lengths of both knee extensors and flexors during the preseason in professional soccer.

Ergun *et al.* (2004) conducted a cross-sectional analysis of sagittal knee laxity and isokinetic muscle strength in soccer players. Their results showed that the dominant extremity in soccer players had significantly higher knee flexor peak torque and H:Q muscle ratio at $180°\cdot s^{-1}$ and that those soccer players had significantly higher extensor and flexor peak torque values and H:Q muscle ratios than sedentary participants for both extremities.

However, Magalhaes *et al.* (2004) studied the concentric quadriceps and hamstring isokinetic strengths in volleyball and soccer players and reported that the H:Q muscle ratio was significantly lower in volleyball players at $90°\cdot s^{-1}$ and that no significant differences were found for H:Q muscle ratio in soccer players of different positional roles.

Additionally, Masuda *et al.* (2003) examined the relationships between muscle cross- sectional area (CSA) and muscular strength in terms of knee extension and flexion, hip extension and flexion and hip abduction and adduction among 14 well-trained university soccer players, who were divided into two groups based on ability (Group A: above-average ability; Group B: average ability). They observed no significant differences between the two groups in muscle CSA and isokinetic strength. Rahnama *et al.* (2003) studied how exercise that simulates the work rate of competitive soccer players affects the strength of the knee extensors and knee flexors and showed that significant changes were found ($p<0.05$) for both legs in the hamstring

to quadriceps muscle ratio.

No significant differences were found for average peak torque H/body mass ratio and Q/body mass ratio between the soccer and basketball players in this study. This indicates that soccer

and basketball players have the same relative strength. However, some researchers (Williams & Singh, 1997; Pincivero *et al*., 2002; Buchanan & Vardaxis, 2003), found significant relationships between peak torque Q/body mass ratio and H/body mass ratio. Pincivero *et al*. (1997) studied the relationship between open and closed kinematic chain assessment of knee strength and functional performance. They noted that correlation coefficients were statistically greater for peak torque/body mass at a velocity of $180°{\cdot}s^{-1}$.

Additionally, Williams and Singh (1997) studied dynamic trunk strength of Canadian football players, soccer players, and middle- to long-distance runners. According to their results, eccentric flexor peak torque relative to body mass was significantly greater in soccer players than runners and recreationally active participants. Buchanan and Vardaxis (2003; 2009) explored the differences in Q and H strength among the genders and different age groups and found that, with body mass-stature normalisation, most age and gender differences were small. Pincivero *et al.* (2002) assessed isokinetic torque, work and power among non-injured, ACL (anterior cruciate ligament)-deficient and ACL-reconstructed individuals. The H peak torque corrected for body mass was significantly higher in the non-involved than in the involved limb only at $60°{\cdot}s^{-1}$.

CONCLUSION

This study revealed significant differences between professional basketball and soccer players for peak torques of H and Q muscles. However, when peak torque H:Q muscles ratio was compared between soccer and basketball players, there was only a significant difference for the left knee of basketball players at $60°{\cdot}s^{-1}$.The difference was due to bilateral left- and right- leg strength differences in soccer players, which were not found in basketball players. Therefore, the isokinetic strength of the left knee might be lower than that of the right knee in soccer players. Strength training, especially for the left leg, may be necessary to reduce injury risk in soccer players. However, there were no significant differences in average peak torque Q/body mass and H/body mass ratios between basketball and soccer players.

Therefore, relative strength is comparable in soccer and basketball players, but absolute strength is greater in basketball than soccer players. According to the study data, body mass has a decisive effect on Q and H muscle peak torque values in soccer and basketball players and relationships also exist between mass and peak power.

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MOTIVATION AND BEHAVIOUR OF SERIOUS LEISURE PARTICIPANTS: THE CASE OF THE COMRADES MARATHON

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ABSTRACT

The Comrades Marathon is a major sporting event on the South African calendar with little research on the motivation and behaviour of serious leisure participants who participate in this event. Following on previous research of Stebbins (1982) where six characteristics of distance athletes/runners were identified and further explored by Shipway and Jones (2007), these characteristics were investigated in relation to the Needs Theory of Personality, Maslow's Hierarchy of Needs and the Symbolic Interactionist Approach within the context of the Comrades Marathon and the phenomenon of distance running. A qualitative explorative study was done to understand the motivation and behaviour of serious leisure participants employing non-probability purposive sampling to select 20 respondents who had participated in the Comrades Marathon in at least 10 years' races (including the 2011 Comrades Marathon). The findings indicate a strong identification with the activity, as well as social ethos and sub-culture influence in social identity. This research attempted to confirm theory and link the characteristics with Maslow's (1954) 'hierarchy of needs', Murray's (1938) 'list of needs' and the 'symbolic interactionist' approach of Mead and Blumer (1969). Due to the inherent limitations of the research future investigation in this field is imperative.

Key words: Marathon athletes; Motivation; Behaviour; Serious leisure participation.

INTRODUCTION

Leisure studies as a field of research is associated with terms such as relaxation, triviality and freedom from responsibility, and referred to as „casual" leisure; whereas „serious" leisure is "the systematic pursuit of an amateur, hobbyist or volunteer activity sufficiently substantial and interesting in nature for the participant to find a career there acquiring and expressing a combination of special skills, knowledge and experience" (Stebbins, 1982:254). However, despite Stebbins" (1982) classification of these forms of serious leisure participation, limited systematic research into the motivation behind serious leisure participation exists (Roberts, 1999; Gibson, 2005, 2008) within the South African context that this article proposes to report.

To travel to participate in serious leisure is regarded as serious sport tourism by Gibson (2005), however, the concept of serious leisure will be used in preference to serious sport

tourism in this case, with both Hall (1992) and Gibson (2005) being of the view that serious leisure can be used as an appropriate framework to understand the behaviour of the committed sport tourist. Clearly research into clarifying the meaning of these concepts is necessary but will not be pursued in this instance.

Various literature sources exploring the needs, motives and behavioural characteristics underlying long distance runners have been identified (Masters & Lambert, 1989; Stebbins, 1992; Funk & James, 2001; Ogles & Masters, 2003; Gillet & Kelly, 2006; Kotze, 2006; Shipway & Jones, 2007), and have been found to be overlapping, with concepts used interchangeably, such as psychological needs and motives (identity, self-esteem, self-actualisation, social interaction, perseverance, affiliation), and physiological needs and motives

(unique ethos, specialist skills, competition, durable benefits, rewards, career development). In terms of the above-mentioned motives and behavioural characteristics specific to serious leisure participants (long distance athletes), the characteristics developed by Stebbins (1982) are used as the basis and tested on participants in the *Comrades Marathon* of 2011. Within the serious leisure context this research also attempts to relate these characteristics to Murray‟s (1938) „needs theory of personality‟ as motivators of behaviour, the „needs hierarchy‟ of Maslow (1954) and the „symbolic interactionism‟ approach‟ developed by Mead (1934) and refined by Blumer (1969). The potential contribution in the field of the sociology of sport regarding the latter has remained relatively undeveloped (Weiss, 2001).

The world over, more than 70 000 people are motivated to annually run gruelling distance races such as ultra-marathons. In Africa, a number of ultra-distance events are held with the *Comrades Marathon* in South Africa being the world‟s oldest (since 1921) and largest (based on number of participants), 1-day ultra-marathon of approximately 89km. In Morocco, the *Marathon des Sables* is a six-day stage race, which covers 250km through the Sahara desert, while Namibia hosts a marathon across the Namib Desert of 250km. On Reunion Island the *Grand Raid de la Reunion* is an ultra-marathon crossing the island over 163km with an altitude gain of over 9 000 metres attracting 2 350 competitors of which half are from abroad.

In 2010 the *Comrades Marathon*, also known as the "ultimate human race", received recognition as a Guinness World Record, as the event with „the most runners in an ultra-marathon‟ with more than 23 500 entries and 14 343 finishing before the 12-hour cut-off time. In 2011 there were only 19 591 entries, 12 600 starters and 11 070 finishers, with the drop in entries over the two years ascribed to the FIFA Soccer World Cup 2010 that enlarged the international category of runners (as serious sport tourists) in the 2010 event that may have taken the opportunity to also attend soccer matches, or vice versa (Comrades Marathon, 2011a).

The *Comrades Marathon* (see the illustration of the route at the end of the article), is run between Durban and Pietermaritzburg (alternated annually) over a distance of approximately 89km that has to be completed in less than 12 hours. For the 2011 marathon on which this research is based, the „up-run‟ from Durban to Pietermaritzburg took place on Sunday 29 May.

This research sets out to explore the motives and behaviour of serious leisure participants to partake in the phenomenon of distance running, incorporating the six distinctive characteristics proposed by Stebbins (1982). It also aims to assess whether the needs hierarchy of Maslow and needs of Murray form the base of the motives and behaviour of such participants. The focus is specifically on participants of the *Comrades Marathon 2011* to determine:

- the sense of identity participants have with distance running;
- the unique ethos and sub-culture of the participants within the distance running community;
- the need to persevere and master the skill (through effort) of running the *Comrades Marathon*; and
- the durable benefits and career development of participating in distance running.

Finally, a possible link between motives and behaviour of participating athletes and the theories and approaches of Maslow, Murray and Mead (Blumer) is explored.

LITERATURE REVIEW

Serious leisure versus casual leisure

Serious leisure as concept describes activities that are interesting and substantial in terms of allowing participants to find careers that acquire a combination of knowledge, special skills and experience (Stebbins, 1982). Serious leisure participants may often identify strongly with the sub-culture of their chosen activity, as with long distance running in this case. Within this context, sport tourism can provide serious leisure participants with ways to confirm or construct their leisure identity, provide a time and place to interact with like-minded persons sharing the ethos of the activity, to celebrate their social identity and provide a way to benchmark their leisure „careers" (Green & Jones, 2005).

Serious leisure is often contrasted with casual leisure in that the latter can be described as an immediate or relatively short-lived pleasurable activity that requires little or no special training that is intrinsically rewarding. Casual leisure is regarded as all leisure falling outside the basic types of serious leisure. Serious leisure is further distinguished from casual leisure by six unique qualities or characteristics developed by Stebbins (1982), and can be summarised as: the need to persevere; finding a career; significant personal effort based on specially acquired knowledge, training or skill; certain durable benefits; a unique ethos; and a strong identity with the chosen pursuit.

In terms of travel behaviour, Gibson (2005:2) defines leisure-based travel as: "… travel that takes individuals temporarily outside of their home communities to participate in physical activities (active sport tourism), to watch physical activities (event sport tourism)...". Therefore, athletes that participate in the *Comrades Marathon* may be classified as serious leisure participants (tourists) as they strive for the six characteristics/qualities mentioned above and, because the majority travel to Durban/Pietermaritzburg, which is outside of their home environment to participate in the running of the *Comrades Marathon* that can be classified as a sport tourism event.

Motivation and behaviour of serious leisure participants

Fundamental to all behaviour are needs and motivations based on the intrinsic physiological and sociological wants (and needs) of human beings. Classic theories of motivation applied to understanding leisure, sport and tourism behaviour are, amongst others, Murray"s (1938), needs theory of personality and Maslow"s needs hierarchy (1954). Murray"s (1938) most important contribution to theory in personality is his use of the concept of needs to explain the motivation and reason for behaviour, stating that motivation is the core that refers to something from within (the human being), and especially his/her needs of achievement, affiliation and exhibition (that will be related to the current study). Maslow"s (1954) needs hierarchy, as one of the most well-known theories of motivation, can be associated with Murray"s approach, where he proposed that human behaviour is driven by both physiological and psychological needs, and developed a hierarchical order to depict needs from the most basic (physiological) need to the highest need of self-actualisation (psychological).

Studies in leisure, sport and tourism have used either the theories of Murray or Maslow, or a combination of the two. Other social theories that have been used in the field of sport are, amongst others, the optimal level of stimulation (Berlyne, 1960), the functional, conflict, critical and feminist theories (Coakley, 2007), whereas this research only explores the theories of Maslow, Murray and the interactionist theory (Mead, 1934; Blumer, 1969), within the

context of serious leisure participation.

Motivation is concerned with why people do certain things, the benefits they seek and the experiences they pursue to satisfy their needs and desires (Cooper *et al.*, 1993; Higham, 2005). Motivation is a function of self-perceived needs of the participant/athlete, which drives the decision-making process and the purchase of related products. The motivational profile of the (marathon) athlete is a combination of intrinsic and extrinsic factors that have been described in terms of the push (psychological) and pull (cultural) factors. The push factors are intrinsic and unique to each athlete as they are determined by the personality and attitude of the individual.

In the context of sport specifically, push factors may extend to the desire to achieve serious leisure objectives or a „career" that cannot be achieved at home; whereas pull factors include the interplay of a significant sport event (*Comrades Marathon*), people and place that a distinctive (tourism) destination may offer. Specifically in terms of sport experiences, pull factors may relate to the search for desired competition of the achievement of sporting experiences that are unique to particular places (Hinch & Higham, 2011), such as the physical space (route) and race of the *Comrades Marathon*.

The six distinctive characteristics of serious leisure developed by Stebbins (1982), and also researched by other authors (Green & Jones, 2005; Shipway & Jones, 2007), were tested amongst the respondents who were selected for the empirical fieldwork and participated in the *Comrades Marathon, 2011* to better understand their behaviour of and motives for running and brought into relation with the needs of Maslow"s hierarchy, Murray"s personality needs and the interactionist approach. The interactionist approach is regarded as a useful framework in the context of this study, as it considers both individual needs and the social

need of belonging to a group, such as belonging to a running club (Coakley, 2007; Shipway, 2010).

In terms of the six unique characteristics, the characteristic „sense of identity", which refers to the human need for identity reinforcement, is satisfied by top-level sport. This motivation is based on external satisfaction associated mainly with displaying special skills in sport and receiving approval, status or rewards for performing well. In modern society there is no other social sub-culture that gives so many people, regardless of their gender, age, social or educational level or religion, access to a system of social validation and acknowledgement by others (Weiss, 2001). "To be socially accepted" was a main finding of Shipway and Jones (2007:373), and plays a major role in the lives of distance runners (Masters & Lambert, 1989; Kotze, 2006). The identity theory is approached from the individual and the group by Shipway (2010), in the sense that it enables one to develop identity, a sense of who one is and how one is connected to the social world, which can be related to the interactionist approach (Coakley, 2007), as this approach again focuses on issues related to meaning, identity, social relationships and sub-cultures in sport. Sport, therefore, provides the ideal environment for different sub-cultures to form, each with their own set of beliefs and value systems (Green, 2001).

The characteristic of „unique ethos" of distance runners relates closely to social identity that is created when becoming part of a sub-culture through participating in an activity. Social identity is where participants have the desire to affiliate with other runners and to receive recognition or approval from them (Masters & Lambert, 1989). Homogeneity was evident amongst runners at a major International Marathon (*Cyprus International Four-day Challenge*), according to

Shipway and Jones (2007), and even when the runners were not competing, they were wearing clothes that clearly identified them as runners. This type of behaviour can occur for two reasons: firstly, is to gain the approval of other members within the group or secondly, to avoid negative evaluation (Shipway, 2010). In terms of the interactionist approach, language is also very important as a set of shared meaning that arises out of social interactions with language being the vehicle. The interactionist approach is also more concerned with higher needs and does not address the lower psychological needs of Maslow‟s hierarchy, but is applicable to the three higher levels as indicated by Maslow‟s hierarchy.

The „need to persevere‟ as characteristic, can be described as the personal effort of an athlete based on his/her specialist skills, knowledge or ability. These are aspects, such as time spent training, understanding different techniques or strategies, money saved months in advance to cover costs involved in participating in the event and time taken to go to the event (Shipway, 2010). Perseverance is a sense or form of endurance, persisting through difficult and possibly painful times. It is how athletes deal with any failures or difficulties that come across their path in preparation of and during the event (Shipway, 2010). Distance runners need to persevere in the process of developing their careers in distance running by gathering and testing information on training methods, eating methods and organising the trip to the destination where the event will be taking place. A reciprocal relationship appears evident between effort and social identity as participants might feel that if an activity requires a large amount of effort a valued identity is developed, and a large amount of effort is then put into maintaining this identity (Shipway, 2010).

„Durable benefits‟ as characteristic are benefits that last beyond the event, such as self- esteem, self-actualisation (Maslow‟s highest level of need), and social interaction months prior to the event during training and even health benefits (Jones & Green, 2005). The esteem need is to recognise and achieve one‟s own goals and be recognised by others. In the literature (Shipway & Jones, 2007; Shipway & Holloway, 2010), participants identified with the activity of distance running and saw it as a lifelong (durable) activity.

The field of sport and tourism lacks integration in terms of, amongst others, research (Glyptis, 1991; Gibson, 1998); whereas Weed (2008) is of the opinion that research in the field of sport tourism lacks epistemological diversity with the majority of empirical research using quantitative methods with positivist assumptions rather than following more interpretivism epistemologies (the relationship between reality and research seeking to understand specific context) (Costa & Chalip, 2005), that focus on individuals and their experiences of sport tourism as derived from the interaction of the activity, such as in this case, the *Comrades Marathon*, the people (the other athletes) and the place (route between Pietermaritzburg and Durban) of the occurrence.

METHODOLOGY

The apparent lack of qualitative research (Weed, 2008) is addressed in this study by following a quasi-ethnographic (non-random representation of people and their interaction), and quasi-experimental (respondents are not assigned randomly and involves their perception of their interaction), method of research (Keyton, 2010). This method is primarily participant observation where the researchers are “directly involved in community life, observing and talking with people as you learn from them their view of reality” (Agar, 1996:163). Data is

collected through interviewing, qualitative open ended-questions where the analysis is done inductively and the focus is on the participants‟ perspectives (Creswell, 1998).

This method also involves the use of the dialect or language used by the respondents, long-term immersion in a context (Arnould & Wallendorf, 1994), and understanding the cultural and symbolic meanings and „local rules‟ of the participants (Hochschild, 1979). As one is immersed in the serious leisure sub-culture of distance running with close family and friends being long distance runners, it allows for investigator triangulation (Keyton, 2010), so this researcher was able to obtain additional rich data from respondents that served in bringing more credibility to the findings.

Sampling

The main aim of the data collection was to access and understand the meanings that participants give to their cultural environment through observation and first-hand experience. Non-probability purposive sampling was used with the focus on choosing respondents based on their knowledge and experience in long distance running (Babbie, 2010).

The research took place in 2 stages; the first was observation prior to the *Comrades Marathon 2011*, at the *Bonitas Comrades Expo* at the Durban Exhibition Centre (Friday/Saturday 27/28 May), as well as en-route, and at the finish on race day on Sunday 29 May. During the period

of the race (27-29 May), no personal interviews were held with athletes. The second stage involved individual in-depth interviews (September-October 2011) with athletes who had completed 10 or more *Comrades Marathons* (including the 2011 race). The rationale was that these athletes were truly immersed in the social culture of the world of distance running and would be „information rich‟ individuals able to provide accurate information on the motivation and behaviour evident in serious leisure participation.

The target population was male and female adults aged 18 years and older. The unit of analysis was individual male and female adults who had completed 10 or more *Comrades Marathons* and were members of one of the most active and oldest running clubs in Gauteng, the Benoni Northerns Athletics Club (BNAC). The reasoning behind this was that athletes who had run 10 or more *Comrades Marathons* were truly immersed in long distance running and had a definite identity within the distance running world, although none of them were professional career athletes.

Twenty (20) individual in-depth interviews were held with respondents to elicit insight into their thinking and explore their motives and behaviour in terms of distance running, specifically the *Comrades Marathon*; and thereby collect reliable and accurate data (Cooper & Schindler, 2011). The sampling units were athletes selected from the Benoni Northerns Athletics Club (BNAC), based on the number of *Comrades Marathons* completed by club members over the past 3 decades. This club is oriented around non-professional training for the *Comrades Marathon* and has a strong social dimension. Additional reasons for using the BNAC were that:

- A large number of the BNAC club members annually participate in the *Comrades Marathon*;
- The BNAC organises a sufficient number of club runs for members to train together, enhancing the social aspect of running. (Training days are Tuesday mornings, Wednesday evenings after which a social gathering takes place in the club pub, Friday mornings and

Saturday mornings. Closer to the *Comrades Marathon*, the club has runs in Bedfordview as part of hill training where refreshments are provided.);

- BNAC club members together attend different road races throughout South Africa during their training season and out of season. (At the finish of each race there is a club tent where all the runners get together and socialise, once again enhancing the social aspect of participating in running.)

For the 2011 *Comrades Marathon* 19 591 athletes entered the race of which 15 211 were male and 4 380 were female. From BNAC a total of 27 athletes finished the 2011 *Comrades Marathon*, who were doing their 10th or more *Comrades Marathons*. Of this amount there were 7 woman and 16 men of which 6 women and 14 men were interviewed. All of these respondents had completed the 2011 *Comrades Marathon*, as well as at least 9 previous races, not necessarily consecutively (Comrades Marathon, 2011b, 2011c).

Data collection

As stated above the data collection took place in 2 stages: the first was exclusively field observation during the race; and at the finish. The second stage of data collection involved

post-race individual in-depth interviews with athletes who had completed 10 or more *Comrades Marathons*, including the 2011 race.

Pre-testing of the data collection instrument for stage 2 involved individual in-depth interviews with two experienced distance runners to improve the reliability of the outcome of the data and to ensure that more in-depth knowledge could be obtained about the needs and behaviour implicit in distance running. The discussion schedule used for the in-depth interviews consisted of 2 general question sections and 6 themed questions in accordance with the 6 characteristics of serious leisure (Stebbins, 1982), as well as questions related to Murray‟s needs, Maslow‟s hierarchy and the interactionist approach (Blumer, 1969).

Examples of types of interview questions asked were:

> Do you feel the need to persevere against all odds? Explain the meaning of rewards? Do you feel that you have achieved something each time you finish the marathon? Can you comfortably interact socially with other runners? Do Comrades runners have a distinctive way of dressing? Do you as runners have your own jargon? How would you explain the value of the *Comrades Marathon* in terms of your own life?

In terms of aspects of the race questions were asked, such as:

> Does the start of the race affect you in any way? Did the Expo influence you before the race? Do the spectators along the route affect you?

In one or two instances the data were quantified, however, the aim was to explore the „how‟ and „why‟ of the psyche of distance athletes. For this research the actual „voices‟ of the participants were „heard‟, categorised, coded and interpreted. The post-race interviews took place during September-October 2011. Of the 20 runners interviewed, a total of 292 *Comrades Marathons* had been run between them with an average of 14.6 marathons per runner.

Analysis of data

The data were documented using a discussion schedule for the in-depth interviews that covered the 6 themes in accordance with the characteristics of Stebbins (1982), defining the qualities of

serious leisure as set out in the literature review. Qualitative content analysis was used to analyse the transcribed texts as a method for the subjective interpretation of the content of text data through the systematic classification process of coding and identifying themes or patterns (Hsieh & Shannon, 2005).

Content analysis is a qualitative data reduction technique that attempts to identify core consistencies and meaning (Patton, 2002). It emphasises an integrated view of speech/texts and their specific context (participants of the *Comrades Marathon*). Qualitative content analysis is more than merely counting words or extracting objective content from texts to examine meanings, themes and patterns that may be latent in a particular test, as it allows for the understanding of social reality (distance running as serious leisure participation) in a subjective but scientific manner (Hsieh & Shannon, 2005). Qualitative content analysis is mainly inductive, grounding the examination of themes, as well as the inferences drawn from them in the data. In some cases, qualitative content analysis attempts to generate, or at least confirm existing theory (as in this case).

The content analysis was divided into:

1) Preparing the data: In this case analysing interview transcripts (literally transcribed) in order to reveal athletes‟ motives and behaviour in terms of distance running.
2) Defining the unit of analysis that refers to the basic unit of text to be classified during content analysis, in this case it was the 6 basic themes (based on Stebbins‟ characteristics). A theme may be expressed in a single word, a phrase, a sentence, a paragraph, as for example in this case, “durable benefits of participating in long distance, non-professional, career development”. Thus, you may assign a code to a text chunk of any size, as long as that chunk represents a single theme of relevance to the research under question. The actual „voices‟ of the participants must be „heard‟, themed and interpreted.
3) Developing categories and a coding scheme (manual) that are derived from the data (transcribed texts of the interviews), previous studies (Stebbins, 1982), and theories (Murray, Maslow and Blumer) on which to base the inquiry, namely the motivation and behaviour of serious leisure participants.
4) Testing the coding scheme on a sample of text, for example, *I had very little self-worth, but after completing the marathon I felt better…*, coded as Category 1 - Benefits, with Sub-category 1.1 - Durable Benefits, and Codes - lifelong, health, self-esteem.
5) Coding all the text and checking the coding repeatedly as new themes may emerge and must be added to the coding manual.
6) Assessing the consistency of the coding after the entire data set has been coded to recheck the consistency of the coding especially if more than one coder was used, as in this case.
7) Drawing conclusions from the coded data that involves making sense of the themes or categories identified. Since Stebbins‟s characteristics were used as the basis of the themes, the aim was to identify relationships between categories, between the needs theories of Maslow and Murray and the interactionist approach, and to uncover underlying patterns between them.
8) Monitoring and reporting the methods and findings that is imperative for a qualitative study, such as trustworthy and replicable. Qualitative content analysis does not produce counts and statistical significance, but uncovers patterns, themes and categories important to a social reality, namely the reality of serious leisure participants participating in distance running (*Comrades Marathon*).

As the sample was small it was decided to analyse the data manually and not to use a software programme such as Atlas TI or Nvivo, although in retrospect such a programme would have assisted the researchers in text editing, text retrieval and category manipulation and is recommended for future research. A brief example of the codes and categories to theory is presented in Figure 1.

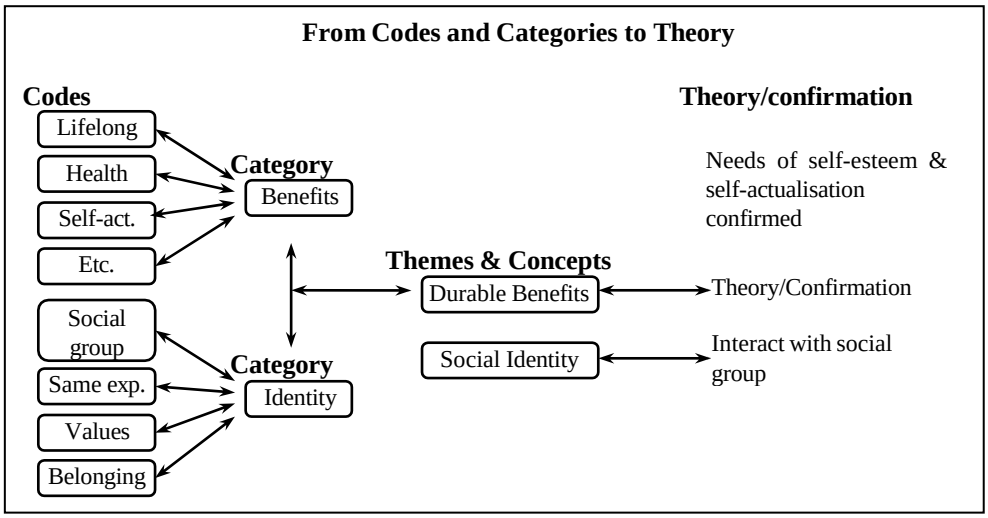

FIGURE 1: **AN EXAMPLE OF HOW CODES AND CATEGORIES WERE DEVELOPED TO CONFIRM THEORY**

Limitations of the research are that since only athletes of one club were used as respondents, the results may be biased (one-sided) that excludes the possibility to generalise or present meaningful suggestions.

RESULTS AND DESCRIPTIVE FINDINGS

In terms of the categories identified in the content analysis the category, *sense of identity* (one of Stebbins‟ unique characteristics), and how it relates to the activity of distance running (*Comrades Marathon*), is interpreted as follows: the respondents as athletes have been participating in the activity of distance running for 10 or more years and have been part of this particular long distance running sub-culture for many years, which has subsequently influenced their sense of identity with this activity. As they are closely related to this sub- culture, it has become part of their value and belief system. Social identity is defined by Tajfel (1972:292) as "the individual‟s knowledge that he/she belongs to certain social groups together with some emotional and value significance to him/her of the group membership." A respondent mentioned that he went back after the first Comrades because he had now made friends, and these friends formed this runner‟s social identity to a certain extent. Social interaction is clearly evident in the running community, as people have common ground on which they can strike up conversations and interact socially. The reason for this social interaction is as one respondent said: *We all experience the same things, we do the same things and you can get caught up in it and, I mean, some people just live it*. This ties in with Murray‟s need for affiliation, as well as

the interactionist approach of the social need of belonging.

All the respondents felt that the *Comrades Marathon* had a high emotional value for them with 75% of them not able to see themselves separate from distance running, they felt it as being *a part of myself*. Due to their long distance running careers and immersion within the sub-culture, this had become part of their identity. Curry and Weiss (1989:258) interpret sport motivation from a symbolic interactionist position and define sport motivation as "the reasons that people give for participation in sport" and empirically demonstrate that there is a link between sport motivation and "self" or social identity (Curry & Weiss, 1989). However, Weiss (2001) states that social recognition and/or the reinforcement of identity can only be maintained on the basis of controlling the value and norm system of the surrounding social group (sub-culture). For example, in the *Comrades Marathon* there is a sense of identification that the runners share amongst themselves, such as achievement, knowledge, perseverance, self-control, that are valued in their particular social environment or sub-culture and relates to a controlling value and norm system of this group.

The ***need for belonging*** (Maslow‟s 3rd level), links with social identification and personal effort as these athletes put in tremendous effort to develop and sustain an identity they have created through distance running. In Shipway (2010:71) one respondent said: *Where else can you finish 27 532th and still feel as if you were in an Olympic final?* From this statement it can be said that this runner felt like she belonged at this event. When *Comrades Marathon* athletes stand at the start of the race, they are standing amongst 12 000 to 15 000 other athletes who have the same goal - to finish the race. This creates a sense of belonging with regard to the event (*Comrades Marathon*) and the activity (distance running).

In terms of the interactionist approach, „meaning‟ is attributed to something, in this case to the *Comrades Marathon*, and how one responds to it (to interact with a certain social group and identify with it). Runners feel a sense of belonging because of the camaraderie, as one respondent said: *When you're on the road everybody's on the same level. If you're a CEO of a company or a gardener, you're on the same level. The BNAC goes out of its way to make new members feel welcome; more so than other clubs and, therefore, it is easier to feel a sense of belonging.* The need for belonging (as proposed by the interactionist approach) is surpassed by the ***self-actualisation*** need (Maslow‟s 5th and highest level of need), that is satisfied when you become self-fulfilled and feel completely content with who you are as an individual, but also what you are doing as a distance runner. However, according to Maslow *et al*. (1987), feelings of dissatisfaction and agitation can arise if an individual is not doing what he or she is interested in (distance running). Morgan (in Shipway & Holloway, 2010:271), suggests that runners experience a sense of withdrawal when not able to run, supporting Maslow‟s theory. As with Murray‟s need of „infavoidance‟ that refers to humiliation of an athlete, as when the marathon was not completed successfully.

The category ***unique ethos*** (one of Stebbins‟ characteristics) of the responding participants and the ethos of distance running as a sport activity, relates to the participants‟ behaviour, their dress code and overall norms and values found within the distance running community (Jones & Green, 2005). With regard to a specific dress code, all the respondents replied that they occasionally (at leisure) wore Comrades t-shirts, and even during the interviews, it was observed that some respondents (50%), had their Comrades photos and previous race numbers on their office walls. However, before, after and during the Comrades weekend, 75% of the respondents acknowledged wearing watches and shirts from previous years, the

current year‟s *Comrades Marathon* or gear from other prestigious running events. This can be related to Murray‟s need of „exhibition‟, to show (exhibit) oneself off in terms of others in the same sub-culture. Observations were made that during the *Comrades Marathon 2011* weekend, people travelling between Durban and Johannesburg and making rest stops, were wearing previous races‟ shirts, the previous year‟s Comrades shirts or even their specific club colours. These findings are consistent with Shipway‟s (2010) observations that homogeneity was evident at the International Marathon in terms of dress.

At the *Comrades Marathon* Expo held in Durban, it was observed that most runners in general terms (not necessarily those later interviewed), were wearing their running shoes and Comrades t-shirts. At the Expo‟s clothing section queue, two athletes were observed with their „green number‟ clothes (dedicated „green number‟ shirts, sweaters and caps) buying exclusive „green number‟ merchandise. „Green number‟ status is when a runner has completed 10 Comrades Marathons, and is regarded as the most prestigious of the runner groups. This behaviour indicated serious identification with the *Comrades Marathon*.

The differences between runners who finished well (silver) and those that finished at lower levels (bronze) were not noted, and the aspect of competitiveness of athletes could be explored further. Only runners who had completed the race (10 times or more) were interviewed and did not include those that did not finish. The latter could also be addressed in future research, namely to determine the differences between runners and their performances, in terms of those athletes that finish a race and those that do not.

Under the content analysis category of unique ethos, the codes for language usage and use of jargon amongst runners became apparent, especially as most respondents (90%) agreed to using „runner language‟, with phrases such as *running in a bus*, *silver*, *Bill Rowen*, *bronze*, *hills* and *hitting the wall*, being used during the interviews. In Shipway and Jones (2007) competitors spoke of *blowing up*, *hitting the wall*, and *miles in your legs*, also that they became a person to *stay away from* in the months leading up to the event; which supported that there was a certain dialect or jargon runners use within this fraternity. In terms of the interactionist approach, language is very important as a set of shared meaning, which arises out of social interactions with language as the vehicle.

Language and communication between participants and in the club/bar after a run, reinforces the feeling of belonging that can be related to Maslow‟s need of belonging/friendship. The wisecracks, friendly horseplay and joint singing all serve this purpose (Weiss, 2001). However, one of the respondent‟s expressed the initial need to break away from the running club, as she felt some people lived it day-in and day-out and that it became too much. While others said that their partners did not want to interact socially with other runners as they did not feel a sense of belonging because of not understanding the sport, however, *after getting involved with it, they all loved it as they then felt a sense of belonging and knew what everyone was talking about.* The social behaviour of runners seemed a common denominator amongst the entire running community and it was the individual‟s choice whether they wanted to attend the social activities of the club.

In terms of the content analysis category, need to persevere (this includes two characteristics of Stebbins, need to persevere and significant personal effort based on specialised skills), of

the responding participants and their mastery of the skill of distance running, it became evident that *Comrades Marathon* athletes put in a lot of personal effort to enable them to participate in the event. On the *Comrades Marathon* website (www.comrades.com), the link, „ask the coach", is a forum for athletes to ask advice on any aspect of preparing for the race.

Another link refers to different training programs that are worked out for runners, depending on the goal(s) they want to reach. The training programmes start in the December before the year of the race and are worked out right up to the race, showing the amount of effort that goes into preparing for this event. These programmes with a map of the route can be found on the website (Comrades Marathon, 2011d). Extreme physical effort and perseverance go into training for the *Comrades Marathon* and these runners train between four and six times a week for the six months leading up to the event. As one respondent clearly stated, you have got to do your homework. To finish comfortably within the 12-hour deadline, between 1 000 to 1 200km is needed, and to run a silver medal (to run under seven-and-a-half hours) between 2 000 to 2 500km training is needed. This indicates the need to persevere, as well as the realisation that a certain mileage within a certain timeframe ensures that proper preparation is done for the event. As one respondent stated, mentally you have to also convince your body to get out of bed on those cold winter mornings, and when your body is drained you have to convince it that it can still go on and go for the run, indicating the strenuous mental preparation required.

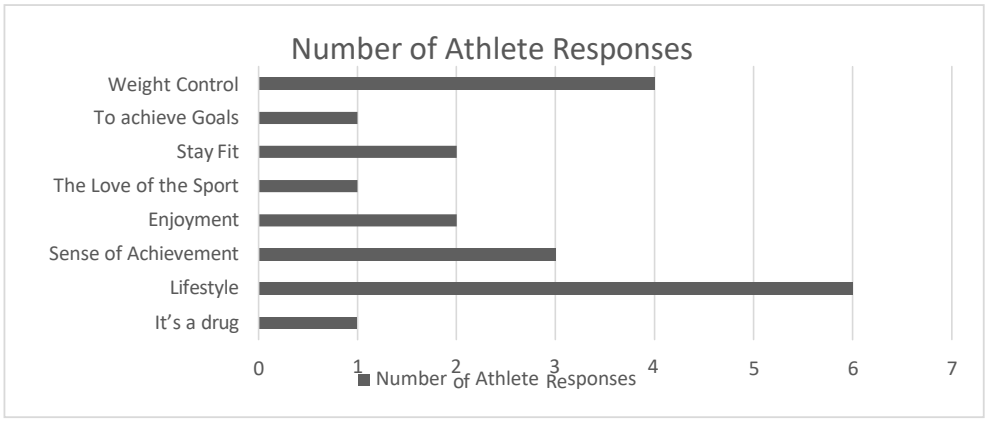

FIGURE 2*: REASONS FOR PERSEVERING IN THE *COMRADES MARATHON

The respondents were all (100%) of the opinion that as they progress as runners and gain experience over the years, they also gain knowledge in terms of what physically works for them, how to train and what is a sufficient level of training. Most respondents (80%) mentioned the fact that it had become a lifestyle and that was why they kept on running. Other reasons were that it kept them healthy and kept their weight under control. Most respondents said that they would run until their bodies did not allow them to run anymore. One respondent noted: *I think it's a way of (lifelong) fitness…because I believe it's a good lifestyle.* Figure 2 above indicates eight reasons why respondents had persevered with running over the years and how many times these reasons for persevering were mentioned during the

interviews. From the data it was evident that there is a strong need to persevere against all odds

when participating in the *Comrades Marathon*. It is seen as a challenge and a goal that these runners set for themselves. Responses from the runners were: *We all experience and do the same things, we just live for it; I don't think I will easily be able to give up; Never, ever did it occur to me that I'm not going to make it or [that] I'm going to give up; I will do it, I will finish*. A respondent, who has completed 21 *Comrades Marathons* of which 11 medals were silver, said that at the BNAC there is a saying: *The men in Benoni Northerns [Athletic Club] don't bail".* Another respondent even mentioned that he had put his marathon races on his curriculum vitae to get a job, to emphasise his level of personal perseverance.

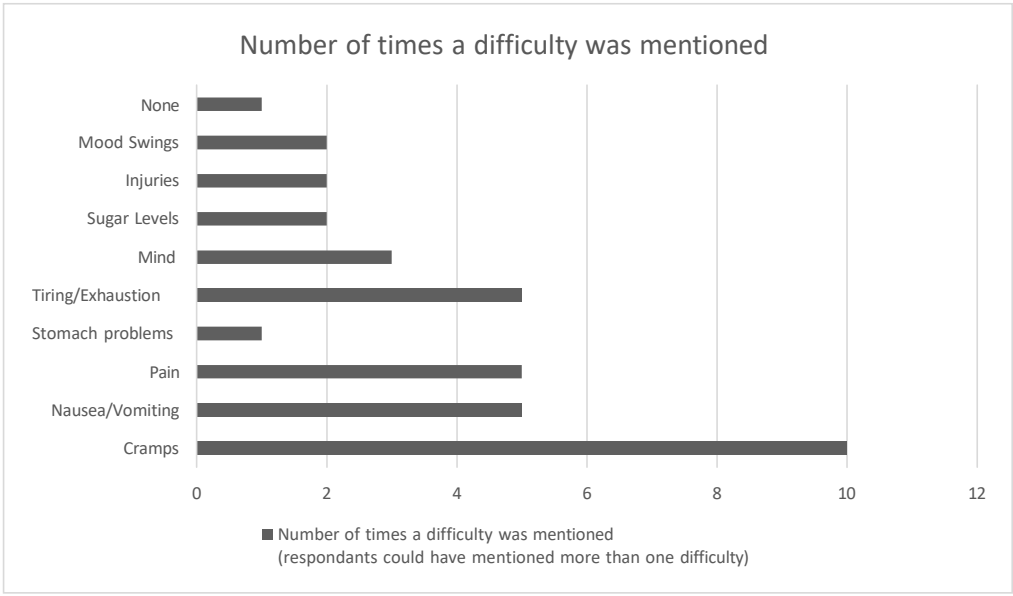

***FIGURE 3*: TYPES AND NUMBER OF DIFFICULTIES ON COMRADES DAY**

Runners experience difficulties during the training that leads up to the Comrades day as well as on the day (Figure 3). On Comrades day cramps, nausea and exhaustion/tiredness are the three main causes of difficulty during the day, with cramps/pain mentioned by 50% of the respondents, and nausea and exhaustion by 25% for each. A few runners in addition mentioned that it is a mind thing on the day to get to the end: *it is just mind against body.* All respondents said the only way to get through these difficulties was to run through them, to keep on moving forward, that it would go away. One respondent who had done 21 consecutive *Comrades Marathons* said: *Somebody gave me advice once that if you do have a problem just walk for an hour or so and it will go away and that is true.* In Shipway and Jones (2007) one runner mentioned that he was sick and might struggle but *I just don't want to fail after training so hard, I just don't want to let my family and friends down.* Similar responses were made by the runners of Benoni Northerns, saying they had trained hard and given up a lot and could not fail, could not give up and not finish the race.

Interpreting the category ***durable benefits*** (two characteristics of Stebbins, durable benefits and finding a career), of participating in long distances for (non-professional) *career development*, are benefits that last beyond the event and are related to self-esteem, self- actualisation (Maslow"s highest level of need), and to the social interaction months prior to the event during

training, as well as health benefits (Jones & Green, 2005). The esteem need is to recognise and achieve one‟s own goals and be recognised by others. An example of this would be setting a goal for yourself to finish the *Comrades Marathon*, and when achieving the goal being recognised by others, who may be fellow runners, family and friends. Self- esteem and durable benefits of distance running are thus interlinked.

In Shipway and Jones (2007: 381) a runner commented: *Despite being in horrific pain for the last couple of miles, my feet actually felt they were on fire; I loved every single minute of it and have never been so proud of myself.* The need for self-esteem and self-actualisation go hand in hand due to self-esteem being the satisfaction of achieving a specific goal. As one respondent stated, *it is one of the most rewarding things you can ever do because of the incredible degree of difficulty of the race, so anyone that finished the Comrades is just simply in sport, I believe, of the best.* Another respondent remarked that *you are invincible,* which boosts self-esteem. Self-actualisation is about fulfilling ones true potential when related to Maslow‟s needs hierarchy. An example is a respondent who did not finish his first attempt at a *Comrades Marathon,* but he went back to finish it the next year improving his time and eventually progressing to run silver medals thus reaching his full potential after experiencing failure at first. Most respondents (95%) feel they have achieved something every time they finish the Comrades, and all agree that *each run is special.* This sense of achievement and fulfilment of personal potential (self-actualisation) can be seen as a durable benefit of feeling good about oneself.

In the literature (Shipway & Jones, 2007; Shipway & Holloway, 2010), participants identified with the activity of distance running and saw it as a lifelong (durable) activity that correlated with the respondents. The respondents, however, added that they would stop running should it become detrimental to their health, for example, serious knee or back injuries. Some respondents (50%) said should they be compelled to stop running the *Comrades* due to health reasons, they would continue with shorter races, such as the *Two Oceans Marathon* (56km) (Kruger & Saayman, 2012), and the *Loskop Marathon* (50km). Others (20%) started running due to medical reasons, as they had severe back problems and doctors recommended them to be super fit, they chose running as the activity to accomplish that goal.

A respondent who was suffering from depression said: *I had very little self-worth, but after completing the marathon I felt much better. I'm still on the road to recovery, but the doctors seem to think that the running is playing a major positive part in my recovery.* This statement links the benefits of health and self-esteem. However, during the research another aspect of distance running came to light, that it could have negative impacts on runners, as it did on the following respondent: *I had to drop out of a marathon at halfway. All my family and friends knew I was running, and I was raising money for charity, and I had to spend the next few weeks explaining how and why I didn't finish. I haven't entered a marathon since, and find it hard to consider doing another one, knowing that I failed to finish.* Another respondent had serious personal problems to face and running provided that perfect escape, *Comrades gave me my life back,* which is the reward running had. Therefore, in terms of durable benefits of

distance running, the need for self-esteem and self-actualisation are apparent amongst the behaviour of distance runners, and applied to Maslow‟s hierarchy amongst distance runners‟ experiences, as well as to the interactionist approach where meaning is given to life through interaction with others.

The code to develop a career in distance running (under the content analysis category „durable benefits"), respondents all had different reasons for why and how they started running. Many runners (75%) started running through friends, relatives or work colleagues. Two of the respondents started running because they were part of the event as children, both had lived on the route and had always supported the runners along the way, and it became a goal or a (nostalgic) dream for them to participate in this race they knew as children. All the respondents started running the race to see whether they would be able to finish the notorious *Comrades Marathon*. After they had proved to themselves they could do 89km, they went back for various reasons with some runners trying and succeeding in running silver medals, while others attempting a Bill Rowen medal (between 7½ hours and 9 hours). Respondents were asked if the level of achievement was of significance and responses were mixed as some said that no matter the time they did, being good or bad, they felt they had achieved something major every time they crossed the finishing line, *My Bill Rowens's aren't more special than my bronze ones.*

Athletes who participate in the *Comrades Marathon*, who have completed 10 or more races have developed their „careers" to a certain extent. They have developed from being "fun" runners who started out on minimum mileage, trained to run their first Comrades and then continued to run to develop to an intermediate level, gained experience and knowledge over time and are now at a master level of the activity. This correlates with Stebbins" characteristic of significant personal effort based on specialised knowledge, training and skill, indicating the inherent interplay and interrelationships between the characteristics.

Taking the above findings into account, an attempt was made to apply Murray"s motivators of behaviour, Maslow"s hierarchy of needs and the interactionist approach, to the *Comrades Marathon* participants. Murray (1938) listed various needs that underlay the motivation of behaviour, of which three have been applied to this research. The need for *achievement* includes accomplishing something difficult, mastering and manipulating to overcome obstacles and attain a high standard; to rival and surpass others can be directly related to athletes of the *Comrades Marathon*. The *need for affiliation* that includes drawing near and enjoyably cooperating with an allied other who resembles one is also applicable to athletes of the *Comrades Marathon*. Finally, the *need of exhibition*, like to make an impression, to excite, amaze others, can also be seen as applicable to *Comrades Marathon* athletes.

Although many of Murray"s (1938) other needs may also be relevant to the respondents, the above-mentioned are regarded as the most applicable. The needs of Murray (1938) are divided into groupings, many overlapping with those of Maslow, with the latter developing a hierarchy that categorises the needs from the most basic need level such as the physiological need for food, water, shelter and sex (this need for sex is also mentioned by Murray, but is explained in terms of relationships rather than procreation as Maslow views it), but may comprise of different needs depending on the circumstances (Maslow *et al*., 1987). When compared to distance running these basic needs would be the level of physical health and

ability to participate in such an activity. A *Comrades Marathon* runner has to be sufficiently healthy for the long distances required and in addition sufficient food and water are required during training and on the day of the event to ensure that runners are hydrated and maintain normal sugar levels to enable them to physically participate in the event (Maslow"s 1st level).

Safety needs (Maslow"s 2nd level of need), such as security includes law and order and would entail safety on the roads when training and participating in an event. Within the context of

motivation theory, the physiological needs still hold but are less dominant at this level as they have been satisfied. Therefore, once the first level need is satisfied the next level need takes over in terms of the importance that Maslow describes as the need for safety (Maslow *et al.*, 1987). For example, in October 2011 five road runners preparing for the *Soweto Marathon* were killed by a „drunk driver" (SAPA, 2011) - this type of behaviour is unacceptable as it discourages current and potential participants to take part in the sport. This supports the need to be safe when training and participating in events. It also shows the risk of the sport due to motorists not acting in a safe and responsible manner. Benoni Northerns Athletic Club (BNAC), have their club runs not only for the social aspect of running with people but also consider the safety aspect, for when running in larger groups this takes up more space on the roads and forces motorists to notice the runners.

However, the ***social aspect*** can also be related to the need for self-esteem and self- actualisation that are apparent amongst the behaviour of distance runners and applied to Maslow"s hierarchy amongst distance runners" experiences, as well as to the interactionist approach where meaning is given to life through interaction with others. Finally, in terms of the interactionist approach, language and communication between respondents is also regarded as very important as it involves a set of shared meaning that arises out of social interactions, such as respondents socialising after a run that reinforces the feeling of belonging and can again be related to Maslow"s need of friendship and belonging. The interactionist approach is more concerned with higher needs and does not address the lower psychological needs of Maslow"s hierarchy, but is applicable to Maslow"s three higher levels of belonging and self-actualisation.

DISCUSSION AND CONCLUSIONS

In the previous discussion, the characteristics of serious leisure (Stebbins 1982), Maslow"s (1954) needs hierarchy, Murray"s (1938) needs and the interaction approach (Blumer, 1969), are potentially linked to develop a better understanding of the running needs and behaviour of serious leisure participants in the *Comrades Marathon*. Clearly respondents in both this study and that of Shipway and Jones (2007), strongly identify with distance running as a lifelong activity with 75% of runners from BNAC stating that they could not see themselves separate from distance running. The *Comrades Marathon* had a very high emotional value for these runners, due to the sub-culture in which they find themselves. Social ethos was also evident within distance running, as the respondents (as athletes) have a definite need to persevere against all odds and finish the race they started with a large amount of effort going into the preparation for the event both physically and mentally. As these athletes developed a (non-professional) „career" in distance running, they needed to persevere through the stages of development from being a novice runner to a level of mastery. Benefits, such as self-esteem

and self-actualisation, sense of belonging and social interaction were evident and link with Maslow"s hierarchy of needs, Murray"s needs and the interactionist approach and indicate that these perspectives can be used to further explain the needs and behaviour of serious leisure participants. Although this research has not brought much innovation to the fore, its value can be seen as confirming existing theory.

The limitations of this study refer to only BNAC runners being interviewed and the data being from a one-sided biased perspective in terms of running clubs. BNAC is a club that focuses on the *Comrades Marathon* and prides itself in the social aspect of running, which could increase the bias towards social identification with the activity. Runners from this club may think that

the social side of running is common within the whole running fraternity whereas this may not be the case. Due to these limitations, the results of this study do not allow making suggestions in terms of the implications for management and the organisers of long distance running events in general.

The study aimed to investigate a possible link between the needs theories (Murray, 1938; Maslow, 1954), the symbolic interactionist approach (Mead, 1934; Blumer, 1969), and the motivations and behaviour of a select group of serious leisure participants in a particular event, the *Comrades Marathon*. In spite of the fact that the study was empirically limited in scope, an attempt to reaffirm previous research findings in the field of serious leisure participation was possible.

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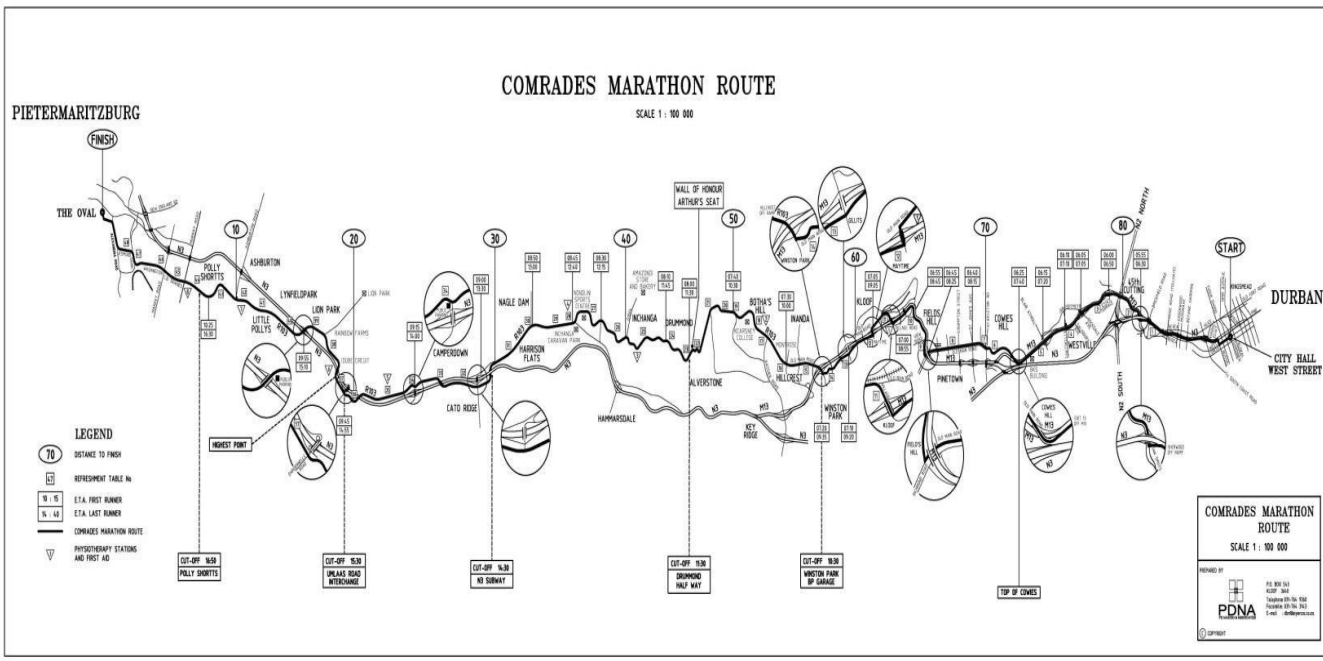

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A QUALITATIVE VISION OF ARTIFICIAL TURF FOOTBALL FIELDS: ELITE PLAYERS AND COACHES

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ABSTRACT

This study identified the most important parameters for the design and safety of artificial turf football fields according to professional footballers and coaches. Two semi-structured interviews were conducted. The sample consisted of 32 professional players and 25 professional coaches. The players and coaches emphasised that the main problem with artificial turf was the increased risk of injury. The consensus of the interviewees was that it is essential for artificial turf to be installed gradually in

elite competitions, starting with youth football. It would allow players to be slowly acclimatised to the surface through their developmental stages. When they reach elite competitions, they would be able to play comfortably either on natural or artificial turf with fewer problems.

Key words: Sport facilities; Surface; Safety; Satisfaction; Perception.

INTRODUCTION

Recent research on football has tried to answer a major question posed by the football community: What is the ideal surface for playing football? The number of artificial turf football fields the world over has been growing exponentially (McNitt, 2005), so players at all levels from beginners to professionals spend increasing amounts of time competing and practicing on artificial surfaces. The European Synthetic Turf Organisation (ESTO) estimated that in 2008 there were more than 15 000 synthetic pitches in Europe (ESTO, 2008).

Traditionally, the surface for football has been natural turf for top-level competitions and dirt pitches for recreational and leisure use (Felipe *et al*., 2011). However, in recent years, artificial turf has come to be accepted as the most suitable surface for recreational sport, because it affords much more use than natural turf, with considerably reduced maintenance costs (Simon, 2010; Burillo *et al*., 2011). Furthermore, artificial turf is being increasingly used for official first-class competitions, leading it to be considered the primary choice of surfaces (ESTO, 2008; Gallardo *et al*., 2009).

From its introduction in the 1970s, the first-generation artificial turf was widely rejected by footballers and coaches alike, due particularly to the fact that they perceived more risk of injury and a lower quality of play (Ekstrand & Nigg, 1989; McNitt *et al*., 2007). Although first studies have investigated the injury pattern on artificial turf and have concluded that the injury risk is higher on previous artificial turf‟s generation (first and second), than on natural grass, but this disappears with the third generation (Dragoo & Braun, 2010).

However, evaluation over the last three decades has shown that artificial turf does not produce a greater risk of injury for players, and that it provides very similar mechanical properties and ball response to that of natural turf (Steffen *et al*., 2007; Pasanen *et al*., 2008; Meyers, 2010). Despite this, official matches on artificial turf are still under the scrutiny of the media and the subject of much discussion in the footballing community (FIFA, 2007).

The construction of artificial turf football fields is a highly positive aspect for encouraging this sport, as it is a large improvement on old dirt pitches and natural turf pitches in bad conditions, and generates higher economic, social and environmental returns (FIFA, 2007). However, one important aspect for the acceptance of artificial turf by players and its use in official competitions is the accreditation of the playing surface. The aims of accreditation are: to ensure the quality and safety of the sport facility being used for recreational sport or top-level competition; to ensure the correct maintenance of the surface; to establish quality standards; to protect the players‟ health and the environment; and to anticipate low-cost policies (Bartlett *et al*., 2009).

During the time artificial turf as a football surface has been evolving (1970-2012), several

studies have measured the satisfaction of the users with a view to improving this surface (UEFA, 2004; Andersson *et al*., 2008; Zanetti, 2009; Gallardo *et al*., 2010; Burillo *et al*., 2012a), using quantitative methods. Similarly, other studies have attempted to determine the influence of the artificial turf through standardised tests (Villwock *et al*., 2009; Sandkuehler *et al*., 2010; Brito *et al*., 2012; Burillo *et al*., 2012b). There is no agreement on the general acceptance of artificial turf compared to other surfaces. While Andersson *et al*. (2008) established a negative attitude towards artificial turf other studies (UEFA, 2004; Burillo *et al*., 2012a), suggest that the negative results are due to a lack of experience on that surface, as experienced players reported positive attitudes toward artificial turf. Andersson *et al*. (2008) argues that it is clear that further studies are needed to investigate in more depth.

However, the relentless progress of the artificial turf fields makes it a dynamic reality. The above quantitative studies offer the reality of the moment, but provide strong constraints towards a future understanding of this surface. Their results are preferably oriented to describe a situation and slightly to the experiences in the vital process of surface-player relationship. There have been no studies published that have measured users‟ perceptions of and satisfaction with artificial turf football fields using a qualitative and open-ended methodology to uncover the full range of potential problems and responses. The importance of understanding user requirements and receiving product feedback is a vital part of any product design process. Nevertheless, perceptions are formed subjectively and so developing

a method to identify and measure them can be difficult (Dawson-Squibb, 2004; Fleming *et al*., 2005).

PURPOSE OF THE STUDY

In order to find out whether artificial turf has reached its optimum quality, similar to that of natural turf, which enables it to be seamlessly integrated into any top-level football competition, it would be helpful to know the opinion of the users, the footballers and the coaches, who have direct contact with both surfaces daily. Therefore, the purpose of the present study was two-fold:

- Firstly, to identify advantages and disadvantages of artificial turf from the point of view of high level footballers and coaches using a qualitative methodological approach, and
- Secondly, to find out the most relevant parameters with regard to the safety and future of artificial turf football fields according to the footballers and coaches.

This methodology supplements other quantitative studies, potentially leading to unexpected discoveries from the explanation and understanding of the causes that lead to satisfaction or dissatisfaction with artificial turf.

METHODS

Participants

With institutional ethical approval, a total of 32 players, aged between 20 and 38 years (M=23.5yr; SD=3.8yr) and a total of 25 coaches, aged between 27 and 53 years (M=37yr; SD=7.6yr), participated voluntarily in this study. The participants were purposefully selected (Patton, 2002). The players were of three nationalities (15 English, 12 German and 5 Spanish) competing in professional or semi-professional leagues of these countries with a mean of 12.9 years (SD=3.7) of regular training and competition on natural turf, and a mean of 6.0 years

(SD=4.6) on artificial turf. The coaches (all were Spanish coaches) involved in professional and semi-professional leagues in Spanish and international competitions with a mean of 3.4 years (SD=5.8) training on natural turf and a mean of 4.5 years (SD=3.3) on artificial turf. At the time of the research, all players and coaches were training and competing regularly on artificial turf football fields.

The number of interviewees was deemed appropriate, as it was concluded by all members of the interview and analysis team that after the above interviews were done, a saturation point had been reached with no new information emerging from the on-going data processing (Patton, 2002).

Measures

Two guides (1 for players and 1 for coaches) were produced that enabled the interviewer to optimise the amount of data obtained and provide a selection of unambiguous questions. This ensured that the 2 interviewers followed a consistent approach. The interview guides were produced with 2 discussion groups. The first for the players was made up of 3 professional footballers in the Spanish league with experience on natural and artificial turf (both groups with an experience of 5 years training and competing on artificial turf and natural grass). The other was for coaches, which were made up of 3 national level coaches in Spain with 5 years‟

experience in training on both natural and artificial turf. Once the interview guides had been drawn up, 3 pilot tests were conducted for each group of participants in order to identify any problems regarding the quality of the data concerned. Possible misunderstandings of the questions, as well as discovery of any preconceived attitudes that trainers and players had that might influence their replies, was avoided.

The pilot study allowed the interviewers an opportunity to practise the interview technique and to adjust the questions where needed to avoid any problems. This allowed the principal investigator to ensure the questions were unambiguous and the structure of the interview was clear. An experienced qualitative researcher, who listened to the audio recordings and reviewed the transcripts, provided feedback on the pilot interviews. In order not to influence the participants‟ answers, the final interview guides contained several questions designed to obtain perceptions without suggesting characteristics of importance. The final interview guides were made up of open-ended questions used to obtain detailed qualitative data. The final interview consisted of 24 questions for players and 21 questions for coaches.

Procedures

Players and coaches were contacted via e-mail and were invited to participate in the study. The researcher then set a date and a venue for the interview with each participant. Participants were assured that their comments would remain anonymous and that the interview data would be treated confidentially. Each interview was recorded (M=25.13 minutes; SD=3.10 minutes) in its entirety and each was tape recorded and transcribed verbatim into text documents for subsequent analysis. The interview was conducted *in situ* before daily training sessions during the initial part of the 2010/2011-season (August-September). All interviews were conducted in English by a single researcher who was trained for it during the pilot tests.

Analysis

The same researcher who conducted the interviews with the subjects performed the process of data analysis. Once all the data had been transcribed, analysing the data involved organising all the information collected (codes) into a series of structured themes by means of an

inductive analysis. After the interviews had been coded, they were structured into sub-themes and base-themes and linked to the emergent-themes that arose from the inductive analysis (Patton, 2002). The software used to analyse the information, as well as identify and group each of the codes, was Atlas-ti v 5.0 for Windows.

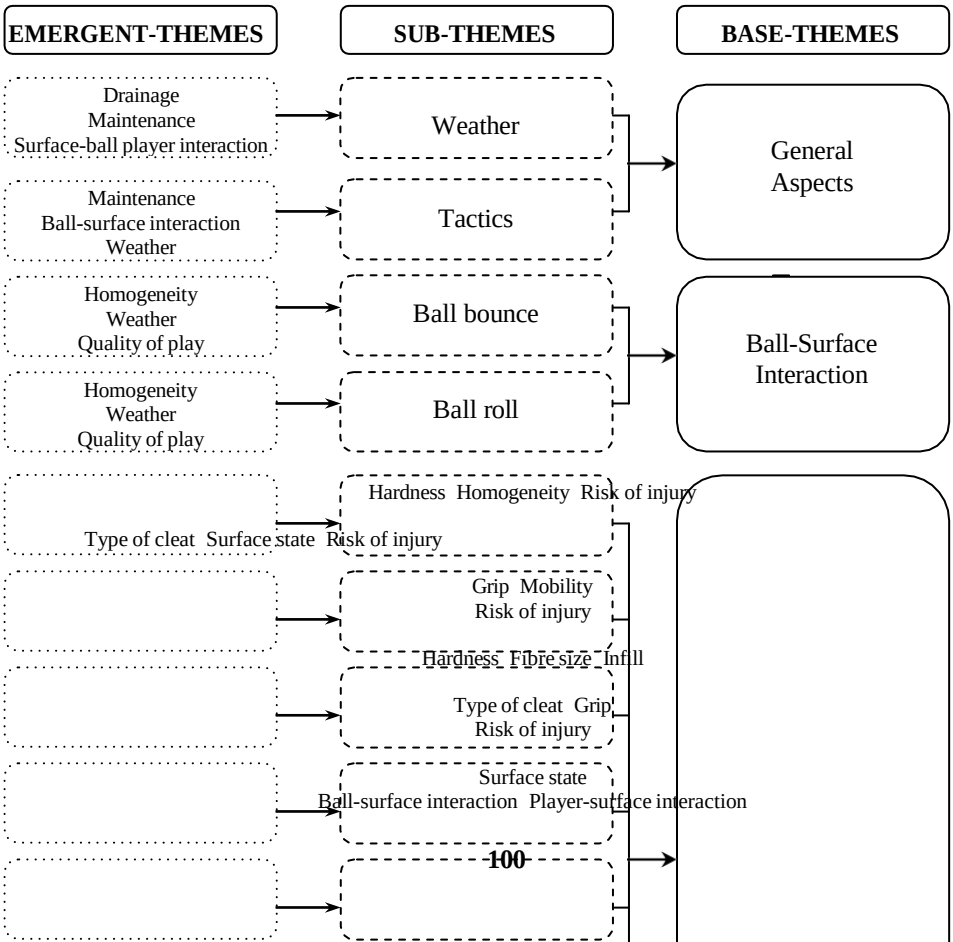
The structuring of the codes into themes was the result of triangulation by the researchers who took part in the designing of the research and data collection (Patton, 2002; Gil *et al*., 2010). The themes into which the results analysis process was structured were the result of the consensus reached among the research team after several meetings. The interviews were coded separately by each researcher, with the classification of each code agreed on by all, thereby eliminating the possible effects of an individual misinterpretation. This process is known as the „triangular consensus validation" (Patton, 2002).

RESULTS

The results collected from the opinion of players and coaches are presented in three sections for the purpose of clarity: surface; safety; and satisfaction.

Surface

In the surface section, there were three base-themes (Figure 1). The first of these is "general aspects." Two sub-themes appeared in this base-theme: weather and tactics.



Run Grip

Studs

Shock absorption

Change of direction

Throwing technique

Player-Surface Interaction

Skin abrasion

Tackle

Weather Adaptation Type of cleat

Fatigue

***FIGURE 1*: TREE STRUCTURE FOR SURFACE: RELATIONSHIP BETWEEN BASE-THEMES, SUB-THEMES AND EMERGENT-THEMES**

There was consensus among players and trainers that artificial turf is an optimum surface for withstanding adverse weather conditions, such as rain or snow, because it has an ad hoc horizontal drainage system, which slopes so that the water runs off into gutters round the edges. For example, a typical remark was.

> *On artificial turf, water drainage is much better than on other surfaces, since no puddles are formed, and a match or training session can be conducted normally when it rains.*

The state of the surface of artificial turf is a determining factor in playing tactics according to the coaches. Depending on the weather conditions, the state of conservation of the surface, the surface comportment of the ball, or the choice of tactics are affected in order to adjust to the requirements of the surface.

> *A tactical adjustment is needed depending on the state of the artificial turf or the ball comportment, particularly the bounce and roll. But as well as an adaptation in tactics, a physical adjustment is also needed.*

Within the surface-ball interaction, there are two sub-themes. The first is ball bounce. They consider ball bounce on artificial turf as being excessively high, and sometimes too fast, and this causes unforced errors, since it is usually hard to calculate the trajectory, as well as the height of the bounce.

> *The bounce on artificial turf is very difficult for the players, since the ball either sticks or bounces very high depending on the amount of rubber it has.*

However, players and coaches state that the bounce on artificial turf has one advantage over the other surfaces. Regardless of whether the ball bounces too much or too little, the bounce will always be the same in view of the consistency of the surface.

On the other hand, both groups considered the consistency of the ball‟s roll to be a very positive characteristic of artificial turf. Because the surface is consistent, the ball moves reliably without changes in or diversion of its trajectory. However, if the surface is insufficiently watered, it can cause the ball to stop prematurely.

> *On artificial turf the rolling of the ball is perfect, since there is no untoward bounce, and controlling the ball and any other technical action is highly effective and reliable.*

Within the surface-player interaction base-theme, eight sub-themes emerged. The first of these was running off the ball. The interviewees emphasised the consistency of the surface as a positive aspect, because it enabled them to move on it without any problem. However, because of the hardness of the artificial surface, they also indicated that the risk of injury, especially muscle strain, increases considerably.

> *Artificial turf is more slippery when running off the ball, as well as being a very hard surface, which causes an increase in muscle strain injuries.*

Something similar occurs with sudden changes of direction. A bad choice of cleats increases the risk of injury with this type of manoeuvre. The type of cleat that is chosen, directly affects

the footing on the surface. A bad cleat selection (which should be based on the state of the surface) will increase the risk of injury, as well as produce an imperfect grip.

> *Using aluminium cleats on natural turf means that grip is better on this surface, although proper choice of cleats means that a player's grip on artificial turf is satisfactory.*

For players and coaches, one of the aspects that needs improvement on artificial turf pitches is impact absorption. The asphalt sub-base that is usually placed below the pitch produces a surface that is excessively hard, with poor impact absorption. Another aspect rated negatively is the kicking technique. Because the ball sits closer on the surface, it is very difficult for a player to place his foot properly beneath the ball to take a good kick, and thus, the effectiveness of this action is negatively affected.

> *Big players, with big feet, have problems in taking a kick on artificial turf, since it is harder to place the foot under the ball.*

However, they emphasise that players develop different kicking techniques for natural and artificial turfs.

Tackling on artificial turf is undoubtedly the aspect that is most problematic and most criticised. Players state that they try to avoid this type of technical manoeuvre as much as they can in order to avoid skin abrasions caused by sliding on this type of surface.

Artificial turf is less tiring than other types of surface, because it is better equipped to cope with bad weather conditions. The fact that it does not have puddles or muddy areas is a decisive factor in avoiding the physical strain that comes with these circumstances.

> *The surface of artificial turf is wholly consistent, and given its system of drainage, there are no puddles, which mean that physical effort is reduced.*

Safety

The safety section produces just one base-theme; risk of injury from the surface. In turn, it is divided into two sub-themes: risk of injury; and element causing the injury (Figure 2).

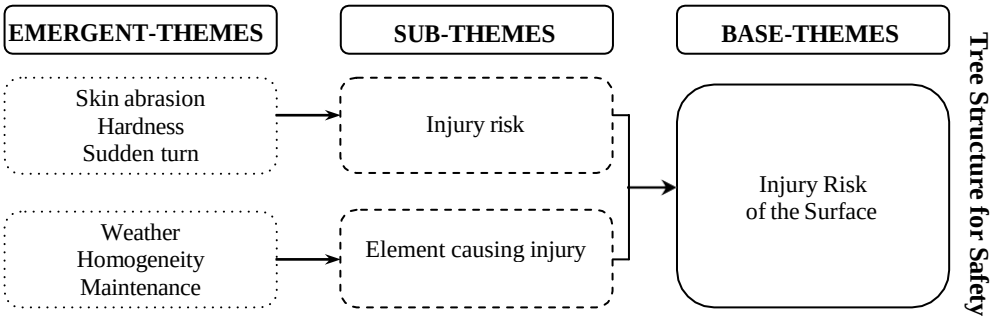


***FIGURE 2*: TREE STRUCTURE FOR SAFETY: RELATIONSHIP BETWEEN BASE-THEMES, SUB-THEMES AND EMERGENT-THEMES**

The risk of injury on this surface is primarily due to factors such as skin abrasion after a fall or a tackle on the harder surface, often caused by a lack of maintenance, upturned or disjointed seams in the sections that make it up, or by the way the pitch has been constructed.

Furthermore, there is a major risk of injury to the knee ligaments because with an inappropriate choice of cleat type, as mentioned above, the knee can remain rooted after a manoeuvre involving a turn or sudden change of direction.

> *Experience tells me that if the artificial turf is not well combed or if it is cold and the ground is hard, when you play with cleats it is fairly dangerous and harmful to the knees and ankles.*

On the other hand, there is no single element that is directly responsible for increasing the likelihood of sport injuries on artificial turf. For footballers and coaches, it is a set of factors, such as the way the facility is constructed or weather conditions that increase or lessen the risk of injury.

> *The substratum used for artificial turf pitches, such as cement, makes the surface harder, thereby increasing the risk of injury.*

Satisfaction

Two base-themes arise from the satisfaction section: the present; and future of artificial turf. These are divided into six and three sub-themes, respectively (Figure 3).

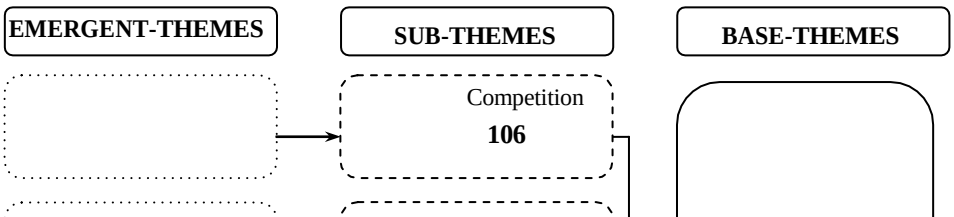
The sensations that the player has about artificial turf, as well as the surface-player interaction produced (grip, movement, kicking technique, etc.), cause certain misgivings when choosing this surface to train or play on regularly. However, they believe that it allows intensive use of the turf, in view of the consistency and the opportunity; it is the surface that best meets the needs of both high level and lower-grade football.

> *Artificial turf is the ideal surface for reinforcing learners' technical skills, thanks to its consistency.*

For example, the principal advantages of a synthetic surface include: the consistency of a pitch, the resistance to adverse climate conditions compared to natural grass, the possibility of intensive use, and an affordable maintenance cost. On the other hand, the main disadvantages of artificial turf are a non-adjustment to this surface and a high injury rate, particularly skin abrasion after a tackle.

Thus, it seems that in the short term, the introduction of artificial turf for first-class matches, either club or international competitions, would not be very well received by those principally involved (players and coaches). The introduction of artificial turf for first-class competition has only been considered in areas where weather conditions make playing football impossible, or in clubs whose finances do not permit them to maintain a natural turf pitch in perfect condition.

> *If you look at the big clubs, like Real Madrid or Barcelona, they do not need artificial turf in their stadiums, but for clubs in Norway, for example, where it is always snowing and is very cold, artificial turf is a good solution.*



Ball-surface interaction Player-surface interaction

Training

Adaptation
Ball-surface interaction Player-surface interaction

Maintenance Homogeneity Intensive use

Risk of injury Hardness Adaptation

Competition

Advantages of artificial turf

Disadvantages of artificial turf

Current Artificial Turf

Quality of play Homogeneity Intensive use

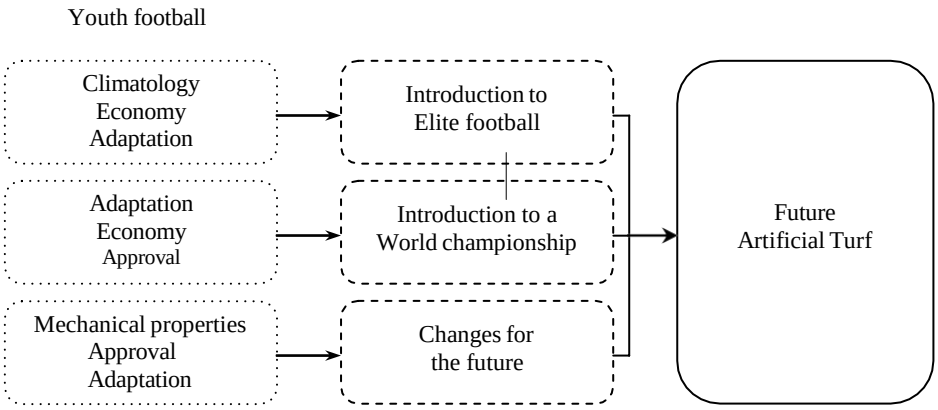


***FIGURE 3*: TREE STRUCTURE FOR SATISFACTION: RELATIONSHIP BETWEEN BASE-THEMES, SUB-THEMES AND EMERGENT-THEMES**

Finally, the responses indicated that the aspects of artificial turf, which need improvement in the future, are its mechanical properties (particularly with regard to the hardness of the pitch), and the mandatory standardisation at all levels, in order to ensure playing safety and practicality, as well as the players‟ adjustment to this surface. Figure 4 shows the inter-dimensional relationship model generated in this study.

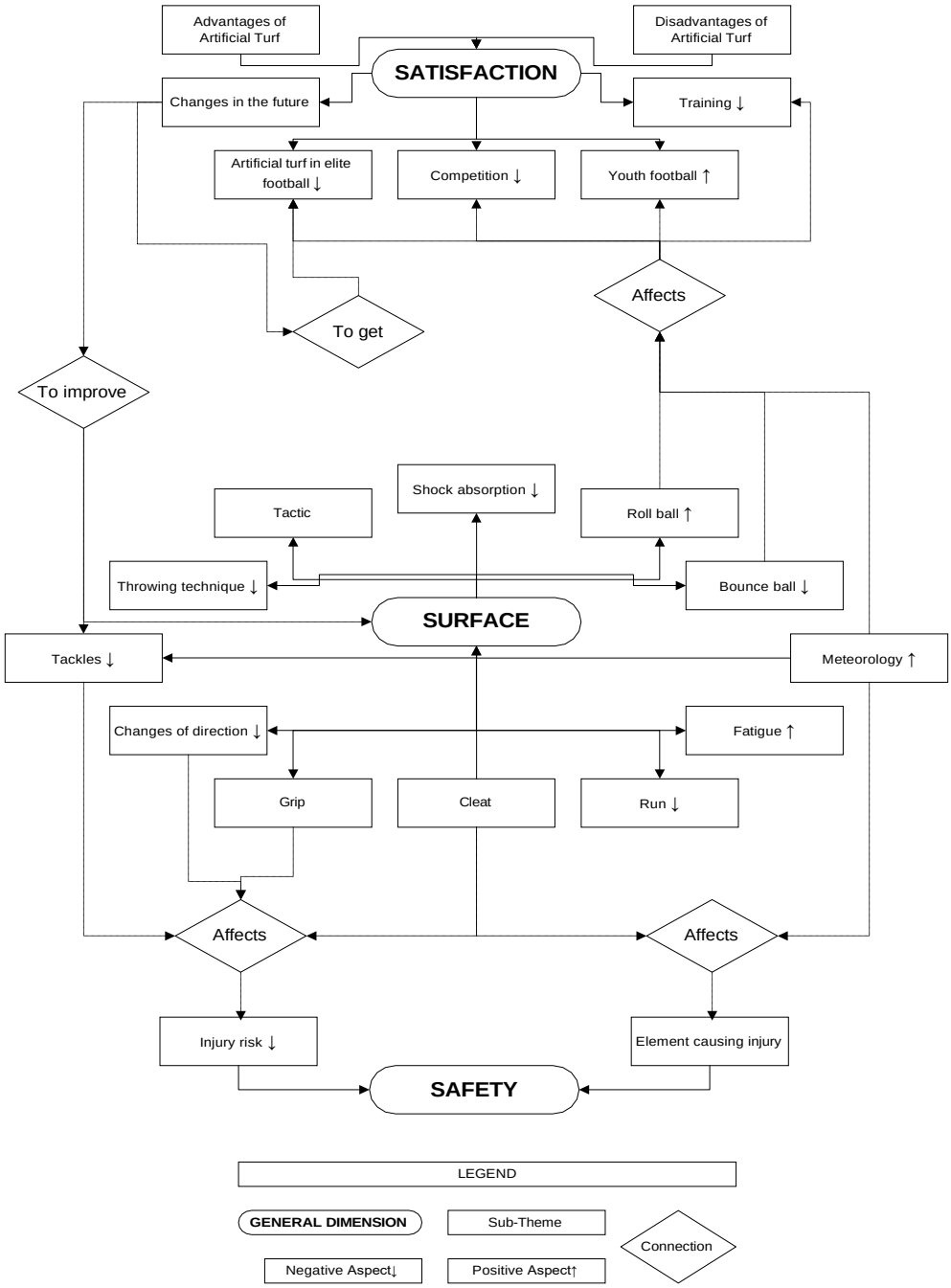


***FIGURE 4*: INTERDIMENSIONAL RELATIONSHIP: INTERRELATION BETWEEN GENERAL DIMENSION AND SUB-THEMES**

DISCUSSION

Surface

Adverse weather conditions undeniably affect football pitches, no matter what kind of surface they have, although players and coaches perceive that a synthetic surface is affected to a lesser degree. According to Simon (2010), artificial turf can be used even when it snows and, in general, it is not affected by heavy rainfall, thanks to its drainage system. Burillo *et al*. (2012b) suggests that artificial turf has better drainage potential if it is constructed on an impermeable surface (asphalt sub-base), where the water runs into gutters on the perimeter after vertical filtration.

Furthermore, weather conditions have a considerable effect on the risk of injury, including both heavy rain and snowfalls but also high and/or low temperatures. Players and coaches point out that playing in high temperatures is riskier on artificial turf than on natural turf. Meyers (2010) who analysed the data of 24 university football players, believes that there are significantly more injuries on artificial than on natural turf, both in minor, substantial and severe injury incidences.

The quality of on-going play is one of the main benefits of artificial turf, because the turf does not inhibit or divert the trajectory of the ball when it bounces or rolls (Simon, 2010). Even so, there are factors, such as humidity, the compaction of the ground or the density of the filling that produce major differences in the surface-ball interaction on artificial turf pitches (Schmidt, 1999). Players and coaches state that the bounce is higher on artificial turf, but they emphasise the consistency of this surface, because regardless of the fact that the bounce is higher, it is always the same, and it is thus a question of the player adjusting to this circumstance. In this respect, Burillo *et al*. (2012a) states that the vertical bounce of the ball is excessive on 90% of artificial turf pitches, but the users are generally satisfied with this parameter.

On the other hand, the roll of the ball is one of the most highly rated aspects of artificial turf. The main reason is a greater consistency of the surface, which causes the ball to roll without veering from its initial trajectory. Other researchers (Baker & Woollacott, 2005) show that players and coaches are more satisfied with the roll of the ball on artificial rather than on natural turf.

There is no doubt that the type of cleat chosen has a decisive influence on grip and traction, depending on the state of the pitch (Burillo *et al*., 2012b). Players state that the cleats they use most on artificial turf are rubber cleats, followed by multi-stud boots. Burillo *et al.* (2012a) report that most players and referees use rubber cleats, which provide greater satisfaction as far as grip is concerned, as opposed to shorter cleats (multi-cleat boots). Pasanen *et al*. (2008) found that there is a greater risk of anterior cruciate ligament injury when using rubber cleats, as they increase the friction surface of the boot. Among rubber cleats (multi-ground), the round ones are the safest for players because of a more uniform sole pressure, whereas blade-shaped cleats (elongated) are more dangerous because of the increase of pressure loads on the side of the foot, which can produce injuries in this area (Bentley *et al*., 2011). Nevertheless,

the ideal solution would be to use multi-stud boots as they provide a better ratio between surface grip and risk of injury (Burillo *et al*., 2012b).

For most of those interviewed, the impact absorption produced by artificial turf is poor. This

is mainly due to the fact that most artificial turf pitches are excessively hard because of the lack of maintenance and because they do not comply with the minimum standards required by the regulations in the matter of impact absorption (Burillo *et al*., 2012b). However, Ford *et al*. (2006) found that there are no significant differences in impact absorption between natural turf and artificial turf. This aspect has undergone a great improvement with the new generations of artificial turf. Chivers (2008) found that there were more sport injuries in the first part of the season, coinciding with the end of summer and before the start of winter, and he concluded that in this period, the pitch was harder than during the rest of the year.

Players and coaches were undecided when establishing which surface was less risky when carrying out a sudden change of direction. Tscholl *et al*. (2007) report that 14% of football injuries arise when there is no contact with the opponent, in other words, when there is only interaction between the turf and the player. Of these, 16% occur due to sudden changes of direction. The study sample stated that kicking for goal was conditioned by the surface and they emphasised that effectiveness decreased when carried out on a synthetic surface. Potthast and Brüggermann (2009) have found that kicking on natural turf is significantly more accurate and more rapid than on artificial turf. For Andersson *et al.* (2008) professional players have greater difficulty in controlling the ball before kicking it on artificial turf, and furthermore, there are more problems when kicking for goal on the run.

One of the most controversial aspects with regard to artificial turf is the tackle. Players state that they avoid tackling on artificial turf as much as possible. Andersson *et al*. (2008) found that tackling was much less frequent on artificial turf than on natural turf. Various authors (Fuller *et al*., 2005; Tscholl *et al*., 2007), have found that in a game of professional football on natural turf, there are between 30 and 36 tackles per player in a game. Andersson *et al*. (2008) point out that on artificial turf there are between 16 and 20 tackles per player in a game. Coaches and players have stated that abrasions caused by a tackle are one of the main causes of sport injury on artificial turf. Several studies (Ford *et al*., 2006; McNitt *et al*., 2007; Gallardo *et al*., 2010), state that skin abrasion is one of the main problems of artificial turf and may cause players to give up the sport.

Meyers (2010) states that the level of injuries caused by skin abrasion is lower on artificial turf (1%) than on natural turf (1.3%). Although abrasion used to be one of the most negatively rated aspects of artificial turf, new studies (Zanetti, 2009; Meyers, 2010; Simon, 2010), have shown that it is becoming less of a drawback. Thus, within a few years, users perhaps will no longer mention abrasion as being one of the negative aspects of artificial turf.

Safety

Artificial turf is the surface that produces the most risk of general injury when playing football. These results are linked to factors such as grip, injuries caused by sudden turns, tackles, or the greater hardness of this type of surface. Coaches and players say that more ACL injuries occur on natural turf, whereas ankle injuries are more common on artificial turf.

Ekstrand *et al*. (2006) found significant differences between the number of ankle injuries occurring on artificial turf compared to natural turf. They also found that the number of knee injuries occurring on natural turf was significantly higher than on artificial turf.

Steffen *et al*. (2007) found that there were significantly more injuries occurring during games than in training sessions. Studies conducted, to date, have found that there are no significant

differences between the number of injuries occurring while playing on artificial when compared with natural turf (Ekstrand *et al*., 2006; FIFA, 2007; McNitt *et al*., 2007; Steffen *et al*., 2007; Pasanen *et al*., 2008; Gallardo *et al*., 2010).

Satisfaction with artificial turf

The players and coaches in this study would not choose artificial turf as their habitual surface for training and playing. The main reason was the players‟ lack of adaptation to this surface in first-class football, as it is not the predominant surface for top-level competition and, therefore, the manoeuvres and techniques of surface-ball-player interaction are less precise. Andersson *et al*. (2008) found that their subjects had negative impressions regarding artificial turf. They claimed that playing on natural turf was much easier, both physically and technically.

Players and coaches claimed that users are prejudiced and think that artificial turf as a surface is more dangerous and of lower quality than natural turf. This problem may be resolved when younger players, who are now regularly playing and training on artificial turf in the youth squads of major European clubs, arrive at the top level and are presumably more used to this surface and do not mind whether they play on natural or artificial turf.

Most of the players and coaches consider that artificial turf is now ready to be introduced to first-class European football and that they would not mind playing matches on this surface regularly. They also consider it necessary to introduce it in regions with adverse climate conditions and in clubs with a tight budget.

Another positive aspect for the future of artificial turf in first-class football is the fact that most of the professional clubs‟ youth teams train only on artificial turf, since it is considered by many experts as being the ideal surface for training future professionals (Stiles *et al*., 2009). Thus, professional football‟s inhibitions regarding artificial turf may very possibly soon be reduced to a minimum.

Given the above responses and findings across different studies, the major question is how artificial turf may be improved to match or surpass the properties of natural turf in the opinion of players and coaches. The characteristics of the surface need to be modified. These characteristics particularly concern surface-ball and surface-player interactions. To achieve this, the accreditation of the surface at all levels needs to be regulated. FIFA (2009) stipulated that a pitch accredited with its 2-Star certificate has the same quality as that of a natural turf pitch with the same top-class features. Users‟ preconceived ideas about artificial turf need to be addressed. However, it appears it may be at the point of being resolved. Younger players who are now playing in the first division and youth players who will be doing so in the next few years are fully accustomed to playing and training on a regular basis on artificial turf

pitches, suggesting there would be no problem if, at some stage, they had to play a first division game on this type of surface.

CONCLUSIONS

To achieve the introduction of artificial turf into first-class football, players needs to successfully adjust to this surface. This must be done gradually, from the junior squads

upwards, by having the lower levels of all clubs training and playing on artificial turf, so that when they reach the highest levels they are fully adjusted to artificial turf and have no qualms about playing on this surface.

As main limitations of this study, at first sight, the short time available to extract information from key informants has relevance. As they are professional players and coaches, they were interviewed during the team's base camp and time was limited. Another limiting factor was that the results were analysed homogeneously, thus, not classifying them by nationality.

With a view to future research, consideration needs to be given to primarily increasing the group of key informants and analysing according to nationalities. Other target groups of key informants regarding artificial turf football fields are persons like sport managers or architects.

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SPORT FOR REFUGEE YOUTH IN A NEW SOCIETY: THE ROLE OF ACCULTURATION IN SPORT FOR DEVELOPMENT AND PEACE PROGRAMMING

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ABSTRACT

With the growing recognition of sport as a vehicle for development and peace, there has been a considerable increase in the use of sport for development programs and initiatives targeting underprivileged youth in the most at-risk areas of the world (refugee youth in this study). Little evidence and information, however, is available on how sport can be utilised as a tool for refugee youth when they move to a host/or new society. As relocation projects for refugee youth continue to increase around the world, it is critical for stakeholders of the Sport for Development and Peace (SFDP) movement to understand the initial value of their programs for integrating refugee youth in a new society. Given that relocation of refugee youth is strongly associated with the process of acculturation, this article attempts to explain the construct of acculturation within the framework of the SFDP movement and how SFDP programs can be utilised as a vehicle for refugee youth in acculturating into a host country. Based on the acculturation literature, recommendations for SFDP programs for refugee youth in a new country are provided.

Key words: Acculturation; Sport for Development and Peace (SFDP); Refugee youth; New society.

INTRODUCTION

The belief that sport has a significant transformative power in addressing a wide range of social issues, including inter-group conflict, health challenge (HIV/AIDS, diabetes), gender inequality and poverty, is becoming popular today. In particular, over the last decade there has been a considerable increase in the number of sport-for-development programs and initiatives attempting to leverage the role of sport in reaching at-risk youth in the developing countries around the world (Lyras, 2007; SDP IWG, 2007; Levermore, 2008a, 2008b; Kay, 2009; Giulianotti, 2010; Sugden, 2010; Lyras & Welty Peachey, 2011). These programs have been primarily operated by civil society organisations that were supported by some international sport and humanitarian institutions, such as the United Nations (UN) and the International Olympic Committee (IOC, 2009).

The main foci of *Sport for Development and Peace* (SFDP) programs include initiatives that target women, refugees, people living with HIV/AIDS, people with disabilities and at-risk youth (UN, 2003). For a long time, it was difficult to find empirical evidence for positive social outcomes of such programs (Coatler, 2010). In recent years, however, limited empirical and anecdotal evidence has found that sport can have a positive impact on development for the above target groups in the most disadvantaged areas in underdeveloped countries, particularly those in Africa and Southeast Asia (UN, 2003; Höglund & Sundberg, 2008; Schulenkorf, 2010). Indeed, Schulenkorf (2010) attempted to investigate how sport events play a critical role in contributing to reconciliation and inclusive social changes between disparate communities in ethnically divided Sri Lanka. Findings from Schulenkorf‟s (2010) work indicated that sport events can establish interpersonal friendships and play a role in the creation of inclusive social identities by creating „moments of togetherness‟ for members of disparate ethnic groups. In addition, Gschwend and Selvaranju (2007) found that sport-related projects could be expected to be effective tools for trauma-relief among people influenced by disasters, civil war or unrest. Although such evidences are clear in the underdeveloped countries, there are limitations in the understanding of how sport can be utilised to facilitate the development of the target groups when they move to new countries with strong

immigration histories.

One of the target groups for the SFDP movement is refugee children and youth. The United Nations High Commissioner for Refugees (UNHCR) is a representative UN agency that protects refugees and offers support to resolve their problems in their home country. More specifically, the UNHCR is in charge of offering protection for refugees‟ basic human rights and providing admission into a foreign country (Thachuk, 2007). In recent years, the UNHCR has recognised the potential power of sport to influence beneficial change in a society. The UNHCR worked with non-governmental organisations (NGOs) and corporations to implement sport as part of their plan by partnering with corporate sponsors such as *Right to Play*, Nike, Microsoft, and others to grant access to sport and physical activities for refugee children and youth. With the support of partners, the UNHCR had successfully implemented sport and physical activity programs for refugee children and youth. For example, *Right to Play*, one of the premier partners of the UNHCR, has implemented sport and physical activity programs to enhance healthy development for refugee youth.

In over 20 countries, hundreds of thousands refugee youth have engaged in sport programs implemented by *Right to Play* (Right to Play Annual Report, 2011). In a 2010 evaluation assessment, 84% of children in Liberia were able to know how to solve a peer-related conflict peacefully. Similarly, teachers in Pakistan incorporating *Right to Play*‟s programs in their schools reported a decrease in peer-to-peer school violence. Within Pakistan, *Right to Play* works primarily in Peshawar and Quetta, where the vast majority of Afghani refugees reside. Since the inception of *Right to Play*‟s work in these communities in 2002, the staff reported a dramatic increase in school enrolment amongst refugees, as well as enhanced positive relations between the Pakistani and Afghan communities (Right to Play Annual Report, 2011). These sport programs sponsored by the UNHCR and their partners have primarily focused on refugee children and youth in the most underdeveloped and disadvantaged areas of the world, such as refugee camps and conflict zones (UN Office for Sport for Development, n.d.). However, little attention has been devoted to SFDP programs for refugee children and youth in the process of resettlement to a new society.

Given the fact that resettlement of refugees to a new society is a rapidly increasing phenomenon around the world, it is important for stakeholders involved in the SFDP movement to extend their programs to refugee children and youth in a new society. Youth in a new society, who are a relatively marginalised population of the SFDP movement, are more likely to experience difficulties during the process of adaptation to a new society when compared to general immigrants due to cultural differences (language, lifestyles, values), and traumatic life events they experienced before moving (political conflict, exposure to war-related violence, deprivation). In order for the stakeholders of the SFDP movement to better understand refugee youth in a new society, refugees‟ acculturation process should be conveyed clearly.

While a number of scholars have proposed recommendations for SFDP programming, special emphasis should be given in the context of the unique attributes that focus on a target population. The purposes of this article were: (a) to provide a brief overview and conceptual analyses of the challenges and issues faced by refugee youth in a new society; and (b) to provide linkages between two theoretical frameworks of acculturation literature (Berry, 1990, 1997, 2003), and the body of knowledge in *Sport for Development* (Lyras, 2007, 2009, 2012a, 2012b; Lyras & Welty Peachey, 2011), to advance the application of the SFDP‟s theory and

practice in this context.

UNITED NATIONS HIGH COMMISSIONER FOR REFUGEES AND REFUGEE YOUTH: BACKGROUND INFORMATION

People from various countries are currently fleeing from their homelands to escape starvation, war, violence, prosecution, or continuous political threats. In 2008, the UNHCR reported that there were approximately 10.5 million refugees around the world, with almost half of them being children under the age of 18 years (UNHCR, 2009). Since the establishment of the UNHCR in 1951, the agency has contributed to protecting refugees and resolving many problems they were facing. The UNHCR is responsible for the protection of refugees‟ basic human rights, providing admission into a foreign country and at least temporary asylum, and providing protection from a forcible return (UNHCR, n.d.).

Typically, a person who has fled from their native country can apply for refugee status with assistance of the UNHCR. The UNHCR then determines if an individual is eligible for refugee status and, if so, the UNHCR provides three durable solutions for each refugee: (a) safe return to the home country (voluntary repatriation); (b) local integration in the country of asylum (the country to which a refugee fled); and (c) resettlement in a third country (UNHCR, 2009). Among the three solutions, the UNHCR‟s preferred long-term solution for most refugees is voluntary repatriation. During the process of finding the solutions, most refugees may live in refugee camps, which provide accommodation and services, such as shelter, sanitation and medical care. Although numerous people repatriate voluntarily every year, some refugees do not hope to return to their home countries because of the fear of persecution if they are to return or on-going political and civil turmoil in their countries. In cases where voluntary repatriation is a viable option, the UNHCR attempts to settle them in the country of asylum or a third country (UNHCR, 2009). At the worst case, however, some refugees are forced to return to their countries (forced repatriation) if they cannot find any lasting solutions.

Based on the three solutions above, approximately 251 500 refugees voluntarily repatriated during 2009 (UNHCR, 2010). However, repatriation figures have continued to decrease since 2004 (UNHCR, 2010). On the other hand, during the last decade, about 807 000 refugees were resettled in foreign countries and a total of 112 400 refugees were resettled in 19 countries in 2009, the highest recorded total since 2001 (UNHCR, 2009, 2010). Although international law, such as the 1951 UN Convention, related to the Status of Refugees does not require any country to accept refugees, more developed nations with traditionally strong immigration histories have accepted the largest number (Immigration Policy Centre, 2010). The United States, Canada, Australia, Germany, Sweden and Norway are acting as global leaders in offering resettlement options for refugees. The total number of refugees resettled in these six countries in 2009 were approximately 107 000, which was over 95% of the total number of resettled refugees.

Among refugees resettled in the US, 35% to 40% were estimated to be children and youth who were less than 18 years of age (Martin & Yankay, 2012). As almost all refugees have survived traumatic life experiences, including oppression, war or civil conflicts in their native countries, their experiences are often characterised by trauma, persecution, displacement, loss, and grief (Olliff, 2008). In addition, new arrivals from refugee backgrounds are more likely to face challenges and stressors when resettling in the US because of cultural differences (living environment, language) (Olliff, 2008). Those challenges are most frequent for refugee youth,

since they are in the very critical period of adolescence.

While some scientific evidence and anecdotal information for the impact of SFDP on the target groups listed above were found in underdeveloped countries, there is little evidence on the impact when they move to host countries as refugees. Of the target groups of SFDP programs, this article focuses on discussing refugee youth in the resettlement into a host/new country.

In the process of refugees‟ resettlement in a new society, it is critical to consider the construct of acculturation. Acculturation refers to the process by which the behaviours, attitudes and values of individuals from different societies are altered as a result of continuous contact with a host society (Berry, 1990). Compared to general newcomers (international students, immigrants), refugees are known to suffer from more severe psychological (Berry *et al.*, 1986), educational (Rong & Preissle, 1998) and financial problems (Lusting *et al*., 2004), in the acculturation process. It is mainly due to the fact that refugees tend to move to a host society with involuntary motivation and traumatic life experiences in their homeland (McBrien, 2005), which are usually different from immigrants.

Previous studies have suggested that sport or physical activities can influence newcomers‟ (refugees and immigrants) adaptation process in a host society (Grey, 1992; Stodolska & Alexandris, 2004; Taylor & Doherty, 2005; Doherty & Taylor, 2007), and play an important role in helping them better understand a new culture (Coakley, 2009). While these studies have primarily focused on unorganised and unstructured sport, various international institutions and sport organisations, such as the UNHCR, the IOC and the European Union (EU), have recently emphasised and organised sport programs as a powerful tool for minorities, including refugees, at-risk youth and children and people with disabilities within the SFDP movement. For example, *Right to Play*, one of the UNHCR‟S important partners, is

actively using organised and structured sport to enhance refugee children and youth development. The UNHCR and *Right to Play* reported some benefits for refugee youth provided by well-organised sport programs (SFDP programs), such as reducing aggressive and violent behaviours and healing psychological problems (post-traumatic stress disorders, depression, anxiety) (UN, 2003). Despite its obvious influence on refugee youth, no prior studies have explored the relationship between the construct of acculturation and sport within the SFDP movement.

Considering that the resettlement of refugee youth is strongly related to the process of acculturation, an attempt is made to explain the construct of acculturation within the framework of the SFDP movement and how SFDP programs can be incorporated in the acculturation process of refugee youth in a host country. To contextualise the role of sport as a general tool for development and peace, existing studies on acculturation in several domains, including psychology, anthropology and sociology will firstly be reviewed briefly. This will be followed by a review of the acculturation literature that focuses on the effects of sport or physical activity on newcomers‟ lives (immigrants, refugees, sojourners).

ACCULTURATION LITERATURE

To date, the acculturation literature has shown that acculturation refers to a response to a new society and is seen as a process by which the attitudes, behaviours and values of newcomers

from diverse cultures are changed as a result of contact with a new society (Berry, 1990, 1997; Phinney, 1990). According to Graves (1967), there are two levels of acculturation: (a) group level; and (b) individual level. The group level of acculturation refers to a group‟s structural, economic and other changes due to the group‟s contact with a new culture, whereas the individual level of acculturation, termed psychological acculturation, refers to changes in an individual‟s psychological changes, such as behaviour, values and attitudes (Berry, 1997). Although an individual‟s acculturation level contributes to, and is influenced by group-level acculturation, the two levels of acculturation do not always evolve in the same direction or in the same way. For example, an individual may be highly assimilated, whereas the group he or she belongs to may not be assimilated at all (Berry, 1997), while the reverse might also be true. In other words, different individuals may vary in the pace of the acculturation process to a new society even if they are from the same cultural group. With that in mind, it is important to examine a potential systematic relationship between the two levels of acculturation in order to fully understand the acculturation process (Berry, 1997).

Two acculturation approaches

Historically, the acculturation process has shifted from a uni-dimensional to a bi-dimensional perspective. The uni-dimensional approach of acculturation is understood by way of a single continuum: on the one end are newcomers who maintain the values, behaviours and attitudes of their original culture, and on the other are those who strive to accept that of the host culture (Berry, 1997; Nguyen *et al.*, 1999). The midpoint between the two ends of the continuum refers to bi-culturalism, which denotes a high involvement and participation in the values, behaviours and attitudes of both cultures (Nguyen & Von Eye, 2002).

One of the key tenets of the uni-dimensional approach of acculturation is that accepting values and behaviours of the dominant culture is necessarily accompanied by a weakening of connections with those of one‟s original culture (Nguyen *et al.*, 1999). However, this model of acculturation is not capable of differentiating individuals with high involvement in both cultures from those with low involvement in both cultures.

To overcome such limitations of the uni-dimensional model, a bi-dimensional model has been formulated. Berry (1990), one of the most significant contributors to the body of research on acculturation, first proposed a framework regarding acculturation based on the bi-dimensional approach. Berry‟s framework is grounded in two major issues or dimensions: (a) maintenance of one‟s original culture; and (b) contact with and participation in other cultural groups in the host society. Berry (1997) took the two issues into consideration as independent attitudinal dimensions. Thus, this framework on the basis of the bi-dimensional model allows newcomers to report varying levels of adherence to their culture of origin and of acceptance to the dominant culture.

Furthermore, these two dimensions allowed for four possible acculturation strategies/patterns: (a) integration; (b) assimilation; (c) separation; and (d) marginalisation (Berry, 1990, 1997). Integration occurs when individuals maintain their cultural identity and values of their original culture while keeping contact with other cultural groups in the host society. Assimilation occurs when individuals tend to accept the values and identity of the host culture and reject or have very little interest in their original culture. On the other hand, when individuals place a value on holding on to their culture of origin and reject the values and identity of the host society, they are adopting a separation strategy. Lastly, marginalisation

occurs when individuals maintain neither the values nor identity of their original culture nor those of the host culture. Marginalisation is regarded as the most problematic among the four acculturation strategies, because there is a lack of psychological and social contact with both cultures, and individuals do not relate well to others in general (Kim & Abreau, 2001).

The classification of the four acculturation strategies above were grounded in the assumption that newcomers in non-dominant groups can freely choose how they want to acculturate into the host society (Berry, 2003). However, this is not always possible. When certain acculturation strategies are forced on newcomers by the dominant society‟s policies and attitudes toward newcomers, different terms should then be used. For instance, if the host society has strong ethnocentric and mono-cultural orientations and does not favour the value of cultural diversity, newcomers are forced to be separated from or assimilated by the host society. In this case, it would be called „segregation‟ or „pressure cooker‟, respectively. Indeed, in spite of the increasing immigrant population, South Korea as a society still remains culturally homogeneous, which lead newcomers to being labelled as either „segregated‟ or „pressure cooker‟.

Factors influencing the acculturation process

It is well documented that acculturation is a highly complex process because it involves more than one culture and there are multiple factors that are commonly believed to affect an individual‟s acculturation process (Berry, 1997). These factors can be approached via two categories: (a) individual; and (b) situational (contextual).

Firstly, an individual‟s acculturation process depends on a number of the following individual factors, such as: (a) age at time of migration (Beiser *et al.*, 1988); (b) gender (Beiser *et al*., 1988; Carballo, 1994); (c) level of education (Jayasuriya *et al.*, 1992); (d) length of residence in a host country/generational status (Tsai *et al.*, 2000; Leao *et al.*, 2009); and (e) motivation for moving (Richmond, 1993).

The age factor in migration suggests that when people migrate to a host culture at an early age, they are more likely to adapt to the host culture. However, immigrant youth in the period of adolescence are likely to experience significant problems, such as identity confusion and emotional and behavioural disorders (Sam & Berry, 1995). For gender, females may generally have more difficulties in the acculturation process than males. This general finding, however, may depend on differential treatment and relative status of females in the host and native cultures where some differences may exist. In other words, females attempting to take on new roles available in the host country may conflict with their native culture. In terms of educational level, the higher level of education an individual has the fewer problems he/she has in the process of acculturation.

Length of residence in the host country or generational status is a commonly used personal factor associated with the acculturation process of immigrants. The general findings from the literature indicate that the longer an individual resides in the host country, the higher the level of acculturation is (Ghuman, 1997; Oh *et al.*, 2002). There are two broad types of motivations for moving: (a) pull motives; and (b) push motives (Kim, 1988; Richmond, 1993). These two motives are dependent on whether an individual voluntarily (pull motives) or involuntarily (push motives) moves to the host country. The former case includes immigrants and international students, while the latter includes refuges. According to Kim (1988), individuals with voluntary motivation are more likely than those with involuntary motivation to adapt to

the host country.

Secondly, situational factors can be viewed at (a) society of origin and (b) society of settlement (Berry, 1997). To fully understand the acculturation process, the political, economic and demographic conditions of the non-dominant society (society of origin) should be considered. From the perspective of the settlement society, national policies of the host society toward newcomers are an important situational factor affecting acculturation. For example, while some host societies are accepting of cultural pluralism based on integration policies, others attempt to get rid of cultural diversity through assimilation policies. Cultural distance between the two societies can also be a situational factor for acculturation. Cultural distance refers to how dissimilar the two cultures are in terms of language, attitudes and values.

The increase of a cultural difference between a host and a native country leads to poor adaptation to the host country. For example, because immigrants from Asian countries have different cultures from those of North America, for instance collectivism in Asia and individualism in North America (Triandis *et al*., 1988), Asian immigrants might not adapt well to North American society because of the high value placed on individualism. Socialising agents (friends from their culture of origin, family members, media), can also affect one‟s acculturation (Penaloza, 1994).

In this regard, Korean youth may not adapt to the US society well when they are with friends from their culture of origin and prefer to use media in their own ethnic language (Ha & Park, 2012). Lastly, the extent to which an individual adapts to the host society can be varied according to contexts/locations where he/she resides. For instance, while people are likely to maintain their own cultural identity in private spheres or domains including home and ethnic communities, they tend to follow cultures of a host society in public ones, such as workplaces and schools (Berry, 1997).

Acculturative stress

Changes in cultural context may surpass a newcomer‟s capacity to cope with the magnitude, speed and some other aspects of the changes, leading to severe psychological stress, which is called acculturative stress. The concept of acculturative stress refers to “a particular kind of stress, that in which the stressors are identified as having their source in the process of acculturation” (Berry *et al*., 1988:74). Berry *et al.* (1988) listed an array of stress behaviours that may occur during the process of acculturation, such as feelings of marginality and alienation, identity confusion and lowered mental health status derived from anxiety, depression and others. These acculturative stresses are strongly associated with individual and situational factors discussed above. In integrated discussions of the general findings about acculturative stress, Berry *et al.* (1988) concluded that newcomers moving to a new society with involuntary motives (refugees) showed significantly higher levels of stress than those with voluntary motives (international students, immigrants).

In terms of the cultural distance, the greater the cultural distance, the higher the acculturative stress. Newcomers are likely to experience acculturative stress less in multicultural societies than uni-cultural societies, because the former societies are more willing to accompany newcomers by using integration policies (Berry, 1986). Besides these factors, Berry *et al.* (1988) suggest that educational level, prior cultural experiences, and social support variables have been identified as factors affecting acculturative stress.

In summary, acculturation refers to the changes in cultural attitudes, values and behaviours that occur when individuals come into first-hand contact with a new society (Berry, 1990; Phinney, 1990). Therefore, it is essential for the construct of acculturation to be considered in understanding how various categories of newcomers, such as immigrants, sojourners (those staying temporarily), refugees and native people adapt to a new society. Further, given that sport has been used as a useful vehicle to help newcomers adapt to a new society (Coakley, 2009), it should be incorporated in their acculturation process. On the basis of a detailed review of literature on acculturation, Figure 1 provides a conceptual framework for understanding a newcomer‟s acculturation process using individual and situational factors.

Once individuals move to a new society, they begin to enter the acculturation process by experiencing the new society (Figure 1). In this initial stage, their acculturation will be influenced by various individual factors, such as gender, age, educational level, and motivation for moving and situational factors including characteristics of both non-dominant and dominant societies, cultural distance between the two societies, socialising agents and contexts/locations.

Upon arrival, the initial acculturation experience leads to considerable acculturative stress associated with anxieties over security, housing, employment and a loss of familiar ways of doing things. To overcome such acculturative stress, newcomers will choose one of the acculturation patterns/strategies (integration, assimilation, separation, marginalisation) suggested by Berry (1990, 1997, 2003). With regard to individual and situational factors, Figure 1 suggests that both factors can also directly influence newcomers‟ acculturative stress, as well as acculturation patterns.

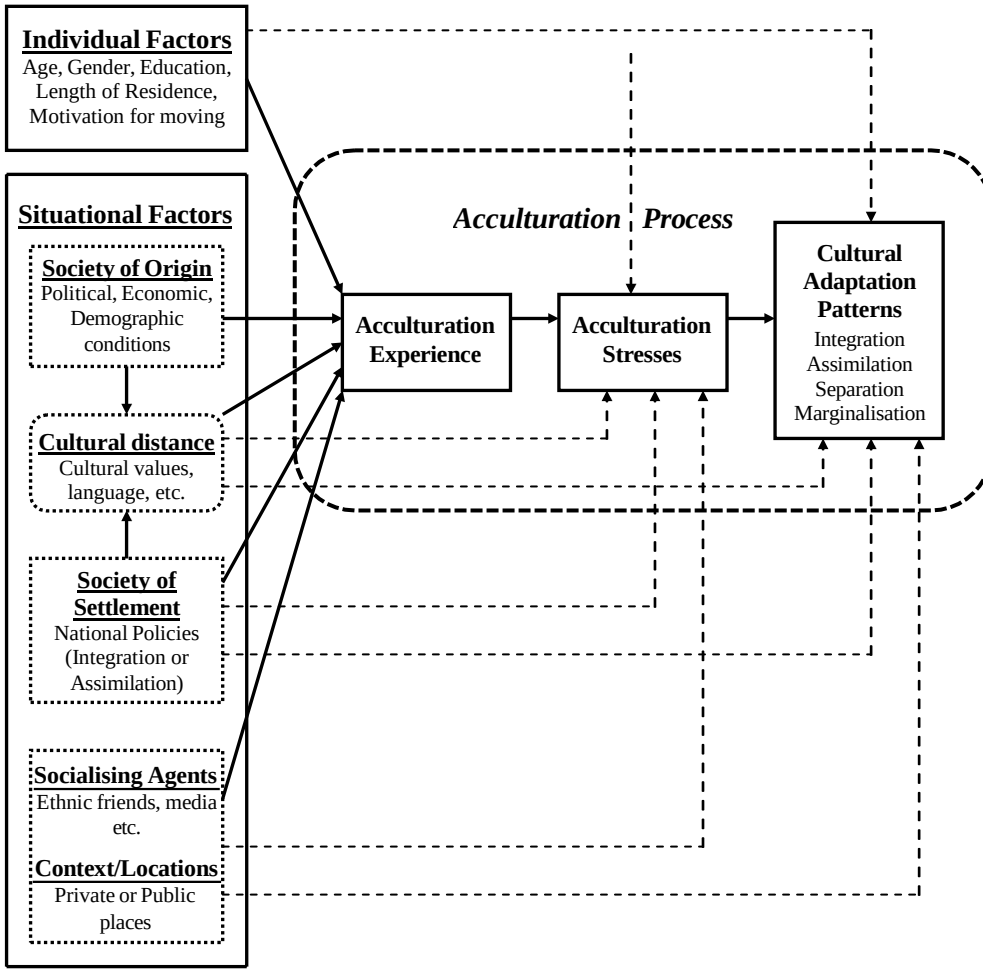

***FIGURE 1*: A CONCEPTUAL FRAMEWORK FOR ACCULTURATION**

ACCULTURATION IN A SPORT CONTEXT: MAKING THE CONNECTION

Research on participation in sport and recreational physical activity of newcomers has increased considerably and evolved as a distinctive field of investigation. The general areas of research include: (a) the nature of newcomers‟ participation (what sport and activities they participate in, where and with whom they participate and changes in participation patterns after moving) (Stodolska & Alexendris, 2004); and (b) benefits of participation (facilitating settlement, enabling in the process of integration to mainstream society, building social capital and social inclusion), and constraints to participation (language, discrimination, resources, lack of parental support) (Taylor & Doherty, 2005; Doherty & Taylor, 2007; Olliff, 2008; Spaaij, 2013). These studies have primarily focused on how newcomers participate in sport in a host society.

Although the studies referred to do not directly employ acculturation as a theoretical framework, acculturation theory conceptually informed the aims of these studies. Since sport and acculturation have the power to bring about change for individuals and society, it seems intuitively apparent that the construct of acculturation may be a meaningful tool within the SFDP movement. Of groups targeted by the SFDP movement, the process of acculturation is particularly important and useful to refugee youth since they are faced with many challenges, such as traumatic life events they experienced in their native countries and cultural differences. Despite the substantial amount of research on the role of sport in understanding newcomers‟ adaptation using the construct of acculturation, little is known about how to take advantage of SFDP programs for refugee youth in a new society. Consequently, it is critical for SFDP researchers and practitioners to incorporate the construct of acculturation into SFDP programs and initiatives for refugee youth to address the problems with which they are faced in a host society.

Sport and physical activity for newcomers

It has been argued that sport and physical activity can assist newcomers‟ adaptation process in a new society (Coakley, 2009). Many studies have attempted to examine the role of recreational sport and physical activity in the newcomers‟ settlement process. For example, based on interview data collected from Korean and Polish immigrants, Stodolska and Alexandris (2004) found that sport participation facilitated inter-group contacts and broke barriers among immigrants, other ethnic group members and mainstream Americans. Moreover, some immigrants utilised sport participation as a vehicle to solidify their ties with their ethnic community and to preserve their ethnic values.

International students who are another type of newcomer were also widely examined (Yu & Berryman, 1996; Taylor & Doherty, 2005; Doherty & Taylor, 2007). These studies sought to identify the benefits and challenges of sport participation in a new society and found that a lack of language proficiency was the most widely reported challenge for sport participation. Feelings of social exclusion due to language difficulties, unfamiliarity with a host society and prejudice from American peers were also reported as challenges for sport participation (Doherty & Taylor, 2007). Spaaij (2013) attempted to explore barriers to sport participation for newly arrived people in a host society at the following three levels: intra-personal (individual characteristics, traits, beliefs); inter-personal (lack of parental support to participate in sport); and structural (language difficulty, financial cost, gender expectation).

Of the three barrier levels, newcomers were constrained to sport participation mainly due to inter-personal and structural barriers.

In terms of benefits, sport participation with people in a mainstream society was found to be helpful in the development of language skills (Doherty & Taylor, 2007). In addition, pursuing fun and improving physical health and psychological well-being were the main benefits. Lastly, newcomers‟ participation in sport also led to the accumulation of the following two types of social capital: bridging; and bonding social capital (Walseth, 2008). While bridging social capital refers to the process of getting to know individuals who have a different background from oneself (people from other ethnic groups), bonding social capital refers to the process of maintaining existing relationships with individuals who have a similar background to oneself. Indeed, Walseth (2008) found that young women from an immigrant background could build both bridging and bonding social capital through sport participation in local sport clubs.

The studies above, however, have some limitations that warrant discussion. First of all, these studies have primarily dealt with general newcomers (immigrants and international students), rather than refugees. Although the two groups have a number of characteristics in common as newcomers, refugees should be distinguished from general newcomers. Motivations for moving into a new society may be different between the two groups. Refugees have had to leave their home countries involuntarily because of violent and traumatic circumstances, whereas general immigrants leave their native countries due to voluntary motives, such as searching for better economic opportunities (Lustig *et al.*, 2003). Voluntary immigrants are also relatively well-educated (Rong & Preissle, 1998). They usually have sufficient time to think about their choice and may have previously visited the country of resettlement. Voluntary immigrants have enough financial resources to live in a host country and are aware of family members, friends or other people from their home country with whom they can settle in a community (Delgado-Gaitan, 1994).

Unlike voluntary immigrants, refugees have to move to a host country from poor living conditions in their home countries or refugee camps, such as lack of food and medical care. It is plausible that there are refugees who want to voluntarily move to a third country in order to escape from traumatic environments and there are immigrants who involuntarily move to the third country due to some reasons (family problems). The literature has shown that most refugees are likely to move based on involuntary motives, while most immigrants are motivated to move based on voluntary motives. It is clear that individuals with voluntary pull motives have fewer problems in the settlement of a host society than involuntary push motives (Kim, 1988). Further, since refugees have had more severe traumatic life experiences in their home countries than general newcomers, it is plausible that refugees are more naturally exposed to problems or stresses in the resettlement process than general newcomers.

Even though the studies sought to delve into the role of sport participation in the settlement of newcomers in a new society, most previous studies have primarily focused on highly individualised, unorganised and unstructured sport and physical activities. According to Burnett and Uys (2000), SFDP programs need to be measured on three levels: micro-; meso-; and macro-levels. The micro-level effects refer to psychological impacts such as personal development, life-skills, increased physical health, self-esteem, self-confidence, and empowerment. The meso-level effects comprise changes in social networks, group cohesion, cooperation, respect, social inclusion and inter-group relationships. The macro-level effects refer to changes in infrastructure, economic resources, socio-economic indicators and systems that provide opportunities to underprivileged communities.

While individual-based participation may bring about some positive effects at the micro-level, effects at the meso- or macro-level necessarily derive from organised and structured sport programs. Strategically managed and organised sport programs can be an effective vehicle for social inclusion and the establishment of interpersonal friendships (Schulenkorf, 2010). In this regard, more studies are needed to examine the impact of organised and structured sport programs and interventions, such as SFDP programs on the resettlement of newcomers, particularly refugee youth.

Despite the fact that a newcomer‟s acculturation is influenced by various individual factors, such as gender, age at the time of migration and length of residence (Berry, 1997), most

previous studies failed to take into consideration his/her sport participation in a host society. In other words, the patterns and tendencies of sport participation for refugee youth in the host society varies according to these individual factors (Spaaij, 2013). To fill this gap, it is necessary for the stakeholders of SFDP programs to consider them as potential moderators.

Sport for development and peace programs and refugee youth

In refugee camps, sport programs are extensively utilised as a tool for youth development (Serena, 2009). The sport programs in refugee camps aim to provide educational opportunities and attempt to offer support during the psychological healing process from violence, conflict and war. The implementation of sport programs may also help to address other issues, such as health issues (HIV/AIDS), gender inequality and the empowerment of refugee girls, sexual violence of refugee women and girls, and unaccompanied and separated refugee children (Thachuk, 2007).

Recognising that a sport program is a viable cost-effective tool to facilitate development of refugee youth, the UNHCR has cooperated with various partners, including the IOC, *Right to Play*, Nike, FC Barcelona and others to expand its sport programs in refugee camps. *Right to Play* is one of the UNHCR‟s significant partners and a leader in the world of refugee youth‟s sport and play. It is an international, athlete-driven NGO that uses sport and play to enhance the development of children and youth. Some anecdotal evidence from the UNHCR and *Right to Play* shows that sport programs in schools at refugee camps result in the following positive outcomes: (a) the rise of school attendance rates; (b) reducing aggressive and violent behaviours; (c) improving educational levels; and (d) healing psychological problems associated with war and conflict (UN, 2003:9).

Based on a partnership with the UNHCR, one of the first SFDP initiatives that Nike launched for refugee youth is "Together for Girls" in 2004 (Thachuk, 2007). This initiative employed sport as a tool for refugee girls‟ integration, education and development. As a result of the initiative, there has been a significant increase in girls‟ participation in sport and school enrolment. In addition, Ninemillion.org was created in 2006 by the UNHCR in partnership with Nike and Microsoft. This campaign aims to provide better access to education, sport and technology for nine million refugee children (Ninemillion.org, n.d.). Lastly, *Sport Works Chad*, a partnership with the UNHCR, was a sport program designed to increase access to regular and inclusive sport and play activities that promote peace-building skills (e.g. fair play, teamwork), community cohesion and conflict resolution skills (SDP IWG, 2007).

There are a plethora of SFDP programs for refugee youth. However, almost all SFDP programs designed for them occur in the most disadvantaged areas of the world, such as refugee camps in under-developed countries. In recent years, SFDP programs have begun paying attention to those who moved to developed host countries, such as the US, Canada and Australia, by recognising the benefits of sport for refugee youth in the resettlement in host countries (Olliff, 2008). The benefits include, but are not limited to, providing capacity-building opportunities, promoting physical and mental well-being and building community understanding (Olliff, 2008). Given that a number of people in refugee camps are moving to the developed countries, stakeholders involved in the SFDP movement should pay more attention to SFDP programs for refugee youth in the developed host countries, one of the isolated target populations for SFDP programs, using the construct of acculturation.

RECOMMENDATIONS FOR SPORT FOR DEVELOPMENT AND PEACE PROGRAMS AND RESEARCH: REFUGEE YOUTH

According to Berry (1986), refugees are regarded as a special type of group undergoing acculturation. In contrast to immigrants, refugees move to a new society based on involuntary motives and, contrary to native people, there is no established territory or culture to support refugees in a host society. If it is assumed that acculturation is stressful, and if there is undesired and unsupported change, refugees may experience more challenges than any other persons undergoing acculturation.

Particularly, refugee youth in the US face further challenges, such as: academic difficulties, language acquisition, social isolation and alienation, social adjustment with peers, negative peer pressure, cultural misunderstanding and adjustment to a new educational system. Given that it is well recognised that sport can serve as a "good medicine" for refugee youth, several recommendations for future research and practice for the SFDP movement, specifically those related to refugee youth in a host society, are proposed in relation to the conceptual framework for acculturation provided in this article (Table 1).

Firstly, SFDP programs for refugee youth should be developed and implemented by considering a variety of individual factors affecting their acculturation process, such as age at the time of migration and current age, gender, educational experience and length of stay in a host society. Assessing these various individual factors can help to identify individual differences of refugee youth, which in turn provide refugee youth with appropriate sport and physical activities to meet their particular needs and desires.

In acculturation literature, an acculturation scale generally assesses these individual factors. Giulianotti (2010:208) pointed out that one of the main limitations within the SFDP literature is the failure to move beyond case studies and "produce more analytical and generalized work", which has led to a relative lack of scientific evidence regarding the outcomes of SFDP programs for specific target groups. This may inhibit policy makers and practitioners from

maximising various positive impacts including increased self-esteem, personal development, life-skills, self-esteem and so forth. Thus, investigating these individual factors for refugee youth in SFDP programs, along with the acculturation construct, may be an essential step in establishing a strong body of knowledge for the outcomes of SFDP programs.

***TABLE 1*: CHALLENGES, ACCULTURATION FACTORS, AND SFDP PROGRAM RECOMMENDATIONS FOR REFUGEE YOUTH IN A HOST COUNTRY**

Challenges faced by refugee youth in a host country	Factors affecting acculturation	Sport for refugee youth: Program recommendations

Traumatic life experiences in a native country (e.g. political conflict, war-related violence and deprivation)	Individual factors: (a) age at the time of migration, (b) gender, (c) educational level, length of residence in a host country, motivations for moving (pull motive vs. push motive)	Develop and implement programs that will respect and embrace individual differences of refugee youth
Lack of financial resources, food, and medical service in a native country	Society of origin (first situation factor): political, economic, and demographic conditions of a native country	Utilise Berry"s (1990, 1997) four acculturation strategies (integration, assimilation, separation, marginalisation) to segment refugee youth and provide appropriate sport programs
Lack of educational opportunities in their native country	Society of settlement (second situation factor): a policy the host country has toward refugee youth	Foster an inclusive, collaborative environment (inter-group contact principles: equal status, potential friendship, common goals, institutional support, inter-group corporation)
Psychological stresses in the acculturation process (mostly caused by cultural distance between a native country and a host country)	Cultural distance between a native country and a host country	Enrich sport programs with other cultural activities (e.g. arts, music, poetry, theatre), along with a variety of sport activities
	Socialising agents: friends from their culture of origin, media, family members	Employ bilingual and bicultural instructors or coaches in program
	Contexts/locations: public or private spaces	Translate outreach materials as a way of recruiting refugee youth

Four acculturation strategies developed by Berry (1990, 1997) (integration, assimilation, separation, marginalisation), might be useful tools to segment refugee youth participating in SFDP programs. In other words, different sport and physical activities can be utilised depending on their acculturation strategies/patterns.

For example, if individuals have an integration strategy (high levels of identity in both cultures), some sport reflecting characteristics of both their homelands and the host society should be utilised, while those exhibiting an assimilation strategy are likely to participate in sport reflecting the characteristics and attributes of a host society. For those in a separation strategy, some sport and activities they used to play in their homelands should be employed in SFDP programs. Although this seems in contrast to the idea of SFDP (facilitating social inclusion), it can be overcome by implementing the programs flexibly. For example, while implementers of the programs provide familiar sport activities in their home countries during a certain period of time, other activities based on the interests of refugee youth can be implemented later.

Finally, certain types of novel and creative sport and activities are needed for those in marginalisation. Therefore, practitioners in SFDP programs should provide a variety of sport activities for refugee youth according to their acculturation strategies. It is also very important for researchers involved in the SFDP movement to examine which sport and activities are most appropriate for refugee youth on the basis of the four acculturation strategies. However, it should be noted that, because the most preferable method of acculturation strategy has been found to be integration (Berry, 2003), sport activities reflecting attributes of both a native and host country, such as soccer, may be more effective. This is also in accordance with one of the main goals of the SFDP movement, social inclusion.

As suggested in the conceptual framework (Figure 1), situational factors derived from both society of origin (political, economic and demographic conditions in one‟s homeland), and society of settlement (policies toward refugees), and socialising agents (friends from their own ethnic group), and contexts (private spaces vs. public spaces), can significantly affect newcomers‟ adaptation to a new society. As such, practitioners involved in SFDP programs first need to understand various customs, values, identities and behaviours refugee youth bring from their homelands and camps, and then understand how they adjust to those of the settlement society. The increase in political and cultural distance between the origin society and the settlement society may lead refugee youth to more acculturative stresses. These acculturative stresses may be exacerbated by discrimination from their peers with different ethnic and cultural backgrounds.

To minimise their acculturative stresses, practitioners in SFDP programs need to provide inclusive sport teams that facilitate multicultural environments. Creating multicultural and inclusive sport teams in implementing SFDP programs is a critical part of building a sense of cohesion, inclusion and inter-group tolerance. It is important to note that these inclusive sporting environments can be fostered by understanding that "refugee settlement is a two-way process of mutual accommodation requiring adaptation on the part of both the migrant and the host society" (Spaaij, 2013:38). Aside from sport and physical activities, SFDP programs with other cultural activities, such as arts, music, theatre and poetry may also contribute to alleviating acculturative stresses. These are consistent with recommendations for effective sport-for-development programs suggested by Lyras and Welty Peachey (2011).

The literature on the role of sport for newcomers has shown that language difficulties were the most frequently reported challenge for sport participation in a host society (Doherty & Taylor, 2007). One of the practical solutions for the language barriers is to employ bilingual/bicultural instructors or coaches. Involving the bilingual and bicultural staff and volunteers is critical in developing a sense of trust with refugee youth. In addition, translating outreach materials related to SFDP programs is also a good way to recruit refugee youth. Given that being well-trained and committed to the target population are keys to success (SDP IWG, 2008), the employed bilingual/bicultural instructors should go further through the proper training process provided by leading organisations.

CONCLUSIONS

The current study identified a variety of challenges faced by refugee youth in a host country and suggested recommendations for SFDP programs by utilising the construct of acculturation. Table 1 presented challenges that refugee youth face with various factors

affecting acculturation, and recommendations for SFDP programs for these factors. In conclusion, despite the recent increase in the use of sport for development purposes in the world, refugee youth in the resettlement process represent a relatively marginalised population of the SFDP programs. Given that the movement of refugee youth is strongly associated with the acculturation framework, future SFDP programs and initiatives need to thoroughly consider the acculturation process within the programs and interventions. Furthermore, a variety of factors (individual factors, cultural distance between the origin society and the settlement society), influencing their resettlement to a new society should be incorporated in SFDP programs. This article hopefully made a contribution by providing a theoretical basis for SFDP programs that are still struggling with the absence of substantial scientific evidence and theoretical frameworks.

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ORGANISATIONAL COMMITMENT LEVELS OF FACULTY MEMBERS IN SPORT EDUCATION INSTITUTIONS IN TURKEY

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ABSTRACT

This study aimed to reveal the organisational commitment levels of faculty members to teaching at higher education institutions in Turkey. To be able to obtain participants' views, the organisational commitment scale developed by Allen and Meyer in 1990 was used and data was analysed by means of the SPSS 17.0 program. A significant difference was found in the sub-components of affective commitment in terms of tenure related differences and tenure in job status in the organisation. Some significant differences were reported in age, education status and academic rank variables of continuance commitment. No significant differences were seen in any of the normative commitment variables. In addition, a significant positive, medium-level and linear relationship was found between affective commitment and normative commitment. Also a significant positive and linear but low level relationship was obtained between continuance commitment and normative commitment.

Key words: Higher education; Sport schools; Organisational commitment;

Faculty members.

INTRODUCTION

Today‟s organisations expect their employees to make efforts to recommend success. Organisations take into consideration their employees‟ authority, their overcoming of problems, becoming successful and reaching perfection. Hiring employees with such features and motivating them to work for the long-term in relation to the objectives of the organisation are two important points to bear in mind. Urging the employees toward attaining the organisational goals, in other words, motivating them is connected not only with situational factors but also with individual differences (Kaya & Selçuk, 2007). Employees feeling a commitment towards the organisation where they work are indeed the principal and the necessary power for their institutions (Chen, 2004).

The fact that employees have enough knowledge and skills is not sufficient for organisational success on its own. The success of the organisations has to do with the reflection of employees‟ knowledge of and skills in their work. Positive attitudes, strong dependence and their feelings for the organisation are necessary (Bolat & Bolat, 2008). Organisational commitment is the most important factor in reaching organisational objectives. Therefore, all organisations expect to increase the level of commitment of the faculty members. The fact that employers make the employees feel they are distinguished, help them participate in decision making processes and conducting healthy communication is essential to create the kind of organisational commitment desired. Similarly, employees would be of the opinion that organisational commitment is beneficial not only for the organisation but also for them.

Taking into consideration management‟s support of organisational commitment of which they think they have a right, employees would also help the organisation‟s management to create an ideal working environment and understanding (Bayram, 2005).

Relevant literature suggests that Porter *et al*. (1974) came up with the most common definition of the organisational commitment concept. Commitment takes place, according to their definition, when individuals identify with the organisation and strive towards the objectives and values of the organisation (Çöl, 2004; Feinstein, 2006; Paulin *et al*., 2006). Organisational commitment covers psychological holism, identification, stabilisation and behaviour (Drummond, 2000). Furthermore, organisational commitment is a feeling that reveals the harmony between belief and behaviour of individuals (Huczynski & Buchanan, 2001). Organisational commitment covers three components (Maxwell & Gordon, 2003):

- Acceptance of the organisation‟s goals and values and strong belief in them;
- Willingness to make efforts in attaining the organisational goals; and
- Strong desire to continue adherence to the organisation.

Some of the most widely recognised and used organisational commitment models in the literature are that of Allen and Meyer (1990), Cohen (2007) and Seymen (2008). Their models consist of three components: „affective commitment‟; „continuance commitment‟; and „normative commitment‟. *Affective commitment* is defined as the employee‟s affective attachment to the organisation, identification with it, internalisation of the organisation‟s values, goals and objectives, as well as making an effort to attain those goals and objectives and the desire to be a part of the organisation. *Continuance commitment* is the need to stay in

the organisation because the employee perceives a high cost of loss when leaving the organisation, hence feeling the obligation to continue with the organisational membership. *Normative commitment* is the feeling of the employees not to leave the organisation because he/she feels a moral obligation and responsibility for the organisation (Allen & Meyer, 1990; Arnett *et al*., 2002).

With the above-mentioned definitions, a long process is required to create the organisational commitment of employees. In the organisations where organisational commitment is not created, organisation culture is not settled and such organisations are faced with extinction in the long-term. The employees having a say in the management should pay attention to the topics (organisational commitment, organisational culture and organisational atmosphere), in organisational context. Higher education institutions, like other organisations, should hold the highest organisational commitment among their employees in the context of total quality.

This study aims to reveal faculty members‟ levels of organisational commitment to teaching at higher education schools of sport. Especially in determining the commitment levels of faculty members to their institutions will certainly contribute to education by quality staff in terms of vocational proficiency, as well as to the satisfaction of the needs of staff in the sport sector. It is also expected to help administrations to improve the strategies within such organisations. Since there has not been previous research on this topic, this study could contribute to filling the gap.

METHODOLOGY

The sample of the study consisted of mainly faculty members teaching at schools for sport at higher education institutions in Turkey. A total of 123 faculty members from these schools participated in the study.

To determine the level of organisational commitment of the participants at their schools, a scale developed by Allen and Meyer (1990), was used based on the reported reliability of this scale by Deniz (2010). This organisational commitment scale is composed of 3 components: affective commitment (6 items); continuance commitment (6 items); and normative commitment (6 items). The data obtained was analysed using the SPSS 17.0 program. The Cronbach Alpha coefficient of the scale‟s reliability was found to be 0.816 for affective commitment, 0.654 for continuance commitment and 0.779 for normative commitment. The overall Cronbach Alpha coefficient value of the scale was found to be 0.862. Frequencies and percentages were calculated to reveal the socio-demographic variables of the study group. The differences between mean scores of the scale were measured using the t-test, which is employed for comparison of 2 independent groups according to independent variables. The Kruskall Wallis H-test was used for to analyse the scores of more than 2 groups, as the data did not satisfy parametric testing of the hypothesis. In cases where a statistically significant difference was found, the Mann Whitney U-test was employed to find the origin of the difference. The Spearman rank correlation coefficient was employed to determine the relationship between the mind-sets. The statistical significance level was set at $p<0.05$.

RESULTS

The findings obtained to reveal the level of organisational commitment of the faculty members teaching at schools of sport at higher education institutions are presented in the

following tables in accordance with the objectives of the study.

The results indicated that there were no significant differences between the **gender** groups within the study regarding the 3 organisational commitment components (Table 1).

***TABLE 1*: ORGANISATIONAL COMMITMENT DIFFERENCES BETWEEN GENDERS**

Scale	Gender	n	Mean	SD	t-Value	p-Value
Affective commitment	Males Females	93 30	20.76 20.56	5.02 5.33	0.184	0.855
Continuance commitment	Males Females	93 30	16.20 16.26	4.73 4.92	-0.062	0.951
Normative commitment	Males Females	93 30	17.34 16.30	4.98 4.48	1.022	0.309

SD= Standard Deviation

A significant differences was found with regard to the **age** variable within the *continuance commitment* component of organisational commitment for the age group, 21 to 30 years (Table 2). Those who were younger had a higher mean score (Mean=19.71) in continuance commitment while in other components no significant differences were obtained.

***TABLE 2*: ORGANISATIONAL COMMITMENT DIFFERENCES AMONG AGE GROUPS**

Scale	Age	n	Mean	SD	X^2	p-Value	U-test
Affective commitment	(a) 21-30 (b) 31-40 (c) 41-50 (d) 51 +	14 43 46 20	19.50 19.55 21.21 22.90	4.16 5.42 5.34 3.37	7.363	0.061	–
Continuance commitment	(a) 21-30 (b) 31-40 (c) 41-50 (d) 51 +	14 43 46 20	19.71 16.11 15.80 14.90	4.87 5.04 4.60 3.41	8.287	0.040*	a-b a-c a-d
Normative commitment	(a) 21-30 (b) 31-40 (c) 41-50 (d) 51 +	14 43 46 20	17.85 16.90 16.82 17.55	4.34 5.14 4.75 5.11	0.569	0.903	–

* $p<0.05$ SD= Standard Deviation

A significant difference regarding **education status** was found in favour of the Bachelor"s degree status graduates (Mean=20.66), when compared with the post-graduate status groups for the *continuance commitment* component of organisational commitment (Table 3). No significant differences were observed within the remaining components.

***TABLE 3*: ORGANISATIONAL COMMITMENT DIFFERENCES BASED ON EDUCATION STATUS**

Scale	Educ. status	n	Mean	SD	X^2	p-Value	U-test
Affective commitment	(a) Bachelor	9	19.33	6.32	0.902	0.637	–
	(b) Master"s	27	20.25	5.26			
	(c) Doctorate	87	21.00	4.91			
Continuance commitment	(a) Bachelor	9	20.66	4.92	8.926	0.012*	a-b a-c
	(b) Master"s	27	16.96	4.07			
	(c) Doctorate	87	15.52	4.70			
Normative commitment	(a) Bachelor	9	16.00	3.57	2.724	0.256	–
	(b) Master"s	27	18.37	4.59			
	(c) Doctorate	87	16.80	5.03			

* p<0.05 SD= Standard Deviation

Significant differences were found with regard to the **academic rank status** in the lower dimension of *affective commitment* and *continuance commitment* for organisational commitment depending upon academic captions in research group (Table 4). It has been reported that *affective commitment* is higher in academic staff (Mean=24.37), with the title of professor. The fact that score averages were lower where the academic title was higher, a lower dimension of *continuance commitment* was determined. The lower mean scores were found among the higher rank academic faculty members. Research assistants and the instructors attained higher mean scores of 19.20 and 18.94 respectively.

***TABLE 4*: ORGANISATIONAL COMMITMENT DIFFERENCES BASED ON ACADEMIC RANK**

Scale	Acad. Rank	n	Mean	SD	X^2	p-Value	U-test
Affective commitment	(a) Professor	8	24.37	1.06	11.082	0.050*	a-d a-e c-d
	(b) Assoc. Prof.	6	20.50	4.41			
	(c) Assist. Prof.	49	21.38	5.35			
	(d) Res. Assist.	15	18.40	4.85			
	(e) Lecturer	27	19.74	5.31			
	(f) Instructor	18	20.72	4.66			
Continuance commitment	(a) Professor	8	14.87	2.03	24.781	0.000*	a-f b-d b-f c-d c-e c-f
	(b) Assoc. Prof.	6	13.50	4.03			
	(c) Assist. Prof.	49	14.04	3.73			
	(d) Res. Assist.	15	19.20	5.45			
	(e) Lecturer	27	17.70	5.05			
	(f) Instructor	18	18.94	4.10			
Normative commitment	(a) Professor	8	19.37	6.61	7.369	0.195	–
	(b) Assoc. Prof.	6	20.16	6.17			
	(c) Assist. Prof.	49	16.34	4.80			
	(d) Res. Assist.	15	16.60	4.96			
	(e) Lecturer	27	17.74	4.61			
	(f) Instructor	18	16.50	3.76			

* p<0.05 SD= Standard Deviation

It has been reported that *affective commitment* is higher in academic staff (Mean=24.37), with the title of professor. The fact that score averages were lower where the academic title was higher, a lower dimension of *continuance commitment* was determined. The lower mean scores were found among the higher rank academic faculty members. Research assistants and the instructors attained higher mean scores of 19.20 and 18.94 respectively.

Concerning **job status** (Table 5), the only significant difference was found between heads of departments (Mean=23.42) and „Other" (Mean=19.95) groups for the *affective commitment* component of organisational commitment.

***TABLE 5*: ORGANISATIONAL COMMITMENT DIFFERENCES BASED ON JOB STATUS**

Scale	Job status	n	Mean	SD	X^2	p-Value	U-test
Affective commitment	(a) Manager	3	25.00	1.00	10.812	0.013*	c-d
	(b) Assist Man.	6	22.00	2.75			
	(c) Head Dept.	19	23.42	3.37			
	(d) Other	95	19.95	5.30			
Continuance commitment	(a) Manager	3	14.66	1.15	3.899	0.273	–
	(b) Assist Man.	6	14.50	2.88			
	(c) Head Dept.	19	14.78	4.96			
	(d) Other	95	16.66	4.83			
Normative commitment	(a) Manager	3	21.00	3.60	5.674	0.129	–
	(b) Assist Man.	6	18.83	6.11			
	(c) Head Dept.	19	15.26	5.27			
	(d) Other	95	17.22	4.66			

* $p<0.05$ SD= Standard Deviation

For the **job tenure status** variable (Table 6), significant differences were found between the groupings in the study with regard to the *affective commitment* component of organisational commitment. The highest mean (Mean=23.03) was scored by the 21+ years grouping representing the more experienced faculty members who showed stronger feelings of *affective commitment*.

***TABLE 6*: ORGANISATIONAL COMMITMENT DIFFERENCES BASED ON JOB TENURE STATUS**

Scale	Tenure status	n	Mean	SD	X^2	p-Value	U-test
Affective commitment	(a) 0-5	11	18.09	4.03	10.871	0.028*	a-e b-e
	(b) 6-10	21	19.57	4.71			
	(c) 11-15	34	20.47	6.00			
	(d) 16-20	31	20.74	5.09			
	(e) 21+	26	23.03	3.62			
Continuance commitment	(a) 0-5	11	18.63	4.63	3.431	0.488	–
	(b) 6-10	21	16.00	5.92			
	(c) 11-15	34	16.23	4.71			
	(d) 16-20	31	15.64	4.82			

	(e) 21+	26	16.03	3.69			
Normative commitment	(a) 0-5	11	16.45	3.61	7.243	0.124	–
	(b) 6-10	21	17.76	4.84			
	(c) 11-15	34	16.32	4.98			
	(d) 16-20	31	16.00	4.78			
	(e) 21+	26	19.11	4.91			

* $p<0.05$ SD= Standard Deviation

A significant difference was found for the *affective commitment* component between the groups in the study with regard to the **tenure status** at their **own institution** (Table 7). This difference was between the groups with 1 to 3 years (Mean=18.66), and 10+ years (Mean=21.78) experience. Those who had more than 10 years experience had a higher mean score for *affective commitment* compared to their colleagues with the least years of experience.

***TABLE 7*: ORGANISATIONAL COMMITMENT DIFFERENCES BASED ON TENURE STATUS OF FACULTY MEMBER AT OWN INSTITUTION**

Scale	Tenure own	n	Mean	SD	X^2	p-Value	U-test
Affective commitment	(a) 1-3	18	18.66	5.01	8.130	0.043*	a-d
	(b) 4-6	12	18.83	5.14			
	(c) 7-9	19	19.68	5.94			
	(d) 10+	74	21.78	4.64			
Continuance commitment	(a) 1-3	18	14.50	5.79	4.658	0.199	–
	(b) 4-6	12	16.08	5.97			
	(c) 7-9	19	18.05	4.31			
	(d) 10+	74	16.18	4.29			
Normative commitment	(a) 1-3	18	16.44	4.47	0.611	0.894	–
	(b) 4-6	12	16.41	4.99			
	(c) 7-9	19	17.73	4.71			
	(d) 10+	74	17.18	5.03			

*$p<0.05$ SD= Standard Deviation

The **relationship** between *affective* and *normative commitment* of organisational commitment (Table 8) was significant, positive, linear and at a medium level ($r=0.437$; $p<0.05$). Similarly, a significant, positive and linear, but low level of relationship was observed between *continuance* and *normative commitment* ($r=0.246$; $p<0.05$).

***TABLE 8*: CORRELATION AMONG COMPONENTS OF ORGANISATIONAL COMMITMENT**

Scale	Identifiers	1	2	3
1. Affective commitment	r	1		
	p	-	–	–
	N	123		
2. Continuance commitment	r	0.025	1	
	p	0.781	-	–
	N	123	123	

3. Normative commitment	r	0.437*	0.246*	1
	p	0.000	0.006	-
	N	123	123	123

r = Correlation coefficient p = Significance N = Number of subjects
* $p<0.05$ SD= Standard Deviation

DISCUSSION

Employees and managers should hold positive attitudes and behaviour in institutions where competition is stronger due to globalisation and to avoid extinction. One of the factors that influence these attitudes and behaviour is organisational commitment. An analysis of the following findings was, therefore, taken into account to shed light on this area of study.

In the present study, no significant difference was observed in terms of the gender variable ($p<0.05$). This confirms the findings of previous research related to this study. It is assumed that higher education institutions provide more equal working conditions to the faculty members when compared to those in other sectors. Some researchers (Tao *et al*., 1998; Özmen *et al*., 2005; Kormaz, 2010) also found no significant difference between genders concerning organisational commitment.

A significant difference occurred with regard to age for the continuance commitment component of organisational commitment in the case of the 21 to 30 year group (Table 2). It was found that younger faculty members had higher mean scores due to a more positive response to the statements. Based on a meta-analysis, age had a weak, but more positive affective and normative dimension relationship according to Meyer *et al*. (2002). Some researchers (Shaw *et al*., 2003; Smeenk *et al*., 2006; Popoola, 2009), found that age did have an affect on organisational commitment. On the contrary, Tao *et al*. (1998), in their study reported that no significant relationship was observed for age and organisational commitment, while Meyer *et al*. (1993) found that age related to all three components of organisational commitment although the relationship was low but still positive.

A significant difference was found in terms of the education background variable at the continuance commitment of organisational commitment (Table 3). It was found that the continuance commitment mean scores decreased when academic rank was higher. Based on relevant literature, for instance, Çutuk (2011) suggests that there was a negative correlation between organisational commitment and education background. It turned out to be that the higher the education background, the lower the organisational commitment.

It has been found that affective commitment was higher for the academic rank of professor. In contrast, for continuance commitment the mean score was lower as the academic rank became higher, which is confirmed by previous findings (Table 4). Boylu *et al*. (2007) in their study found that the affective, continuance and normative commitment levels of academic staff ranking, depended on the department and university in general, which is comparable to the findings of the present study where no significant difference was found for the normative commitment in the department where they were affiliated. For normative commitment in terms of attitude toward the university in general, there was a significant difference ($p<0.05$) in terms of attitude toward both the university and the department.

A significant difference was found between the groups in the current study with regard to

tenure status of faculty members at their own institution for the affective commitment component of organisational commitment. The affective commitment mean scores of the faculty members, who served more than 10 years at the organisation, were found to be higher.

The findings of Çutuk (2011) are in agreement of the present study. The longer the employees worked at the institution, the more committed they were to their organisation.

When the results were examined in terms of components, it was found that a significant difference existed between the affective commitment component in terms of job status, tenure status and tenure status within the faculty member‟s own organisation, while no significant relationship was observed in terms of gender, age, education background and academic rank. The continuance commitment component of the scale produced a significant difference in terms of age, education background and academic rank. For this component, no significant difference was obtained in terms of gender, job status, tenure status and job tenure status. Likewise, for normative commitment, no significance difference was found in terms of any of the variables. Wasti (2000), in his study on employees in Turkey, found a negative relationship between normative and affective commitment and taking leave from work. Continuance commitment was, therefore, not a factor that influenced taking leave from work.

Researchers found that those having affective commitment stayed in the organisation because they wanted to, while those with strong normative commitment stayed because they had to do so, and those with strong continuance commitment stayed because they needed to work in the organisation. Bolat and Bolat (2008) and Seymen (2008), suggested that this situation could be interpreted as desire (affective), need (continuance) and obligation (normative).

Arbak and Kesken (2005) explain in their research that the reasons for organisational commitment were primarily personal characteristics, work experience, job and function. In the same study, it is suggested that discontinuity, performance and release are the most mentioned outcomes of organisational commitment. In the curtrent study, a positive, linear and medium level of correlation between affective and normative commitment (Table 8), helped faculty members who participating in the study to see themselves as part of their organisation. This enhanced the feelings of assignment and responsibility that they internalised, motivated continuance with their organisation and positively influenced commitment to their institution.

Creating a shared vision within the organisation should be one of the most important tasks of administrators. It is necessary that they should make their employees feel important in the organisation in terms of organisational commitment. Therefore, providing participation in decision-making, delegation of authority and providing resources needed may be beneficial (Bolat & Bolat, 2008). It may be difficult and take a lot of time to create an organisational commitment in sport education institutions, as well as other institutions. In addition to this, maintaining organisational commitment may require extra effort.

In a nutshell, the levels of organisational commitment of faculty members teaching at higher sport education institutions vary in all components. Therefore, it is highly essential that administration and faculty members should take into consideration the factors that would strengthen the level of organisational commitment and encourage employees to stay in the organisation. Faculty members that work in one of the sectors that deal with the individual, such as sport teaching institutions do, have the duty to educate those that would shape society

and future generations. The feeling of organisational commitment of faculty members in sport education schools where they teach, will be effective in the performance of the institution and

quality-assurance. Running activities at an effective level in sport education institutions mainly depends on high levels of commitment of faculty members. Internalisation of values and aims of the organisation by faculty members will enable them to work more for their institutions and wish to stay employed at the institution. This situation would create a satisfactory working environment.

RECOMMENDATIONS

Based on the results of study, the following suggestion can be made to increase the level of the organisational commitment of sport education institutions:

- Some systematic practices should be included for the development of organisational commitment in sport education institutions;
- Suggestions of and criticism from faculty members should be taken into account when creating and developing organisational commitment in these institutions;
- An effective communication and reward system should be established within the sport education institutions,
- Individual goals of the faculty members and objectives of the organisation should be combined and be encouraged.

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CHEATING: THE DARK SIDE OF SPORT

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ABSTRACT

There is a dearth of empirical data about cheating in sport. This study attempts to help fill this void by investigating perceptions regarding cheating in sport. The sample consisted of 233 final-year university sport science male (n=137) and female (n=96) students. The responses to a self-designed questionnaire revealed that females were less accepting of cheating than male respondents. Furthermore, rugby players indicated a greater tolerance of deliberate rule infringement than participants of other sports and non-sport respondents. The concept of "game reasoning", which allows for deviations of moral reasoning, is discussed.

Key words: Cheating; Moral reasoning; Ethics in sport; Fair play.

INTRODUCTION

> "Serious sport has nothing to do with fair play. It is bound up with jealousy, hatred, beastliness, disregard of all rules and sadistic pleasure in witnessing violence. In other words, it is war minus shooting" — George Orwell (quoted in Launder, 2001:5).

In 1971 Ogilvie and Tutko published their famous article: "Sport: If you want to build character, try something else." In a similar vein, Kretchmar (1994:239) refers to the symptomatic "moral callouses" in sport when deliberate rule violation is negated as shrewd strategy. In contrast, there are many who believe that everyone is doing it and that there is nothing wrong with it. They suggest that the use of "wits" in addition to skill and strategy, adds a dimension that makes sport more interesting (Leaman, 2001).

The media regularly report instances of cheating in sport (Miller *et al*., 2005). One of the most infamous acts of cheating happened during the Soccer World Cup quarterfinal in 1986 when Diego Maradona illegally punched the ball into the net to score a goal for Argentina against England. The referee did not spot the infringement and Argentina won the game. Afterwards, Maradona proclaimed that the "hand of God" had scored his goal (Dixon, 2001:53).

Twenty years later, after the 2006 Soccer World Cup, Lawton (2011:23) wrote:

> "So many games were decided not by skill but a sleight of dubious hand. The dive is no longer an outrage; it is an intrinsic part of the game. Here was where the 18th World Cup took its greatest defeat".

Cheating is defined as a violation of the rules to gain an unfair advantage over an opponent (Jones & Pooley, 1986). However, there are those who accept some forms of cheating as an

inherent facet of sport. Furthermore, they reason that if there is an ethos of accepting breaching of the rules within a specific sport, it is not considered wrong, because there is no "unfair advantage". In other words, participants have a choice whether they want to make use of such opportunities without violating the shared interpretation of the rules (Leaman, 2001). Also, a professional foul (for example, in basketball, water polo and rugby), is not seen as

cheating: It is labelled “gamesmanship” because the offender does so openly and knows that he/she will almost certainly be penalised.

Cheating in sport can be classified as either institutionalised or deviant (Eitzen, 1979). Institutionalised cheating includes illegal behaviour (wasting time) that is accepted as part of the game. Many years ago the multitalented British sportsman, Charles Fry, said: “In football it is widely acknowledged that if both sides agree to cheat, cheating is fair” (quoted in Jarman, 1990:197). Deception, and even aggression and violence, that are morally suspect in the everyday life, are accepted (Edgar, 1998). Deviant cheating, on the other hand (accepting a bribe or doping), is frowned upon and is usually severely punished.

There are, of course, many people who lament the prevalence of cheating in sport. They maintain that it ruins the integrity, value and image of sport. It is not only illegal but also contrary to the spirit of fair play (Preston & Szymanski, 2003).

According to Bredemeier *et al*. (1986a), cheating is an indication of a low level of moral reasoning. Bredemeier and Shields (1986) concluded that non-athletes have a higher level of moral reasoning than a sample of basketball players. Female respondents also displayed a higher level of moral reasoning than their male counterparts. Hall‟s research (Bredemeier & Shields, 1993), supported these findings when he found that college basketball players‟ moral reasoning was lower than their non-athletic college peers. Smith (2003), in contrast, found no differences in moral reasoning between 15 rugby players and 15 non-rugby players.

Kavussanu and Spray (2006) presented 525 footballers with scenarios describing cheating and aggressive behaviours, which are likely to occur during a match. The players perceived the general team atmosphere in football conducive to cheating. The researchers concluded that the perceived performance climate was associated with low levels of moral functioning.

Jones and Pooley (1986) conducted a comparative study of perceptions of cheating in rugby between British and Canadian players. Players were asked to respond to four specific situations in rugby. Both groups admitted that they would cheat in some or all the situations. But, the researchers concluded that the Britons were subtler in their cheating, while the Canadian players were more open when cheating. They concluded that the players‟ perceptions of winning affected their responses. These perceptions are based on cultural beliefs.

Vallerand and Losier (1994) propose that understanding why athletes play sport might help to explain how they play it. As Shields and Bredemeier (2007) emphasised, a limitation of studies on morality is the absence of “why” explanations, in other words, the reasons participants choose certain values or engage in a particular type of behaviour over others. The reasons that determine behaviour (have fun, opportunities for social affiliation, etc.), might steer athletes toward pro-social behaviours such as helping others, and adhering to the rules

of the game, which is generally classified as sportspersonship. In contrast, motives, such as the pursuit of extrinsic rewards and social approval or the avoidance of guilt and punishment, are more likely to lure athletes away from sportspersonship acts and closer to antisocial attitudes or behaviours (cheating, upsetting the opposition psychologically).

The notion that sport builds character remains a strong belief in contemporary society (Sage,

1990). This perpetuates the belief that sport participation per se contributes to character building and the development of moral attitudes (such as fair play) that can be transferred to other contexts. However, this notion does not have a firm empirical foundation (Shields & Bredemeier, 2007). Mewett (2002) is also somewhat cynical about this when he argues that fair play is simply an ideology aimed at hiding amateurism.

PURPOSE OF THE STUDY

Due to the professionalisation of modern sport, it is imperative to study the moral and ethical issues inherent in sport (Malloy, 1982). The current study deals only with on-field cheating (deliberately infringing the rules of the contest).

Sport has been advocated as a builder of character throughout history from the earliest writings of Plato to contemporary declarations of educators, administrators and politicians. This popular belief has not been challenged often, but the current prevalence of cheating and corruption in sport has highlighted valid questions about the contribution of sport to moral development. There is a dearth of empirical studies on moral development and sport (Malloy, 1982; Bredemeier & Shields, 1993). The longstanding accepted belief in the moral value of sport could probably explain the dearth of empirical investigation into this matter. The aim of the study was to fill some of this void by comparing perceptions of different groups regarding on-field cheating in sport.

RESEARCH PROTOCOL

Sample

The research sample was made up by 233 final-year university sport science students (Male=137; Female=96; Mean age=20.3 years; Age range=18 to 26 years). Almost half of the sample (45%) was rugby players.

Procedure

The researcher distributed a questionnaire, which was available in English and Afrikaans, at three sport psychology lectures over a 3-year period. The students were requested to complete 1 questionnaire in the lecture room and give an adjusted copy to another student to complete at home. The recipient of the latter questionnaire had to be someone who had not participated in sport in his/her final 2 high-school years. These students, classified as non-participants, received a questionnaire with only the relevant questions.

Participation in this study was voluntary. The students were also instructed not to hand in a questionnaire if they had any doubt about the way (honesty) their student friend/acquaintance had completed it.

Measuring instrument

The author developed a questionnaire after reviewing the literature on ethics and moral development in sport and after consulting with 3 provincial rugby players and 2 experienced elite coaches. The questionnaire contains four biographical questions and 18 questions pertaining to sport ethics. Subjects had to respond to each question on a semantic differential scale ranging from 1 to 10. The poles of the scale were anchored by words such as *Nothing*

wrong with it on the one end (1) to *Extremely wrong,* on the opposite end of the scale (10).

RESULTS

Table 1 presents the mean scores for each of the 18 questions as attained by the females and males, the rugby players, and the sport participants and non-participants.

***TABLE 1*: MEAN RESPONSES TO QUESTIONS OF THE QUESTIONNAIRE**

Questions

Females (n=96)		

Males
(n=137)

	Rugby (n=106)	**Part.** (n=209)

Non-part. (n=24)

Q1. How important do you personally consider winning in sport?

Q2. How do you normally experience losing in sport?

Q3. What is your opinion of a person deliberately infringing the rules in sport?

Q4. Do you think that deliberately wasting time in order to prevent the opponents from winning in sport is "cheating"?

Q5. Do you consider holding on to the ball after the opponents have been awarded a penalty kick/free throw/ etc. [preventing the opponents from taking it quickly] as "cheating"?

Q6. Would you deliberately infringe the rules in sport in order to help yourself gain a personal advantage over your opponents?

Q7. Would you deliberately infringe the rules in sport in order to help your team gain a personal advantage over your opponents?

7.1	8.1
5.3	6.4
9.1	8.0
6.6	6.1
6.8	6.1
3.1	5.1
3.2	5.5

8.3	7.8	6.9
6.6	6.2	—
7.9	8.4	8.5
6.1	6.4	5.9
6.0	6.4	6.4
5.4	4.3	—
6.0	4.7	—

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TABLE 1*: MEAN RESPONSES TO QUESTIONS OF THE QUESTIONNAIRE *(cont.)

Questions	**Females** (n=96)	**Males** (n=137)	**Rugby** (n=106)	**Part.** (n=209)	**Non-part.** (n=24)
Q8. Do you consider deliberately infringing the rules in sport without being seen by the referee, as "cheating"?	7.1	5.7	5.4	6.3	6.4
Q9. In your opinion, what is the prevalence of players deliberately infringing the laws of rugby as compared to other sports?	7.0	6.9	6.7	7.0	6.9
Q10. How often have you in the past deliberately infringed the rules in sport?	2.9	4.6	4.7	4.0	—
Q11. Do you consider a person who deliberately infringes the rules in sport as a "bad person"?	4.9	3.4	3.2	3.9	4.3
Q12. What, in your opinion, is the likelihood of sportspersons who deliberately infringe the rules in sport would also cheat in other spheres of life?	6.2	4.5	4.0	5.0	6.2
Q13. Do you think that rugby teaches players the wrong values?	3.8	2.8	2.2	3.1	3.6
Q14. Do you think that sport "builds character"?	9.0	8.6	8.7	8.8	8.7
Q15. Do you think that rugby "builds character"?	7.6	5.0	4.4	5.9	6.7
Q16. What is your opinion of a situation where a player injures an opponent in a crushing, but legal, tackle?	4.9	4.1	3.8	4.3	5.3

Q17. Do you think that sports coaches in general encourage [intentionally or unintentionally] their players to deliberately infringe the rules in sport?	5.4	4.8	3.7	5.2	5.3
Q18. Do you think that rugby coaches in general encourage [intentionally or unintentionally] their players to deliberately infringe the laws of rugby?	5.8	5.3	2.7	5.8	5.4

1 = *Definitely not*	10 = *Definitely yes*	Q8, Q11, Q13, Q14, Q15, Q17, Q18
1 = *Occurs very frequently*	10 = *Occurs extremely infrequently*	Q9
1 = *Never*	10 = *Regularly*	Q10
1 = *Extremely unlikely*	10 = *Extremely likely*	Q12
1 = *Extremely undesirable*	10 = *Extremely desirable*	Q16

The confidence level of significance [2-tailed] of the t-tests of differences between group means was set at $p<0.05$. Mainly significant differences were reported.

Comparison of perceptions of females and males

The mean scores of females differed significantly from those of the males on 12 of the 18 questionnaire items. They perceived winning as less important [Q1] and experienced losing less unpleasant [Q2] than males. They were more negative towards deliberate infringements in sport than their male counterparts [Q3; Q6; Q7; Q8]. They differed from the male respondents by reporting that they themselves had cheated less in sport [Q10]. They labelled cheaters in sport more strongly as "bad persons" than the male respondents [Q11]. They believed more strongly than male respondents in the likelihood that sportspersons who deliberately infringe the rules in sport would also cheat in other spheres of life [Q12]. Both males and females did not believe that rugby teaches players the wrong values. However, female‟s perception albeit strong, was less convincing than that of the male respondents [Q13]. Females showed less empathy than males for sportspersons who suffered injuries sustained in legal actions in sport contests [Q16].

Despite misgivings about cheating in sport both males and females nevertheless believed that sport in general, and rugby specifically, builds character [Q18; Q19]. This may sound surprising, but it must be kept in mind that the great majority of the respondents in this investigation were sport science students. One would expect them to hold positive attitudes about the value of sport, including its character-building potential.

Comparison of perceptions of sport participants and non-participants

The mean scores of non-sport respondents differed significantly from sport participants only on 3 of the 18 questionnaire items. They considered winning in sport less important than participants [Q1]. They also believed more strongly than sport participants in the likelihood that persons who cheat in sport would also cheat in other spheres of life [Q12]. Their attitude towards players being injured in sport, albeit within the rules of the particular sport, was not as negative as that of the active sport participants [Q16]. This finding could possibly be attributed to non-participants‟ lack of understanding and empathy of the impact that an injury might have on the well-being of a sportsperson.

Comparison of perceptions of rugby players and other sport participants

Rugby was singled out for special attention: firstly, because rugby players formed the largest group (45%) in the sample, and secondly due to the nature of the game. It is a high-contact game and there are many opportunities for infringing the laws of the game (rucks, mauls, scrums), which the solitary on-field referee and spectators may fail to spot.

The mean scores of rugby participants differed significantly from other sport participants on 14 of the 18 questionnaire items. They considered winning more important than other sportspersons [Q1] and consequently also experienced losing as more unpleasant than other sport participants [Q2]. In general, they were more tolerant towards deliberate infringements of the rules in sport [Q3; Q5; Q6; Q7; Q8; Q10; Q11]. They also believed more strongly than other sport participants that persons who cheat in sport would also cheat in other spheres of life [Q12]. They were more positive than other participants in their perception that rugby does not teach the wrong values [Q13].

Contrary to expectation, they believed less strongly than other sport participants in the character-building potential of rugby in particular [Q15]. Rugby respondents did not consider the consequences of getting injury [albeit in legitimate circumstances] as negatively as other sportspersons [Q16]. This may be an indication that they were realistic and accepted the risks

involved in playing the game. Rugby respondents believed more strongly than other sport participants that rugby coaches in general [intentionally and unintentionally] encouraged their players to deliberately infringe the rule in sport [Q18].

DISCUSSION

The current investigation produced similar results with regard to the gender differences pertaining to perceptions of the legitimacy of rule violations in sport in a study by Dodge and Robertson (2004), with a similar sample (university students). Sportswomen were less favourable in their attitude towards rule violations than their male counterparts. Some authors (Silva, 1983; Bredemeier *et al*., 1986b) propose that it is an indicator of the socialisation process. Boys are generally perceived as more aggressive than girls in sport, as well as outside the sport context. More boys consequently tend to participate in sport characterised by physical confrontation, which is often accompanied by assertive behaviour or aggression. This, in turn, heightens competitiveness, which could create a "win-at-all-cost" environment that accommodates cheating. Bredemeier and Shields (1986) go as far as claiming that high-contact sports are associated with immature moral reasoning.

Evidence suggests that it may not be sport as such but the emphasis on an ego orientation commonly found in high levels of competitive sport that may be partly responsible for the moral immaturity in sport. For example, Kavussanu and Roberts (2001) conducted a study with 56 male and 143 female athletes determining the moral functioning, sportsmanlike attitudes and judgments about the legitimacy of intentional injurious acts. They found that an ego orientation was associated with the judgement of behaviours, such as intimidating an opponent, faking an injury and risking injuring to an opponent as acceptable. In a later study Kavussanu and Ntoumanis (2003) confirmed that ego orientation mediated the effect of moral reasoning in student sportspeople. In other words, an ego orientation was associated with lower levels of moral reasoning.

Sage and Kavussanu (2007) set up an experiment to study the effects of task and ego

involvement in a competitive table soccer setting. Their observations revealed that players assigned to the task-involving condition exhibited more pro-social behaviour than those in the ego-involving and control groups. Subjects in the ego-involving group displayed more antisocial behaviours than those in the task-involving or control groups. They also observed that females engaged more frequently in pro-social behaviours than males.

Bredemeier and Shields (1986) point out that sport is sometimes characterised as a world separate from the world outside the contest where the norms of everyday life are often set aside. According to the social learning approach, moral development is socially defined. Moral behaviour is therefore actions that conform to the pro-social norms of a specific environment or society. Morality is therefore relative. What may be accepted as moral in one setting (the world of sport), may be unacceptable and condoned in another (life outside sport). Kretchmar (1998) supports this view and points out that one should look at cheating in sport within the setting in which it occurs. He argues that all games have settings. He bemoans the tendency of analysts who give the sport community advice on how they ought to act in sport, before considering the unique environment in which these normative actions occur. He argues that one cannot try to behave ethically *in vacuo* in a situation where competitiveness on the

one hand, and sportsmanlike behaviour, on the other hand, often place sportspersons in a conflicting situation. Sportsmanship implies that there are limits to competitiveness. Competitiveness suggests that athletes try their best to win, but sportsmanship dictates that it should be done only within the rules of the contest. "Trying to do ethics *in vacuo* may change athletes from vibrant, caring, connoisseurs of sport to generically nice players who are often confused about how they should act" (Kretchmar, 1998:31).

Likewise, Hyland (2001) points out that it is easy to automatically condemn cheating in sport as morally indefensible, but it is a much more complex phenomenon. It is suggested that while athletes are competing they are protected by a type of moral immunity that differs from the morality that is the norm outside the sport context.

Although sport is seen as a "world within a world", it cannot separate itself completely from the real world. Game reasoning must therefore continue to consider basic moral understandings. "To remain legitimate, the sport participant can only „play" at egocentrism. When the play character of game reasoning is lost, sport can deteriorate into a breeding ground of aggression, cheating and other moral defaults" (Bredemeier & Shields, 1993:596).

When game reasoning loses its "set aside" character, it can have an effect on moral reasoning beyond the context of sport. The increasing encroachment of "daily life" rewards (money) into sport may lead to a blurring of the distinction between sport and everyday life (Bredemeier & Shields, 1993:596). This could have a negative effect on the moral development of those who are intensely involved in sport.

A few theorists have used the social-learning approach to investigate sport morality. Studies by Kleiber and Roberts (1981), Orlick (1981) and Giebink and McKenzie (1985) have produced inconsistent results. No strong case could be made for the development of pro-social behaviour by means of sport experiences. But, there are indications that by implementing theoretically grounded instructional strategies, moral growth can be stimulated (Bredemeier *et al*., 1986b). Hellison *et al*. (1990), using physical education instruction, found positive results among at-risk youth in the promotion of pro-social behaviour, such as self-

control and respect for the rights of others. However, these studies do not pertain to elite competitive sport.

LIMITATIONS OF THE STUDY

Firstly, sport science students outnumbered other [non-sport] respondents, comprising 84% of the total sample. Consequently, the findings of this study can be generalised only to a similar population. Secondly, the focus on cheating presents one side of sport only: Pro-social behaviour received no attention. Lastly, it should be acknowledged that perceptions and reality might differ. However, the aim of the study was to compare the perception of cheating by different groups (males vs. females), and not the actual occurrence of cheating in sport.

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TRAINING VOLUME AND PERFORMANCE OF YOUNG SPANISH NATIONAL AND INTERNATIONAL LEVEL SWIMMERS

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ABSTRACT

The objective of the present study was to determine the volume of training of young national and international level swimmers, how it evolves and its relationship with performance. The sample comprised of 202 swimmers (11 to 18 years old), selected by the Royal Spanish Swimming Federation. The volumes of pool and dry-land training were evaluated together with the swimmer's performance during the season (LEN score). In general, there was a progression in pool training volume from the youngest swimmers (males 13 to 14 years; females 11 to 12 years), to the next age category (males 15 to 16 years; females 13 to 14 years). Training volume was related to performance only for the youngest swimmers, the possible reason being that, after this age, intensity is the most relevant aspect of the training load.

Key words: Planning; Training load; Swimming.

INTRODUCTION

Training for a sport is a long and difficult process involving many variables, which can influence the sportsperson's performance. Training seeks, by controlling these variables, to optimise performance based on the ability to tolerate high workloads (Faude *et al*., 2008). In swimmers, as in the case of other sportspersons, this process has to be ordered and structured (Villanueva, 2007), to allow swimmers to acquire the skills necessary to achieve their goals in adulthood.

Various factors influence swimming performance (Aspenes & Karlsen, 2012), such as physiological, morphological, biomechanical, technical and psychological factors, among

others. Although traditionally swimming training has mainly focused on improving the swimmer's physiological capabilities (Stager & Tanner, 2005), there have been studies examining the relationship of performance with other factors, such as kinanthropometric (Zuniga *et al*., 2011), motor (Coatsworth & Conroy, 2009), psychological (Psycharakis *et al*., 2008) and technical (Jurimae *et al*., 2007).

The improvement produced by training may on occasions be limited by genetics. For example, 45% of the variance in maximal oxygen uptake is genetically determined (Bouchard *et al*., 1997). Training must therefore focus on the remaining percentage, which can indeed be influenced (Richards, 2005). For this purpose, training load is critical for success (Mujika, 1998), and has to be structured according to its nature, orientation, organisation and

magnitude (Verjoshanskij, 1990). The nature of the workload can be defined as the work that is actually done and is determined by its specificity and training potential. The orientation is defined by the skill or capacity that is being worked on, and by the source of power that is used. The organisation entails the systematisation and structuring of the load. Finally, the magnitude can be defined as the relationship between the intensity and volume of training, with both high-intensity (but short duration) and low-intensity (but high volume) training being important components of training programs for sportspersons who compete successfully in intense exercise events (Laursen, 2010). Various researchers (Mujika *et al*., 1996; Chatard & Mujika, 1999; Maglischo, 2003; Faude *et al*., 2008; Soultanakis *et al*., 2012), have studied the relationship between volume and intensity in swimming.

An adequate combination of these characteristics is a prerequisite for efficient training. This combination is dependent on the duration and, therefore, on the metabolic requirements of discipline-specific competition (Faude *et al*., 2008). Coaches choose high-volume training at the beginning of the season to build a solid aerobic base for higher intensity training later (Aspenes & Karlsen, 2012). However, the literature in this regard is inconclusive. Some studies point to the importance of intensity for the success of training (Mujika *et al*., 1995, 1996; Chatard & Mujika, 1999), while others suggest that high training volumes do not provide any immediate advantage over lower volumes (with higher intensity) for swimming performance (Faude *et al*., 2008; Aspenes & Karlsen, 2012; Soultanakis *et al*., 2012).

PURPOSE OF THE STUDY

Most studies concur that it is necessary to establish a logical progression in training volume (Faude *et al*., 2008; Issurin, 2010). Most work on this topic has been on adult swimmers (Faude *et al*., 2008; Soultanakis *et al*., 2012), with very few studies on young swimmers. It is of particular importance to analyse how training volume influences performance in young swimmers because their training load is crucial during this formative stage of their sporting careers (Toubekis *et al*., 2011). The objective of the present study was therefore to determine the volume of training, how it evolves and its relationship with performance in young swimmers (11 to 18 years old), who compete at national and international level. The Bio-ethics Committee of the University of Extremadura (Spain) approved this study.

METHODOLOGY

Subjects

The swimmers' parents or legal guardians signed an informed consent form prior to the subjects' participation. The subjects of the study were 215 swimmers between 11 to 18 years old, selected by the Royal Spanish Swimming Federation (RFEN), and belonging to Spain's national teams. They were classified according to their category: „Cadet" – 66 males (13 to 14 years) and 67 females (11 to 12 years); „Youth" – 31 males (15 to 16 years) and 29 females (13 to 14 years); and „Junior" – 10 males (17 to 18 years) and 12 females (15 to 16 years). They had been chosen as participants in the *Detection and Follow-up of Sports Talent Program*, and in the *Future National Selection Program*, both of which are organised by Spain's Sports Council and the RFEN. The respective national team coach responsible for the different categories was responsible for the selection of the swimmers.

In the „Cadet" category, the top 66 swimmers were selected according to the score attained by applying the following equation:

$$\text{Points} = \frac{\text{LEN} + 2\left[\text{Height} + \text{Span} + (10 \cdot \text{Brocca Index}) + (10 \cdot \text{Span Index}) + (2 \cdot \text{Hand - Foot})\right]}{10}$$

where LEN = performance in points in the LEN table; Height of swimmer (cm); Span of swimmer (cm); Brocca Index = [Height – (Weight kg + 100)]; Span Index = [(Span-Height)/Height]·100, Hand-Foot = sum of the length and width of the hand and foot (LEN, 1996).

In the „Youth" and „Junior" categories, the two best swimmers in each event and speciality were selected. A summary of chronological age and body size of the participating swimmers is presented in Table 1.

***TABLE 1*: MEANS AND STANDARD DEVIATIONS FOR AGE AND BODY SIZE CHARACTERISTICS OF SWIMMERS ACCORDING TO GENDER**

	Cadet		**Youth**		**Junior**	
Variables	Males Mean ± SD	Females Mean ± SD	Males Mean ± SD	Females Mean ± SD	Males Mean ± SD	Females Mean ± SD
Age (years)	13.60 ± 0.56	11.51± 0.55	15.65 ± 0.43	13.67± 0.45	17.43 ± 0.52	15.48± 0.50
Height (cm)	171.12 ± 7.50	154.75 ± 7.47	176.80 ± 5.55	165.74 ± 7.19	179.25 ± 4.23	170.20 ± 5.47
Weight (kg)	57.95 ± 8.18	43.96 ± 7.17	69.50 ± 3.69	53.77 ± 5.67	67.80 ± 4.06	61.74 ± 7.10
Sitting height (cm)	80.46 ± 4.14	77.24 ± 4.10	83.78 ± 5.24	90.05 ± 3.21	84.99 ± 2.31	75.41 ± 5.21
Arm span (cm)	177.48 ± 8.77	158.86 ± 8.72	184.01 ± 5.94	170.17 ± 6.64	185.12 ± 3.21	173.43 ± 7.75

Evaluation of training and performance

The subjects completed a questionnaire on the number of hours spent per week on pool and dry-land training and the distance covered in metres per training session. The questionnaire items were the following:

i) *How many hours per week do you normally train in the water?* Possible responses: (a) 5 or less hours; (b) between 5.25 and 7.5 hours; (c) between 7.75 and 10 hours; (d) between 10.25 and 14 hours; and (e) more than 14 hours.

ii) *How many metres in the water do you normally cover in each training session?* Possible responses: (a) 2 500m or less; (b) between 2 501m and 3 500m; (c) between 3 501m and 4 500m; (d) between 4 501m and 5 500m; (e) between 5 501m and 6 500m; and (f) more than 6500m.

iii) *How many hours per week do you normally do dry-land training?* Possible responses:

(a) 0 hours; (b) 2 hours or less; (c) between 2.25 and 4 hours; (d) between 4.25 and 6 hours; and (e) more than 6 hours.

The swimmers completed the questionnaire during training sessions of the National Team. In the „Cadet" category, it was given at the end of the season, and the questions referred to that season. In the „Youth" and „Junior" categories, the questionnaire was given at the beginning of the season, and the questions referred to the previous season's training.

The variable „performance" was calculated as the best score according to the LEN table of competitive performance level. LEN scores measure how close a certain personal best time is to the World Record in each competitive event, allowing times to be compared both within a given event and between different events. Individual performance levels were quantified as the best personal times during the season. This methodological approach is similar to that followed in other studies (Saavedra *et al*., 2010). The performance was evaluated from the most important competition for each category, which in all cases was at the end of the season (June-July).

Data analysis

The normality and homoscedasticity of the distributions were tested using the Kolmogorov-Smirnov and Levene tests, respectively. *Class marks* were used for the value when the response corresponded to a range. For example, "between 10.25 and 14 hours" has a class mark of (10.25+14)/2 = 12.125 hours. A one-way ANOVA with a Tukey *post-hoc* test was used to establish differences by age group. Effect sizes were also calculated (Cohen, 1988). Pearson's simple correlation coefficient was used to examine possible correlations between training volume and performance.

RESULTS

Table 2 lists the basic descriptive statistics of the training and performance variables for each gender and age group category, as well as the results of the one-way ANOVA and Tukey *post-hoc* analyses.

For both gender groups, there were differences between the youngest (Cadet) category and the other 2 categories for both of the in-pool training volumes (hours/week and metres/session), and differences between all 3 categories in performance. For the females, there were also differences between the Youth and Junior categories in hours/week in-pool volume and between the youngest (Cadet) category and the other 2 categories in dry-land training volume.

Table 3 presents the results of the correlation analysis between the season's performance and the training volume variables (same season). For the Cadet category, for both gender groups, performance was positively correlated with the 2 in-pool training volumes (hours/week and metres/session). But in the male Youth category, performance was negatively correlated with the training volume per session.

***TABLE 2*: ONE-WAY ANOVA AND TUKEY POST-HOC TEST OF POOL AND DRY-LAND TRAINING VOLUMES AND PERFORMANCE BETWEEN CATEGORIES ACCORDING TO GENDER**

Variables	Cadet (C) Mean ± SD	Youth (Y) Mean ± SD	Junior (J) Mean ± SD	F-value	p-value	Diff.
Male						
In-pool vol. (hr/wk)	10.3±1.7	14.4±1.4	15.9±2.3	50.852	<0.001	C<Y,J
Session vol. (m)	4520.3±1120.9	5854.9±732.6	5800.1±888.4	25.192	<0.001	C<Y,J
Dry-land vol. (hr/wk)	1.9±1.7	2.8±1.2	3.5±1.7	4.321	0.001	C<Y,J
Performance (LEN)	600.3±89.4	748.7±61.2	825.2±57.6	159.143	<0.001	C<Y<J
Female						
In-pool vol. (hr/wk)	9.9±2.1	12.2±1.8	14.9±2.7	29.184	<0.001	C<Y<J
Session vol. (m)	4111.5±900.5	5655.2±814.0	6208.6±1137.7	47.809	<0.001	C<Y,J
Dry-land vol. (hr/wk)	2.4±1.9	2.5±1.2	3.5±1.0	2.640	0.076	No diff.
Performance (LEN)	574.0±81.3	726.7±55.0	783.7±29.5	183.606	<0.001	C<Y<J

Cadet male (13-14 years) Youth male (15-16 years) Junior male (17-18 years).
Cadet female (11-12 years) Youth female (13-14 years) Junior female (15-16 years)

***TABLE 3*: CORRELATIONS OF THE TRAINING VARIABLES WITH THE SEASON'S PERFORMANCE** (Pearson's *r* and p-value)

Variables	Males			Females		
	Cadet (13-14yrs)	Youth (15-16yrs)	Junior (17-18yrs)	Cadet (11-12yrs)	Youth (13-14yrs)	Junior (15-16yrs)
In-pool vol. (hr/wk)	0.361**	-0.432**	0.281	0.247**	0.067	-0.200
Session vol. (m)	0.431**	0.154	0.540	0.258**	0.280	0.374
Dry-land vol. (hr/wk)	0.153	0.196	0.298	-0.081	0.028	-0.010

* p<0.05 ** p<0.01

DISCUSSION

This study analysed the training volume, its evolution and its relationship with performance in Spanish swimmers of a national and international level aged 11 to 18 years. To the best of our knowledge, it is the first study of this type with young swimmers. Quantifying the volume of young swimmers' training at this level and establishing its relationship with performance, could assist coaches to understand the relevance of training volume and how it evolves over the successive formative stages in the development of their young swimmers.

The volumes of in-pool training in hours per week were less than those reported in most other studies (Platonov & Fessenko, 1994; Villanueva, 2007; Toubekis *et al*., 2011), but the volumes per session were similar to those of other studies (Table 4). One study (Villanueva, 2007) recommends somewhat lower session volumes for girls, namely 3 125 to 4 100 metres for the Cadet category (11 to 12 years), 3 333 to 4 286 metres for the Youth category (13 to 14 years), and 4 000 to 5 000 metres for the Junior category (15 to 16 years). Such a low volume of training per session may, however, be one of the commonest mistakes made in the training process, given its recognised importance for the swimmer's metabolic adaptation (Laursen, 2010).

***TABLE 4*: IN-POOL TRAINING: HOURS PER WEEK AND METRES PER SESSION**

	Males			**Females**		
Variables	Cadet (13-14yrs)	Youth (15-16yrs)	Junior (17-18yrs)	Cadet (11-12yrs)	Youth (13-14yrs)	Junior (15-16yrs)
In-pool volume (hr/wk)						
Platonov & Fessenko (1994)	13.0	16.5	20.5	9.5	13.0	16.5
Richards (1996)	7.0	14.5	–	7.0	14.5	–
Villanueva (2007)	9.0	10.0	12.0	9.0	10.0	12.0
Vitor & Böhme (2010)	15.0	–	–	–	–	–
Martínez (2011)	–	12.0	–	–	12.0	–
Toubekis (2011)	12.0	–	–	–	12.0	–
Present study	10.3	14.4	15.9	9.9	12.2	14.9
Session volume (m)						
Richards (1996)	4750	6000	–	4750	6000	–
Chatard & Mújika (1999)	5000	7750	8000	5000	7750	8000
Hellard (2002)	4750	6850	7225	–	–	–
Martínez (2011)	–	6900	–	–	6900	–
Toubekis (2011)	4150	–	–	–	4150	–
Present study	4520	5854	5860	4111	5655	6208

Regarding the differences between categories for both genders there were differences in the in-pool training volumes between the Cadet and the Youth categories (Table 2). In contrast, there were no differences in training volumes between the Youth and Junior categories with the exception of the in-pool weekly hours of training in the female categories. In particular

therefore, there was a progression in the volume of training load from the youngest (Cadet) category to the next in age (Youth), but not from this latter category to the oldest category studied (Junior). The principle of progressive training load (Matvéev, 2001), is thus not being adhered to. The reason for the better performance in the female categories (higher LEN scores), may be the increase in volume (hours/week) between the Youth (13 to 14 years) and the Junior (15 to 16 years) categories.

The maturational growth and the motor skill development of young swimmers require an increase in the volume of training that respects this progression (Lätt *et al*., 2009). However, the progression of this increase in training volume is not necessarily linear (Beunen & Malina, 1996). The differences could be less pronounced because most of the swimmers had reached physiological maturity (Beunen *et al*., 1997). Studies on the topic at the senior level, as was mentioned above, indicate that volume is not a determinant of success in competitive swimming (Faude *et al*., 2008; Aspenes & Karlsen, 2012; Soultanakis *et al*., 2012). It is also noteworthy that, while there was no progressive increase by age in the dry-land training volume in the case of the male swimmers, recent studies have highlighted its importance in lower categories (Sadowski *et al*., 2012).

With respect to the relationship between training volume and performance, in-pool training volume (hours/week and metres/session), there was a positive correlation with performance in the Cadet categories for both gender groups. These results are consistent with previous studies of young swimmers where a correlation between performance in 200m and 400m events and the annual volume of in-pool training was reported (Van Tilborgh *et al*., 1984). Similarly, the absence of any relationship between training volume and performance in the oldest age category (Junior – 17 to 18 years and 15 to 16 years in males and females, respectively), is consistent with previous studies indicating that it is intensity, not volume, that is the key to improving results in swimming (Costill *et al*., 1991; Mujika *et al*., 1996; Chatard & Mujika, 1999). Another study (Hellard *et al*., 2002) concluded that it is the frequency of training that is related to performance.

A recent review (Aspenes & Karlsen, 2012), reported that in the short term intensity and volume of training have the same influence on performance, although most of the studies included in that review were on senior category swimmers. Therefore, this may indicate that it is in the younger categories where training volume is a determinant, with it becoming a necessary but not a determining factor in older categories. Surprisingly, no relationship between the number of hours of dry-land training and performance was found, in contrast to previous studies (Van Tilborgh *et al*., 1984). One of the possible causes of this difference is that training methods and content have changed since that earlier study, and that this could affect performance and its relationship with the variables studied (Mouroço *et al*., 2012).

LIMITATIONS OF STUDY

This study had a number of limitations. (i) The questionnaire completed by the swimmers themselves may not have objectively reflected the training they actually were doing, and it might have been more appropriate for it to be completed by the coaches. (ii) The time of the study relative to the season's schedule might have influenced the training volume in terms of hours per session and metres swum, since the different categories held their championships

on different dates. (iii) The developmental stage of the swimmers was not evaluated, and such information would be useful for interpreting the observed relationships between kinanthropometric parameters, training and performance. (iv) No evaluation was made of the type and methods of training the swimmers were exposed to (each swimmer belonged to a club, and therefore, had a different trainer within the National Championships program).

PRACTICAL APPLICATION

This study could help coaches understand the relevance of training volume and its evolution over the successive formative stages of their young swimmers. The findings revealed that the training volume was important to performance in young swimmers (males 13 to 14 years; females 11 to 12 years). In older swimmers, training intensity may have more relevance than training volume.

CONCLUSIONS

The results of the present study showed that, in the male swimmers, there was only a progression in the in-pool training volume from the youngest category (13 to 14 years) to the next category (15 to 16 years). This may reflect planning that does not respect the principle of training load progression. There was no progression in the dry-land training volume. In the female swimmers, this progression was observed between all three groups of swimmers (11 to 12 years, 13 to 14 years, and 15 to 16 years). It, therefore, seems necessary for training volume to be more clearly structured when swimmers are young. With respect to a relationship between training volume and performance, this was only present in the youngest categories (Cadets: 13 to 14 years and 11 to 12 years for males and females respectively). This could be because, after this age, intensity is the most relevant aspect of the training load.

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LIGGAAMSAMESTELLING EN RUSTENDE METABOLIESE TEMPO (RMT) IN 25 tot 35 JARIGE VROUE VAN GEMENGDE HERKOMS EN KAUKASIËR VROUE: 'N PROFIELONTLEDING

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ABSTRACT

Obesity is a rapid growing epidemic worldwide, affecting more women, especially black and coloured women (women of mixed ancestry) in South Africa. Limited research regarding the body composition and resting metabolic rate (RMR) of individuals from mixed ancestry is available, especially in comparison to other ethnic groups. The objective of this study was to compare various anthropometric and body composition parameters, as well as RMR in a cohort of sedentary Caucasian women and women of mixed ancestry. A once-off cross-sectional design based on a non-randomised available population participated in this study. Caucasian women (n=51), and women of mixed ancestry (n=26), between the ages of 25 to 35 years were recruited. Body composition parameters were determined using the Bod Pod® together with other anthropometric measurements (body mass, stature, waist- and hip circumference). The Mann-Whitney U test and effect size determined the significance of the differences between the groups. Stature (p=0.001) was significantly higher in the women of mixed ancestry. Caucasian women showed a medium practical significantly lower BMI (d=0.68), fat percentage (d=0.59) and fat mass (d=0.47). Women of mixed ancestry were shorter, had a higher BMI, fat mass and fat percentage compared to Caucasian women of the same age and weight.

Key words: Body composition; RMR; Ethnicity; Females.

INLEIDING

Etniese verskille in liggaamsamestelling tussen Kaukasiërs en Swartmense is reeds deeglik nagevors en daar is bevind dat Swartmense oor 'n groter liggaamsmassa-indeks (LMI), skraal-liggaamsmassa (SLM), vetmassa (VM) en beenmineraaldigtheid (BMD) beskik as Kaukasiërs (Gasperino, 1996; Forman *et al*., 1998; Weyer *et al.,* 1999; Lovejoy *et al*., 2001; Obisesan *et al*., 2005). Verskille in liggaamsproporsies is reeds tussen Kaukasiërs en Swartmense gedokumenteer (Tershakovec *et al*., 2002).

Beperkte inligting is egter beskikbaar rakende die liggaamsamestelling van persone van gemengde herkoms in Suid-Afrika. Case en Wilson (2000) het gevind dat Swartvroue en vroue van gemengde herkoms, tydens elke leeftyddekade oor 'n groter LMI beskik het as Kaukasiër vroue. Vroue van gemengde herkoms het ook "n korter liggaamslengte getoon as

Kaukasiërs van dieselfde ouderdom (Steyn *et al.,* 1990a). Die enkele studies wat wel op persone van gemengde herkoms gedoen is, het meestal gebruik gemaak van LMI wat nie as die betroubaarste aanduider van liggaamsamestelling beskou kan word nie (Steyn *et al.,* 1990a; Temple *et al.,* 2001; Heyward & Wagner, 2004).

Oorgewigprofiele onder Suid-Afrikaanse vroue toon verder dat Swart vroue die hoogste persentasie (58.5%) toon, gevolg deur vroue van gemengde herkoms (52%), Kaukasiër vroue (49.2%) en Indiër vroue (48.9%) (Puoane *et al*., 2002; Goedecke *et al.,* 2006). Verskeie redes

kan aangevoer word vir die verhoogde voorkoms van oorgewig onder Swart vroue, onder andere, die positiewe assosiasie van oorgewig en obesiteit met gesondheid (insluitend negatiewe HIV-status), finansiële welvaart, respek en geluk (selftevredenheid) (Puoane *et al*., 2005). ‟n Verdere moontlikheid vir die verhoogde voorkoms van obesiteit onder Swart vroue kan ook wees dat die rustende metaboliese tempo (RMT) verlaag is; ‟n verskynsel wat algemeen onder Swartmense voorkom (Forman *et al*., 1998; Gannon *et al*., 2000; Tershakovec *et al*., 2002). Indien spierweefsel vermeerder, verhoog die vetvrye massa (VVM), wat direk met die RMT verband hou (Wang *et al.,* 2000). Sodoende verhoog die rustende energieverbruik (REV), wat op sy beurt weer die totale daaglikse energieverbruik (TDEV) verhoog (Sparti *et al.,* 1997; Wang *et al.,* 2000; Stiegler & Cunliffe, 2006). Bogenoemde verskynsels kan lei tot ‟n negatiewe energiebalans, wat vir optimale gewigsverlies noodsaaklik is.

Verskille in die skraal-liggaamsmassa van die bolyf en ledemate by verskillende etniese groepe kan deels vir die verskil in RMT verantwoordelik wees (Tershakovec *et al*., 2002). Volgens Gallagher *et al*. (2006) kan die verskil in RMT tussen Kaukasiërs en Swartmense aan die kleiner orgaanmassa (aangepas vir liggaamsgrootte) wat in Swartmense voorkom, toegeskryf word. Meer navorsing is egter nodig om die rol wat die RMT ten opsigte van verskille in liggaamsamestelling by verskillende populasies kan speel, beter te kan begryp. Rustende metaboliese tempo (RMT) word gedefinieer as die energie wat gebruik word vir die instandhouding van die liggaam se rustende metabolisme, wat die volgende liggaamsfunksies onder andere insluit: instandhouding van die kardiovaskulêre en pulmonêre sisteem, sentrale senuweestelsel, asook sellulêre homeostase (Gannon *et al.,* 2000). Vetvrye massa (VVM), ook bekend as skraal-liggaamsmassa (SLM), word beskou as die grootste bepaler van RMT en sluit die volgende in: orgaanmassa, spiermassa en beenmassa (Sparti *et al.,* 1997).

Wanneer ’n langtermyngewigsverlies of instandhoudings-perspektief oorweeg word, kan selfs relatief klein veranderinge in spiermassa (wat ‟n groot subkomponent van VVM uitmaak), ’n effek op die liggaam se energiebalans tot gevolg hê (Wolfe, 2006). Enige dieet- of oefen-intervensie wat die VVM in stand hou of daartoe lei dat dit nie na gewigsverlies afneem nie, kan ’n betekenisvolle effek op die totale energieverbruik van die liggaam hê (Stiegler & Cunliffe, 2006).

DOEL VAN DIE STUDIE

Die doel van hierdie studie was derhalwe om die liggaamsamestelling en RMT in 25- tot 35-jarige vroue van gemengde herkoms en Kaukasiër vroue deur middel van ’n profielontleding te vergelyk. Tans is daar geen inligting beskikbaar rakende individue van gemengde herkoms se orgaanmassa nie, daarom is daar in hierdie studie gebruik gemaak van die VVM ten einde ‟n indirekte bepaling van die RMT te bereken.

METODOLOGIE

Studie ontwerp

Hierdie studie was op ‟n eenmalige, dwarsdeursnit studie-ontwerp gebaseer waar van ’n nie-ewekansige beskikbaarheidspopulasie gebruik gemaak is.

Proefpersone

Pre-menopousale vroue van gemengde herkoms en Kaukasiër vroue tussen die ouderdomme 25 en 35 jaar is genooi om aan die studie deel te neem. Die vroue was almal werksaam by ‟n finansiële en tersiêre opleidingsinstansie in die Noord-Wes Provinsie waar hulle

administratiewe werk verrig het (klerke en tiksters). Weens die beperkte aantal vroue van gemengde herkoms in diens van die twee instansies kon slegs 26 deelnemers uit genoemde groep vir die studie gewerf word, terwyl die Kaukasiër groep uit 51 vroue bestaan het.

Die volgende het as verdere insluitingskriteria gedien: Gesonde, sedentêre (tydens en na-werksure) vroue tussen 25 en 35 jaar; LMI≥18kg/m^2; nie-roker; nie-hipertensief; nie-diabeties; en geen kroniese medikasie gebruik nie, uitgesonder voorbehoedmiddels. Die rede waarom daar nie 'n bo-drempel van LMI waardes spesifiseer word nie, is om die proefgroep so groot as moontlik te hou. Daar is egter vir aanvanklike verskille gekorrigeer in die statistiese berekenings. Inligtingsessies rakende die metings asook meetprosedures is aangebied om enige onduidelikhede uit die weg te ruim. Ingeligte toestemming is van al die deelnemers verkry en die studie is deur die etiekkomitee van die Noord-Wes Universiteit goedgekeur (Etieknommer: NWU-00059-07-S1).

Metings

Liggaamsamestelling en rustende metaboliese tempo (RMT)

Liggaamsamestelling is deur middel van lugverplasing in die Bod Pod® (*Life Measurements Intruments, Concord, CA, USA)*, bepaal deur van Siri se digtheidsformule gebruik te maak (Siri *et al.,* 1961). Vetvrye massa (VVM), vetmassa (VM), asook liggaamsvetpersentasie is deur die Bod Pod® bereken. Die proefpersone was in swemdrag geklee met 'n swempet op en moes so stil as moontlik in die Bod Pod® gesit het. Die RMT is op indirekte wyse bepaal soos voorgestel deur Nelson *et al*. (1992), deur van die volgende formule gebruik te maak:

$$RMT = 11.09 + (0.900)\ FFM + (0.1314)\ FM$$

Voor elke meting is alle juwele van die proefpersone verwyder, asook blaaslediging verseker. Proefpersone het vir 8 uur lank gevas en het 12 uur voor die toetsing nie aan fisieke aktiwiteit deelgeneem nie. Kalibrasie van die Bod Pod® is voor elke meting uitgevoer. Metings is telkens op dieselfde tyd uitgevoer (tussen 6 en 8 vm.). Temperatuur is gereguleer en konstant gehou tussen 21 tot 23º Celsius.

Antropometrie

Die volgende antropometriese metings is bepaal ooreenkomstig die prosedure soos deur ISAK (*International Society for the Advancement of Kinanthropometry*) (Marfell-Jones *et al.,* 2006) bepaal, naamlik: liggaamslengte (tot die naaste 0.5cm) met 'n stadiometer; liggaamsmassa (tot die naaste 0.5kg) met 'n elektroniese skaal (*Krupps*®), LMI (kg.m^{-2}); omtrekke (middel- en heupomtrek) (tot die naaste 0.5cm) met 'n staalmaatband (*Lufkin*®).

Statistiese prosedures

Die data van die studie is met die hulp van die Statistiese Konsultasiedienste van die Noord-Wes Universiteit ontleed, deur van die "*Statistica*" (Statsoft, 2004) program gebruik te maak. Beskrywende statistiek toon die liggaamsamestelling van die onderskeie proefpersone aan, terwyl die Mann-Whitney U toets, asook effekgroottes bereken is ten einde te bepaal of daar betekenisvolle verskille tussen die vroue van gemengde herkoms en Kaukasiër vroue voorgekom het (Thomas *et al*., 2005). Die p-waarde vir betekenisvolheid is vasgestel as $p \leq 0.05$. Vir die interpretasie van effekgrootte is die volgende riglyn gebruik naamlik, $d < 0.2$ = klein; met d rondom 0.5 as medium en $d > 0.8$ = groot prakties betekenisvolle verskille (Thomas *et al.,* 2005). Daar is deurgaans statisties gekorrigeer vir aanvanklike verskille wat tussen die groepe voorgekom het.

RESULTATE

***TABEL 1*: BESKRYWENDE STATISTIEK VIR VERANDERLIKES EN VERSKILLE TUSSEN KAUKASIËRVROUE EN VROUE VAN GEMENGDE HERKOMS** (25 tot 35jr)

Veranderlike	**Kaukasiër** (n = 51) RG ± SA	**Gem. Herkoms** (n= 26) RG ± SA	**Z-waarde**	**p-waarde**	**d-waarde**
Ouderdom (jr)	29.61±4.78	28.62±4.28)	0.840	0.399	0.21
Massa (kg)	72.16±16.73	75.68±23.54)	-0.275	0.784	0.21
Lengte (m)	1.67±0.05	1.60±0.07)	4.082	0.000*	1.47†††
LMI ($kg.m^{-2}$)	25.86±5.52)	29.62±9.20)	-1.276	0.202	0.68††
Middelomtrek (cm)	77.96±10.75)	81.52±15.16)	-0.560	0.575	0.33
Vetpersentasie (%)	34.51±7.42)	38.92±10.59)	-1.793	0.073	0.59††
Vetmassa (kg)	25.95±12.08)	31.66±17.36)	-0.996	0.319	0.47††
Vetvryemassa (kg)	46.03±5.50	43.80±7.20)	0.781	0.435	0.36
RMT ($kkal.kg^{-1}.dag^{-1}$)	1298.97±185.02	1247.20±240.37	0.851	0.395	0.28

* $p \leq 0.05$ † =Klein, †† =Medium, ††† = Groot prakties betekenisvolle verskil
Z-waarde van Mann-Whitney U toets d-waarde vir effek-grootte

In Tabel 1 word die beskrywende statistiek van die proefpersone aangebied. Soos blyk uit die tabel is die vroue van gemengde herkoms statisties ($p \leq 0.05$), sowel as prakties betekenisvol ($d > 0.8$) korter as die Kaukasiër vroue. Die vroue van gemengde herkoms vertoon ook ‟n medium prakties betekenisvolle groter liggaamsmassa-indeks (LMI) as die Kaukasiër vroue.

Die vetpersentasie (%) en vetmassa (kg) van die vroue van gemengde herkoms was medium prakties betekenisvol hoër as dié van die Kaukasiër vroue. Wat die vetvrye massa en RMT betref, het daar geen betekenisvolle verskille voorgekom nie, hoewel beide genoemde parameters laer was by die vroue van gemengde voorkoms.

BESPREKING

Volgens die resultate is dit duidelik dat die gemiddelde waardes van die veranderlikes wat „vetheid‟ aandui (LMI en vetpersentasie), beide groepe vroue in die oorgewig en obese (Klas 1) kategorie plaas. In hierdie opsig toon die ACSM (2006) aan dat ‟n LMI-waarde van 25 tot $29.9 kg.m^{-2}$ as oorgewig geklassifiseer word en dat die Kaukasiër vroue sowel as die van gemengde herkoms se LMI binne die grense val. Die LMI-waarde van die vroue van gemengde oorsprong ($29.62 kg.m^{-2}$), grens egter aan die obese (Klas 1) kategorie (30 tot 34.9 $kg.m^{-2}$).

Wat die vetpersentasie betref, val die gemiddelde waardes van beide groepe in die kategorie Klas 1 obesiteit (32 tot 37%) (Ehrman *et al*., 2009). Ross en Janssen (2007) wys egter daarop dat laasgenoemde meting ‟n meer akkurate evaluering van die algehele vetheid van ‟n persoon weergee. Op grond hiervan kan dit dus aanvaar word dat die steekproef se gemiddelde waarde in die obesiteit kategorie Klas 1 val. Dit ondersteun die bevindinge van Puoane *et al*. (2002) en Goedecke *et al*. (2006), wat aandui dat die persone van gemengde herkoms in Suid-Afrika die tweede hoogste obesiteitsyfer (52%) van die vier etniese groepe in Suid-Afrika toon. Die redes vir hierdie toestande is nog nie heeltemal duidelik nie. Dit kan waarskynlik onder andere aan bepaalde persepsies, verlaagde energieverbruik tydens beroep, sowel as tydens vryetyd, demografiese tendense en leefstylgewoontes toegeskryf word. In hierdie verband beweer Van der Merwe en Pepper (2006) dat sekere etniese groepe oorgewig en obesiteit met goeie gesondheid (insluitend HIV-negatiewe status), rykdom, geluk en voorspoed assosieer.

Ten einde hierdie wanpersepsie te korrigeer, kan ’n moeisame en lang opvoedingsproses verg (Van der Merwe & Pepper, 2006). Genoemde navorsers wys daarop dat die toename in verstedeliking wat met ‟n toename in fisieke onaktiwiteit en oormatige energie-inname (wat waarskynlik ook meer verfynde koolhidrate by die dieet insluit) gepaard gaan, die voorkoms van obesiteit kan verhoog (Van der Merwe & Pepper, 2006). Bogenoemde gaan saam met toenemende blootstelling aan energiedigte voedsel, groter porsies en gereelde voedselreklame (Hal & Scott, 2009).

Uit Tabel 1 blyk dit ook dat die RMT by die Kaukasiër groep hoër is as by die vroue van gemengde herkoms, hoewel die verskil nie statisties betekenisvol is nie. Rustende metaboliese tempo (RMT) kan ‟n belangrike rol speel by die energiebalans van die liggaam aangesien dit die grootste komponent (60 tot 75%) van die totale daaglikse energieverbruik (TDEV) uitmaak. Ander komponente van belang by die TDEV is fisieke aktiwiteit (15 tot 30%) en dieetgeïnduseerde termogenese (10 tot 15%). Indien die TDEV die energie-inname oorskry, word ‟n negatiewe energiebalans geskep en vind gewigsverlies plaas.

Heel dikwels word dieet-intervensies vir oorgewig- en obese persone voorgeskryf wat inherent ’n beperking op sukses kan inhou. Dieet-intervensies word algemeen met ‟n verlies

aan vetvrye massa (VVM) geassosieer wat op sy beurt weer die RMT kan verlaag en wat die TDEV dienooreenkomstig kan verlaag sodat die optimale gewigsverlies nie plaasvind nie (Stiegler & Cunliffe, 2006). Stiegler en Cunliffe (2006) beweer daarom dat die belangrikste doelwitte van effektiewe gewigsverlies-programme die vermindering van liggaamsvet dog die instandhouding van VVM en die RMT behoort in te sluit.

Soos reeds bespreek, is ’n groot persentasie van die Suid-Afrikaanse vroue oorgewig en obees. Hierdie toestande kan bepaalde gesondheidsrisiko‟s inhou wat gesondheidsorgkoste vir die werkgewer sowel as werknemer laat toeneem (Ehrman *et al*., 2009). ‟n Verdere oorsaak van die hoë voorkoms van oorgewig en obesiteit by Suid-Afrikaanse vroue is hul sedentêre leefstyl tydens hulle beroep, asook tydens hulle vryetyd (Kruger *et al*., 2002; Joubert *et al.,* 2007).

In hierdie opsig beweer Ross en Janssen (2007) egter dat die nie-vryetyd fisieke aktiwiteit (aktiwiteite tydens die beroep), waarskynlik die grootste bydraer is tot die obesiteit epidemie aangesien die fisieke vryetydsaktiwiteite in die afgelope jare “minimale” veranderinge

ondergaan het. Laasgenoemde navorsers toon egter aan dat tegnologiese vooruitgang in die beroepsomgewing die werker in ‟n groot mate tot ‟n sedentêre wese gedwing het en gevolglik tot hipokinetiese afwykings/siektes kan lei, wat ŉ las op die gesondheidsorg-kostes sowel as produktiwiteit kan plaas (Labuschagne, 2006; Ross & Janssen, 2007). Die deelnemers aan hierdie studie was almal sedentêr gedurende die werksdag wat waarskynlik tot die verhoogde gemiddelde LMI kon bydrae.

Wat die vrouens se deelname aan fisieke aktiwiteit of sport tydens hulle vrye tyd betref, blyk dit dat hulle oor die hele etniese spektrum in Suid-Afrika baie onaktief is. Die Departement Sport en Rekreasie (DSR) in Suid-Afrika toon in ‟n sensusopname in 2005 aan dat, in die geheel, 74.6% van alle vroue in Suid-Afrika beweer dat hulle nie aan fisieke aktiwiteite of sport deelneem nie (DSR, 2005). Die onaktiefste etniese groep was die persone van gemengde herkoms (84.8%), gevolg deur die Asiër/Indiër (75.6%), Swart (75.0%) en Kaukasiër (63.4%) groepe. In 26.9% van die gevalle by die persone van gemengde herkoms word “geen belangstelling” en “geen bepaalde rede” (17.8%) aangevoer as redes waarom hulle nie aan fisieke aktiwiteit deelneem nie. In die geval van die Kaukasiërs was die getalle ten opsigte van hierdie redes vir nie-deelname aan fisieke aktiwiteit 18.8% en 15.6% respektiewelik (DSR, 2005).

GEVOLGTREKKINGS

Uit die resultate van die studie blyk dit dat die vroue van gemengde herkoms meer geneig is om oorgewig en obees te wees as wat dit die geval by die Kaukasiër vroue is. Om hierdie probleem die hoof te bied sal multidissiplinêre strategieë verg ten einde die energiebalans by die vroue te reguleer.

Die verhoging van fisieke aktiwiteitdeelname op sowel die beroeps- as vryetydsvlak maak ‟n belangrike deel van bogenoemde strategie uit, veral omdat die VVM in stand gehou en verkieslik verhoog behoort te word. Op hierdie wyse kan die RMT, wat die grootste deel van die TDEV uitmaak, die proses van gewigsverlies stimuleer (Stiegler & Cunliffe, 2006). Oefen-intervensieprogramme behoort ‟n betekenisvolle komponent van weerstandsoefeninge

in te sluit, aangesien dit beskou word as die oefenmodaliteit wat primêr daarvoor verantwoordelik is om die vinnigste en grootste toename in VVM teweeg te bring (Coffey & Hawley, 2007).

Kultuurspesifieke bestuur, asook die voorkoming van oorgewig en obesiteit, is van groot belang (Goedecke *et al.*, 2005; Kruger *et al.*, 2005). Populasies wat die meeste deur obesiteit in Suid-Afrika geraak word, is Swart vroue en vroue van gemengde herkoms. Inligting rakende die oorsprong van obesiteit asook gesondheidsrisiko‟s wat met hierdie toestand gepaard gaan, behoort in bogenoemde populasies bepaal te word sodat effektiewe obesiteit-voorkoming strategieë in werking gestel kan word.

Kruger *et al.* (2005) beveel aan dat obesiteit voorkoming en -behandeling op gedragsverandering, ondersteuning deur gesondheid beleidmakers, intersektoriale samewerking, opvoeding, asook gemeenskapsdeelname gebaseer moet wees. Obesiteit voorkomingstrategieë kan in skole en by klinieke en gemeenskapsprojekte ingesluit word. Eenvoudige en verstaanbare inligting behoort aangebied te word, insluitend praktiese wenke rakende voedselkeuses en die beoefening van fisieke aktiwiteit. Visuele voorbeelde van porsiegroottes en gemeenskap-spesifieke oefenmetodes kan van groot waarde wees, veral

onder ongeletterde individue.

BEPERKINGE

Die proefpersone in die studie verteenwoordig nie ‘n ewekansige populasie nie, en die beperkte aantal proefpersone moet tydens die interpretasie van die data in gedagte gehou word.

Daar is ook nie ondersoek ingestel wat die persone se daaglikse energie-inname behels nie. Volgens Walker (1996) neig die Kleurlingpopulasie egter al meer om dieselfde nutriënt innames en dieetpatrone as Blanke Suid-Afrikaners te volg. In studies van Steyn *et al.* (1985, 1990b), word gerapporteer dat Kleurlinge se dieet aan ‘n hoë vet- en cholesterolinname gekenmerk word, dat beide geslagte ‘n hoë rook syfer toon en dat obesiteit algemeen sigbaar onder vroue en mans is wie se alkoholverbruik hoog is.

SUMMARY

Body composition and resting metabolic rate (RMR) in women of mixed ancestry and Caucasian women aged 25 to 35 years: A profile analysis

Ethnic differences among Black women and Caucasians regarding body composition have been thoroughly researched. According to various researchers, Blacks have a higher body mass index (BMI), lean body mass (LBM), fat mass (FM) and bone mineral density (BMD) compared to Caucasians (Gasperino, 1996; Forman *et al.,* 1998; Weyer *et al.*, 1999; Lovejoy *et al.,* 2001; Obisesan *et al.,* 2005). Limited information regarding the body composition of people of mixed ancestry is available in South Africa. The few studies that focused on people of mixed ancestry, made use of BMI to describe body composition, which is not regarded the most reliable indicator of body composition (Steyn *et al.,* 1990a; Temple *et al.,* 2001; Heyward & Wagner, 2004).

Overweight profiles among South African women further reveals that Black women have the highest percentage (58.5%), followed by women of mixed ancestry (52%), Caucasian women (49.2%) and Indian women (48.9%) (Puaone *et al.,* 2002; Goedecke *et al.,* 2006). Several reasons can be argued for the increased obesity among Black women, for example, the positive association of obesity with health (including a HIV-negative status), financial wealth, respect and happiness (self-rating) (Puaone *et al.,* 2005). Another possibility for the increased prevalence of obesity among Black women may also be that of a lower resting metabolic rate (RMR) compared to Caucasians (Forman *et al.,* 1998; Gannon *et al.,* 2000; Tershakovec *et al.,* 2002).

The objective of this study was to compare various anthropometric and body composition parameters, as well as RMR in a cohort of sedentary Caucasian women and women of mixed ancestry between the ages of 25 to 35 years. A once-off, cross-sectional design based on a non-randomised available population was used in this study. Caucasian women (n=51) and women of mixed ancestry (n=26) were recruited to participate in the study. Body composition was determined using the Bod Pod® together with other anthropometric measurements (body mass, stature and waist circumference).

The Mann-Whitney U test and effect size were used to determine the differences between the subjects. Stature (p=0.000; d=1.47) was statistically and practically significant lower in

women of mixed ancestry. Caucasian women had a lower BMI (d=0.68), fat percentage (d=0.59) and fat mass (d=0.47) compared to women of mixed ancestry. The practical significant higher values in the parameters indicating fatness (BMI, % body fat and fat mass), may place the women of mixed ancestry in a higher obese-related health risk. This risk profile of both groups emphasises the importance of multidisciplinary intervention programs with the purpose of empowering people with knowledge so that they can take responsibility for their own health and wellness.

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EFFECT OF A 12-WEEK PILATES COURSE ON BODY COMPOSITION AND CARDIOPULMONARY FITNESS OF ADULTS LIVING IN AN URBAN COMMUNITY

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ABSTRACT

Engagement in regular physical activity is helpful in enhancing physical fitness, which greatly outweighs the potential risks involved. Pilates is a non-contact physical activity, as it involves no physical contact with other people. Pilates is considered a relatively safe physical activity. The purpose of the present study was to explore the effect of the Polestar™ Pilates method of exercise on the body composition and cardiopulmonary fitness of adults. The design of the study was quasi-experimental. The experimental group comprised 53 participants (44 females, 9 males). The control group consisted of 35 participants (31 females, 4 males). Only the experimental group received Polestar™ Pilates exercise training, which was presented by a certified Pilates trainer. Both groups received a pre- and post-test of

body composition and cardiopulmonary fitness. After 12 weeks of Pilates training, the cardiopulmonary fitness of the experimental group was significantly enhanced ($p<0.05$), but changes in body composition were not statistically significant. For future research, it is recommended that continuous tracking for 3 to 6 months at the end of the intervention period to follow up the intervention effect be included in the research design. Longitudinal research can provide a greater understanding of the potential long-term benefits of cardiopulmonary fitness and body composition.

Key words: Body fat percentage; Cardiopulmonary fitness; Pilates exercise.

INTRODUCTION

Improvements in the material living standards of numerous communities are associated with an increased incidence of the problem of obesity (O'Brien & Dixon, 2002; Abdul-Rahim *et al.,* 2003). Abdul-Rahim e*t al.* (2003) indicate that the prevalence of obesity in urban communities was higher than rural communities. A person's fat mass or body fat percentage has been the most important estimate of health because of its strong correlation with cardiovascular diseases (Yasumura *et al.,* 2000; Heyward & Wagner, 2004). Body composition refers to the assessment of absolute and relative amounts of bone, muscle and fat

mass as measured by different methods depending on the technology at hand, such as skin fold callipers, hydrostatic weighing, Dual-emission X-ray absorptiometry (Aladro-Gonzalvo *et al.,* 2012).

In addition, cardiopulmonary fitness refers to the capability of the body's overall oxygen supply system. Studies have shown that cardiopulmonary endurance gradually decreases by approximately 1% annually after the age of 25 years (McArdle *et al.,*1991). To improve a person's cardiopulmonary fitness, an appropriate intensity of exercise is needed in order to promote cardiovascular circulation, neuromuscular coordination, energy metabolism and pulmonary ventilation, and other physiological functions (Osullivan & Schmitz, 2001).

Regular exercise can improve physical fitness (Finch *et al.,* 2001), but the more intense the exercise the more injury will occur (Finch & Cassell, 2006). Researchers continue to investigate new exercise techniques where the injury risk of the musculoskeletal system is minimised and is a relatively safe exercise that could affect body composition and cardiopulmonary fitness in humans (Wells *et al.,* 2012). Although the Pilates exercises developed by Joseph Pilates in the early 1930s were not aimed primarily at the control or modification of body composition and cardiopulmonary fitness, his method has recently become popular (Aladro-Gonzalvo *et al.,* 2012).

Pilates designed a comprehensive method of muscle stretching and strengthening, with the goal of building a strong body and with the philosophy of 'mind controls body'. According to its founder, the Pilates program should incorporate the use of special apparatus and equipment in movement routines designed to enhance flexibility, strength and coordination between breathing and movement (Pilates, 1934, 1945). Pilates is advocated as a beneficial exercise method for adult populations (Stanko, 2002; Muscolino & Cipriani, 2003).

Studies investigating the effect of Pilates exercises on body composition and cardiopulmonary fitness have been sparse and the empirical evidence to date has been inconsistent. One study found that for body composition, fat content in the limbs and overall

body was reduced after following Pilates exercises (Baltaci *et al.,* 2005). Another study reported no change in total body mass (Rogers & Gibson, 2006), while yet another study showed similar results, with an additional increase in lean mass (Carvalho *et al.,* 2009).

For cardiopulmonary fitness, one study indicated that the increase in heart rate during Pilates exercise did not reach an appropriate target range (Schroeder *et al.,* 2002). Another study showed that engagement in Pilates for four weeks had no significant effect on the participants' systolic and diastolic blood pressure (Jago *et al.,* 2006). Although Pilates proponents claim that the program improves heart and lung function by enhancing respiratory efficiency, the scientific literature to date does not support this argument. Thus, the possible effects of Pilates on adult cardiopulmonary fitness require further exploration.

PURPOSE OF THE STUDY

Pilate's exercises have been shown to benefit physiological, psychological and motor function (Lange *et al.,* 2000; Bernardo & Nagle, 2006; Bernardo, 2007). However, these findings might be queried because of methodological weaknesses. Possible methodological

issues include small sample sizes, the lack of experimental research designs and poor validity or reliability of measurement instruments (Aladro-Gonzalvo *et al.,* 2012). The present study thus used a quasi-experimental design to investigate the effects of the Polestar Pilates method in adults living in an urban community. The effects of a Pilates exercise program on the body composition and cardiopulmonary fitness of a group of adult participants were investigated.

METHODOLOGY

Participants

The participants were all selected from the staff and volunteers drawn from 6 community institutions and were residents of Taipei City, Taiwan. Participants were excluded if the physicians found them unsuitable (osteoporosis, joint replacement, patellofemoral pain syndrome) for this study. The final sample comprised 125 participants aged between 20 and 65 years, who had not previously been exposed to Pilates training. The study protocol was reviewed and approved by the Human Research Ethics Committee, National Taipei University of Nursing and Health Sciences.

Design

Participants were asked to sign a consent form and were informed not to change their own habits of exercise and activities within their daily living during the duration of the research process. Participants were assigned to the 2 groups according to their preference, with 72 participants electing to be in the experimental group and 53 in the control group. The research design was thus quasi-experimental and no randomisation was used.

All participants engaged in a body composition and cardiopulmonary fitness pre-test, one week prior to the intervention. The experimental group received Pilates exercise training (60 minutes per session, twice a week for 12 consecutive weeks), and the control group received no exercise intervention whatsoever, although they may have been participating in their own exercise routines outside of the study setting. The testing settings were the same for both

groups. Exercise was scheduled after work to suit the needs of the respective institutions. The experimental group participants attended the exercise classes at their respective institutions to facilitate their attendance at classes. Post-tests were conducted within 1 week after the 12-week intervention had ended, and testing was conducted in the same locations.

Measurements

Body composition

The principle of Bioelectric Impedance Analysis (BIA) was adopted. BIA is a widely used method for estimating body composition. The technology is relatively simple, quick, very limited between observer variations and non-invasive. BIA works well in healthy subjects and chronic diseases with a validated BIA equation that is appropriate with regard to age, gender and race (Norman *et al.,* 2012). The InBody 230 (Body composition analyser, Biospace Co., Ltd.), was used to measure body composition and record the body fat percentage.

Cardiopulmonary fitness (Watkins, 1984; Andrade *et al.,* 2012)

The 3-minute step-test was conducted to measure each participant's pulse 3 times and calculate a cardiopulmonary fitness index to reflect cardiopulmonary endurance. The assessor set a stopwatch to 3 minutes, and participants were asked to stand facing a wooden box that was 35cm high. Participants then stepped up and down rhythmically at a frequency of 96 beats per minute, thus comprising 24 steps up and down per minute. They were instructed to stop the step-test immediately if they experienced discomfort. All participants had stopwatches and stopped them if they ceased the step test to record their actual exercise time. After completing the 3-minute test, participants were requested to measure their pulse recovery rates between 1 and 1.5 minutes after ceasing the exercise; again at between 2 and 2.5 minutes after exercise; and for a final time between 3 and 3.5 minutes. All these measurements were obtained in a sitting position. The 3 pulse rates were used in an equation to calculate an index of step cardiopulmonary function, as follows (Gallagher & Brouha, 1943; Liu & Lin, 2007):

$$\text{Index}=\frac{Duration(\text{sec})}{2(A+B+C)} \text{ x } 100$$

where A = recovery heart beat counts within 1 to 1.5 minutes,
B = recovery heart beat counts within 2 to 2.5 minutes, and
C = recovery heart beat counts within 3 to 3.5 minutes after stepping exercise.

Exercise intervention program

Polestar Pilates principles and the Pilates Group Mat Exercise Intervention Program were conducted for 60 minutes at each session, twice a week for 12 consecutive weeks (Otto *et al.,* 2004). The number of participants per class was limited to 12 people. The classes were conducted by a qualified trainer with Polestar Pilates certification and supervised by a qualified physical therapist that also had Polestar Pilates certification. Their presence was aimed at ensuring the accuracy of the exercises performed by the participants during the exercise program implementation (to follow, *Pilates Exercise Program*).

Data analysis and statistics

Data were processed and analysed using the SPSS 17.0 statistical software package for Windows. The level of statistical significance for all tests was set at $p < 0.05$. Descriptive

statistical analysis was conducted to calculate the percentages, means and standard deviations of relevant data. Inferential statistical analysis included the chi-square test and independent-sample t-test to compare the performance of the experimental and the control groups. A homogeneity test was conducted where the differences between the pre-test scores of the 2 groups were determined. Thereafter, the paired t-test was used to analyse the effectiveness of the exercise program by comparing pre- and post-intervention results for the experimental group and control group separately. Using the pre-tests of the 2 groups as the covariates, ANCOVA was conducted to determine the post-test differences between the 2 groups.

Test-retest reliability

The same assessor tested the 20 participants twice (one week apart). These results were used to calculate test-retest reliability by means of a correlation coefficient for the 2 measurements.

The mean for body fat percentage was 28.7% (±5.4) for the first measurement and 29.8% (±5.6) for the second, and the correlation coefficient between the 2 measurements was $r=0.969$ ($p<0.01$). For the heart rate measurements (reflecting cardiopulmonary fitness), the mean cardiopulmonary fitness index was 62.8±10.4 at the first measurement and 59.1±7.8 at the second. The correlation coefficient for the relationship between the 2 measurements was $r= 0.703$ ($p<0.01$).

PILATES EXERCISE PROGRAM

Exercise	Repetitions /duration	Progression

1. Supine breathing	5 minutes	Weeks 1-12
2. Pelvic clock	5 minutes	Weeks 1-4
3. Femur arcs	6 repetitions on each side	Weeks 1-4
4. Basic bridging	6-8 repetitions	Weeks 1-8
5. Assisted roll up	6 repetitions	Weeks 1-4
6. Quadruped series	6-8 repetitions	Weeks 1-8
7. Prone press up	6 repetitions	Weeks 1-4
8. Femur circles	6 repetitions in each direction	Weeks 1-4
9. Side-lying series	3-6 repetitions on each side	Weeks 1-4
10. Hundred	1 set	Weeks 4-12
11. Single leg stretch	3-6 repetitions on each side	Weeks 4-8
12. Roll up	6-8 repetitions	Weeks 4-8
13. Rolling like a ball	6-8 repetitions	Weeks 4-8
14. Swan Dive I & II	3-6 repetitions	Weeks 4-8
15. Single leg kick	6-8 repetitions	Weeks 4-8
16. Leg circles	3-6 repetitions in each direction	Weeks 4-12
17. Sidekick	6 repetitions in each direction	Weeks 4-12
18. Spine stretch	6-8 repetitions	Weeks 4-12
19. Spine twist	6-8 repetitions	Weeks 4-12
20. Mermaid	3-6 repetitions in each direction	Weeks 4-8
21. Standing balance with hip flexion	4 repetitions in each side / each direction	Weeks 4-12
22. Standing balance with hip extension	4 repetitions in each side / each direction	Weeks 4-12
23. Single straight leg stretch	6-8 repetitions	Weeks 8-12
24. Swimming	3-6 sets	Weeks 8-12
25. Push up	3-6 repetitions	Weeks 8-12
26. Leg pull	3-6 repetitions	Weeks 8-12
27. Leg pull front	3-6 repetitions	Weeks 8-12

RESULTS

Demographic characteristics

Of the 72 people in the experimental group, 9 participants did not complete the study. Of the 9 participants, 1 had shoulder pain, 1 sprained an ankle, 1 was pregnant, 4 moved home or changed working hours, and 2 were unable to continue participating because of family reasons.

***TABLE 1*: DESCRIPTION OF DEMOGRAPHIC CHARACTERISTICS**

	Experimental group (n=53)	**Control group** (n=35)		
Variables	**M ± SD**	**M ± SD**	**p-Value**	**Statistics**

Age (y)	42.3 ± 9.6		40.2 ± 10.6		0.333	a
Height (cm)	161.9 ± 6.0		159.6 ± 6.1		0.075	a
Weight (kg)	60.6 ± 11.9		56.3 ± 8.1		0.066	a
Gender	**n**	**(%)**	**n**	**(%)**	0.472	b
Male	9	(17.0)	4	(11.4)		
Female	44	(83.0)	31	(88.6)		
Marital status					0.564	b
Yes	18	(34.0)	14	(40.0)		
No	35	(66.0)	21	(60.0)		
Education level					0.317	b
High school	7	(13.2)	3	(8.6)		
College	40	(75.5)	24	(68.6)		
Masters degree	6	(11.3)	8	(22.8)		
Chronic disease					0.437	b
None	45	(84.9)	28	(80.0)		
Diabetes mellitus	2	(3.8)	0	(0.0)		
Hypertension	2	(3.8)	3	(8.6)		
Arthritis	1	(1.9)	0	(0.0)		
Others	3	(5.6)	4	(11.4)		
Time spent sitting					0.119	b
<4 h a day	18	(34.0)	6	(17.1)		
4-6 h a day	11	(20.8)	13	(37.1)		
>6 h a day	24	(45.2)	16	(45.8)		
Exercise habits					0.391	b
None	14	(26.4)	14	(40.0)		
1-2 times a week	22	(41.5)	11	(31.4)		
Irregular	17	(32.1)	10	(28.6)		
Occupation					0.057	b
Gov. employee	34	(64.2)	29	(82.9)		
Businessperson	19	(35.8)	6	(17.1)		

a = Independent sample t-Test; b = Chi-Square Test

Of the remaining 63 cases, 60 completed the pre- and post-test, but only those who attended more than two-thirds of the exercise sessions were included in the data analysis; thus, a final sample of 53 participants were included in the experimental group. Of the 53 original participants in the control group, 18 were unable to participate in the post-test (1 had lower backache, 1 had a cold, 2 were abroad, 10 were on business trips or busy at work, and 4 were unable to participate because of family reasons). Thus, a total of 35 participants completed both the pre- and post-test in the control group.

Thus, 88 participants across both groups completed the pre- and post-test. Descriptive statistics for their demographic characteristics are shown in Table 1. The independent-sample t-test and Pearson's chi-square test found no significant differences between the experimental and control groups for gender, age, height, weight, marital status, education level, chronic disease, time spent sitting, exercise habits and occupation ($p>0.05$ for all parameters).

Changes in body composition

The pre-test body fat percentage ratios were compared for the 2 groups using the independent-sample t-test (Table 2), where no significant differences emerged.

***TABLE 2*: COMPARISON OF PRETEST RESULTS BETWEEN GROUPS FOR BODY FAT PERCENTAGE AND CARDIOPULMONARY FITNESS**

Parameters	**Experimental** (n=53)	**Control** (n=35)	**95% CI**		**t-Score**	**p-Value**
	M ± SD	M ± SD	Low	High		
Body fat %	30.8 ± 6.3	29.6 ± 5.9	-1.46	3.83	0.890	0.376
CPF	61.7 ± 7.9	60.8 ± 10.9	-3.10	4.95	0.458	0.648

CPF = Cardiopulmonary Fitness CI = Confidence Interval

***TABLE 3*: COMPARISON OF PRE- AND POST-TEST BODY FAT PERCENTAGE AND CARDIOPULMONARY FITNESS**

Parameters of groups	**Pre-test**	**Post-test**	**95% CI**		**Paired t-Score**	**p-Value**
	M ± SD	M ± SD	Low	High		
Experimental Gr. (n=53)						
Body fat %	30.8 ± 6.3	30.2 ± 6.0	-0.49	1.70	1.105	0.274
CPF	62.1 ± 7.8	64.9 ± 9.9	-4.97	-0.64	-2.604	0.012*
Control Gr. (n=35)						
Body fat %	29.6 ± 5.9	30.7 ± 6.3	-1.70	-0.42	-3.380	0.002**
CPF	60.8 ± 10.9	58.9 ± 6.9	-1.39	5.12	1.166	0.252

* p<0.05 ** p<0.01 CPF = Cardiopulmonary Fitness

After the 12-week intervention, the paired t-test was applied to compare the within-group differences between the pre- and post-test results. The body fat percentage ratio of the experimental group decreased from 30.8% (±6.3) to 30.2% (±6.0), but the difference was not statistically significant. However, in the control group, the body fat percentage ratio increased significantly during the study period, from 29.6% (±5.9) to 30.7% (±6.3) (p=0.002), as shown in Table 3.

***TABLE 4*: RESULTS OF ANCOVA FOR POST-TEST RESULTS USING PRETEST AS COVARIATE**

Parameters	**Groups**	**M ± SE**	**F-Values**
Body fat %	Experimental	29.8 ± 0.4	4.535*
	Control	31.3 ± 0.5	
CPF	Experimental	64.6 ± 1.0	10.533**
	Control	59.3 ± 1.3	

* p<0.05 ** p<0.01 CPF = Cardiopulmonary Fitness

Using body fat percentage ratio pre-test of both groups as the covariate, the ANCOVA was conducted to compare the difference of the post-test of both groups. After excluding the effects of the pre-test (Table 4), the F value of the body fat percentage ratio was 4.535 (p=0.036). This result indicates that a significant difference existed between the experimental and control groups for body fat percentage ratio at the post-test. After adjustment, the ratio for the experimental group was 29.8%, which was significantly lower than the control group's ratio of 31.3%.

Changes in cardiopulmonary fitness

The independent-sample t-test served to compare both groups' pre-test values for the cardiopulmonary fitness index. As seen in Table 2, no statistically significant difference was found between the 2 groups. After the 12-week intervention, the paired t-test was conducted to compare the within-group differences between the pre- and post-test. Table 3 shows that the cardiopulmonary fitness index increased from 62.1 (±7.8) to 64.9 (±9.9) in the experimental group, with the difference being significant (p=0.012). In the control group, the cardiopulmonary fitness index decreased from 60.8 (±10.9) to 58.9 (±6.9), but this difference was not significant (Table 3).

Using the cardiopulmonary fitness index pre-test of both groups as the covariate, the ANCOVA was conducted to compare the difference of the post-test of both groups. After excluding the effect of the pre-test (Table 4), the F value of the cardiopulmonary fitness index was 10.533 (p=0.002). This result indicated that the experimental group and control group results differed significantly for the 3-minute step cardiopulmonary fitness index at the post-test. After adjustment, the cardiopulmonary fitness index of the experimental group was 64.6 and that of the control group was 59.3.

DISCUSSION AND LIMITATIONS

Studies on regular exercise interventions with adults are often limited by the need to respect the wishes of participants because it might be unethical to randomly assign participants to different treatment groups in a mandatory fashion. The same problem was encountered in this study. Therefore, the covariance method of statistical analysis was adopted to exclude the differences between the two groups at the pre-test level, thus reducing the potential measurement errors caused by non-random grouping.

For body composition, after the 12-week Pilates intervention, the body fat percentage ratio of the experimental group decreased, whereas it increased in the control group. However, the results showed that Pilates produced no significant effect on body fat percentage ratio in the participants. Previous research has reported ambiguous findings on the effects of Pilates exercise on body composition, with several studies showing that Pilates produced no significant effect on the body fat percentage ratios in adults (Otto *et al.,* 2004; Sekendiz *et al.,* 2007), although another study disagrees (Segal *et al.,* 2004). Another study investigated the effects of a traditional Pilates group mat exercise intervention with 22 adults, implemented three times a week for eight consecutive weeks, and found that Pilates affected body fat percentage ratios significantly (Rogers & Gibson, 2006). A separate study researched 20 sedentary middle-aged women randomised into control (n=10) and experimental (n=10) groups (Arslanoğlu *et al.,* 2011). The experimental group performed three Pilates exercise sessions per week, with each session lasting 45 minutes. Significant decreases were observed

in body fat percentage in the women in the Pilates group.

A possible explanation for the lack of positive change in body weight or fat reduction observed in some studies might be that people with a healthy initial weight tend to lose weight more slowly than obese or overweight people (Jakicic *et al.,* 2001). In the present study, no significant difference was found between the experimental and control groups at the pre-test. After the ANCOVA and adjustment, the control group's body fat percentage ratio at the post-test was significantly higher than that of the experimental group. However, the within-group differences for body fat percentage ratio in the experimental group were not significant at pre- and post-test. By contrast, the body fat percentage ratio of the control group had increased significantly at the post-test when compared to the pre-test scores.

These results suggest that the within-group differences in the body fat percentage ratios during the post-test were caused by increased body fat percentage ratios in the control group rather than the decreased body fat percentage ratios in the experimental group. Possible reason for this finding might be that diet has a great effect on body composition, but was not controlled for in the current study because of limited research funding. Moreover, because the study intervention lasted 12 weeks, possible seasonal influences could not be ruled out. Some of the intervention classes were missed during the Chinese New Year period, a time when people generally eat and rest more than normal. This might account for the slight increase in body fat percentage ratios.

After the 12-week intervention, the experimental group showed a significant improvement in cardiopulmonary fitness. Moreover, after adjustment, the post-test cardiopulmonary fitness index was significantly higher in the experimental group than in the control group; this

finding indicated that Pilates was helpful in enhancing cardiopulmonary fitness of the adults in this study. Guimarães *et al.* (2011) studied 16 patients with heart failure and randomly assigned them to either a conventional cardiac rehabilitation program (n=8) or mat Pilates training (n=8) for 16 weeks. Both groups increased their exercise tolerance, but only the Pilates group showed a significant increase in ventilation and O_2 pulse. The authors concluded that Pilates involves essentially isometric and respiratory exercises, which may have contributed to the improved respiratory efficiency.

In a separate study, Schroeder *et al.* (2002) conducted Pilates exercise training with equipment three times in one week, with 10 men and women who had not previously experienced Pilates exercise. Their results showed that heart rate did not increase to an appropriate target range through the Pilates intervention. However, the inconsistent results reported by these previous studies might be related to the different cardiopulmonary fitness indices used in various studies. The 3-minute step test, used in this study, is widely accepted as an exercise test for non-maximum perceived exertion. Within a fixed time, people step up and down a ladder rhythmically, and the recovery heart rate is measured at the end of the step test to predict aerobic capacity. A lower heart rate during recovery indicates superior fitness. This test method is more functionally oriented than simply measuring the average or maximum heart rate during exercise.

There were some limitations in the present study. Firstly, the participants' diet was not recorded, thus the effect of diet on the participants' body compositions could not be ruled out. Secondly, individuals with different body compositions may impact the results obtained

during the 3-minute step test, and thus may limit the prediction of cardiopulmonary fitness. Thirdly, the intervention was designed according to Polestar Pilates exercise principles, therefore, the results should not be generalised to traditional Pilates exercise. Finally, because group assignment could not be conducted ethically in a mandatory or random fashion, participants were assigned to groups based on their own preferences. Therefore, sampling error associated with non-randomisation could not be eliminated.

PRACTICAL APPLICATIONS

Engagement in regular physical activity is helpful in enhancing physical fitness, which greatly outweighs the potential risks involved (falls and collisions that may cause musculoskeletal injuries). According to this principle, Pilates is a non-contact physical activity because the nature of the exercise involves no physical contact with other people. Thus, the risk of musculoskeletal injuries is low, and Pilates is considered a relatively safe physical activity. One study proposed that Pilates is extremely safe and that even pregnant women can engage in it, with relatively few modifications (Artal & Sherman, 1999). During the current research period, under the instruction of certified supervisors, the participants engaged in Pilates reported no injury. Thus, Pilates is a safe physical activity and is worthwhile to promote health programs.

A recommendation for future research includes continuous tracking for three to six months at the end of the intervention period, to follow-up the intervention effects. This type of longitudinal design can provide a greater understanding of the potential long-term benefits of cardiopulmonary fitness and body composition.

CONCLUSIONS

To date, research has been limited on the effect of Pilates exercise on the body composition and cardiopulmonary fitness of adults. The results showed that, after participants had received 12 weeks of Pilates exercise training, their cardiopulmonary fitness was significantly enhanced, but no statistical difference was found for the body fat percentage ratio. The key findings of this research may serve as a point of reference for people or for follow-up research. Pilates exercise training conducted twice a week for 12 consecutive weeks can promote cardiopulmonary fitness.

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BRITSE EN SUID-AFRIKAANSE SOKKER AAN DIE WESFRONT TYDENS DIE EERSTE WÊRELDOORLOG

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ABSTRACT

Sports historians have ignored this field until recently. General secondary sources usually make no mention of sport and games and the significant role thereof at and behind the front lines during World War I. The historic-scientific method of research was used to reconstruct and analyse the past. Depositories in South Africa and the United Kingdom were used, as well as the Internet. Sport played a very big role in the lives of the soldiers. It appears that boredom was one of the primary causes of the need for sport among them and sport served a need for a morale booster. All ranks played soccer and the game was so popular that every platoon received a soccer ball in the winter of 1917. Soccer leagues at the Front enjoyed great popularity. The game was mainly played when troops were at rest, but sometimes also when close to the front lines. On festive occasions they even played against the enemy, as is evident in the Christmas truces. At the Battle of Loos and later at the Battle of the Somme, soccer balls were dribbled from the trenches towards the enemy lines in a display of British bravado and courage.

Key words: Great Britain; Western Front; Soccer; Association football; World War I.

INLEIDING

Met die naderende eeufeesviering ter gedagtenis aan die uitbreek van die Eerste Wêreldoorlog, kan hierdie studie as aktueel beskou word, veral omdat sporthistorici hierdie veld tot onlangs nog geïgnoreer het. Algemene sekondêre bronne wat dié oorlog breedvoerig bespreek, verswyg gewoonlik die aanwesigheid van sport en spele en die groot rol wat dit aan en agter die fronte sowel as in die krygsgevangekampe gespeel het. Hoofsaaklik Engelse en Afrikaanse bronne is gebruik. Toegang is wel verkry tot die werk van Waquet (2011) en Waquet en Vincent (2011), wat ‟n blik uit die Franse oogpunt bied.

SOKKER AAN DIE WESFRONT: FRANKRYK EN VLAANDERE, 1914-1918

The Graphic van 5 September 1914 bevat 'n klein foto van vier soldate wat met 'n sokkerbal speel en 'n onderskrif wat lui: “The ruling passion. British soldiers (true to their fine type) playing football at Havre before leaving for the front” (p.356). Dit som in ‟n neutedop die Britte se liefde vir speel op. Dit moet hier beklemtoon word dat Suid-Afrikaners in meer as 85 Britse eenhede diens gedoen het en daarom as “Britte” geklassifiseer is.

Om aan sport deel te neem of net te kyk, veral sokker, was in die vroeë 20ste eeu een van die belangrikste vorms van ontspanning vir die Britse werkersklas. Dit het ook vir die Britse werker in uniform aan die Westelike Front gegeld. 'n Offisier het so vroeg as Augustus 1914 in sy dagboek geskryf dat “[t]he men spent the evening in their usual manner, kicking a football about” (Sheffield, 2000:45).

Generaal Douglas Haig, bevelvoerder van die Britse Leërkorps, kon aanvanklik nie die sielkunde agter hierdie verskynsel snap toe hy opgemerk het dat geen troepe sonder ‟n sokkerbal beweeg het nie. Hy was van mening dat hulle hul tyd beter met slaap of ligte ontspanning kon deurbring as om agter ‟n bal aan te hardloop. Hy het dit veral gesê in die lig van toenemende gevalle waar wagte aan diens geslaap het – ‟n oortreding wat met die dood strafbaar was. Hy het in Julie 1915 in sy dagboek geskryf dat manne wat vir wagdiens aangewys is, deur die dag moes rus in plaas van rond hardloop en sokker speel. Tog het hy in die bitterkoue winter van 1917 die reël, wat die spel verpligtend gemaak het, goedgekeur. Elke peloton is toe van ‟n sokkerbal voorsien. Daar was selfs wedstryde waarin 100 spelers aan ‟n kant gespeel het (amper soos in die Middeleeue) en ook offisiere het aan die pret deelgeneem (Winter, 1979:155-156).

Lt.kol. William Denman Croft, een van die bevelvoerders van die 9de Divisie waarin vier Suid-Afrikaanse infanterie-bataljons diens gedoen het, bevestig hierdie storie. Vroeg in Mei 1917 is die *Scottish Rifles* vir 'n week se gevegsopleiding aan die loopgraaflinies onttrek. Dit was bitter koud en om die manne warm te hou, het elke peloton 'n sokkerbal te voorskyn gebring en almal in die bataljon moes speel − selfs offisiere ook. Daar was soms 100 spelers aan 'n kant en die spel is as “go as you please” beskryf. Dit was spannende wedstryde, veral as twee kompanies sterk teenstanders was. Lewende varke is soms as pryse uitgeloof (Croft, 1919:102-103).

Gevolglik is versoeke om sokkerballe gedurig van die fronte te ontvang: “There was said to be a „famine in footballs‟ at the front” (Mason & Riedi, 2010:86). Verskeie sokkerklubs in Engeland het gereeld hieraan gehoor gegee en skenkings gemaak. Een soldaat het geskryf dat hy [hulle] met ‟n nat sak sokker gespeel het − “[s]ince soldiers usually played in hobnailed army boots, the balls did not last long” (Riedi & Mason, 2006:493).

H. Drummond het as ere-kaptein van die sokkerklub van die seiners van SA Infanterie Brigade se Hoofkwartier op 27 Augustus 1916 aan die redakteur van *South Africa* geskryf en gevra dat twee of drie balle aan hulle gestuur moes word. Hulle het net een gehad en dit was toe al gehawend. Hulle span het nog nie ‟n wedstryd gewen nie, maar darem gelykop gespeel teen die 9th Seaforths. Die redakteur het hierop geantwoord dat sulke versoeke en skenkings liewer deur die "Comforts Committee" hanteer moes word, anders word die klub dalk toegegooi onder sokkerballe (*South Africa*, 1916:452).

Lt. Henry Jones van die 9de Britse Kavallerie Brigade het op 14 Oktober 1915 vir hul hoofkwartier aan ‟n sokkerwedstryd teen die 15th Hussars deelgeneem. Alhoewel hulle met 2-1 gewen het, skryf hy: "I can‟t work up any enthusiasm for Soccer. Oh! for a real game of Rugger. Still, the Tommies – the English ones, at least – think Soccer is the only game, so one must cut one‟s cloth to one‟s opportunities. It is something to get a game of any sort out here" (Jones, 1918:131).

Sokker was ‟n uiters gewilde tydverdryf tydens die ruskanse (en net so tradisioneel soos dobbel). Lt.Kol. (later generaal) James Lochhead Jack se Cameronians (oftewel Scottish Rifles) het al sedert Oktober 1914 spele, hoofsaaklik sokker, na aandete gespeel. ‟n Paar maande later, toe hulle in reserwe verkeer het, was dit steeds veral sokker in die middae wat hulle fiks en opgewek gehou het. Dit is hoekom Jack opgemerk het dat "[h]owever tired the rascals may be for parades, they always have enough energy for football" (Terraine, 1964:91). Later in die oorlog, toe hulle van 1 tot 19 Julie 1917 gevegsopleiding by Polincove in die St. Omer-area ontvang het, het hy geskryf "[l]ittle as is the time for recreation, games have to be sandwiched in somehow, since no British troops ever travel without footballs or the energy to kick them ..." (Terraine, 1964:226-227).

Daar is selfs op internasionale vlak meegeding. Tydens die *Slag van die Somme* (wat van 1 Julie tot 18 November 1916 geduur het), het daar volgens maj. Donald Rolfe Hunt se dagboek op 3 Julie ‟n sokkerwedstryd tussen die Suid-Afrikaanse troepe en Franse artilleriste in die Billon-vallei, net 3 000 tree van die Front af, plaasgevind (Uys, 1983:32-33; Uys, 1991:22). Hy vertel dat "[t]he Scotties wore no kilts. It was as well that there were no females within several miles of the valley" (Uys, 1991:22). Met die "Scotties" verwys hy vermoedelik na 4 Suid-Afrikaanse Infanterie (4 SAI) wat ook as die "SA Scottish" bekend gestaan het.

Tydens 2 SAI se verblyf by Lattre St. Quentin het hulle van 24 tot 26 November 1916 elke middag "voetbal" gespeel (SANDFA, WO1D, Box 1a). Die eenheid by Duisans (vermoedelik 1 SAI) het ‟n soortgelyke program gevolg. Die oggende is met opleiding verwyl en die middae met "voetbal" (SANDFA, WD/WW1 PRO, Box 22, file WO95/1780, vol. 9).

Robert Graves vertel dat toe die 2de Bataljon van die *Royal Welsh Fusiliers* by Bouchavesnes aan die Somme was, hulle by Suzanne ‟n ruskans geniet het. Dit was die strafste winter sedert 1894/5 en die manne het interkompanie-sokkerwedstryde op die bevrore rivier gespeel. Die ys was twee voet (610 cm) diep (Graves, 1977:197). Hy verwys vermoedelik na die strawwe winter van 1916/7.

In April 1917 was die Suid-Afrikaanse Infanterie by La Thieuloye met opleiding besig en in die middae het hulle graag sokker gespeel (SANDFA, WD/WW1 PRO, Box 22, file WO 95/1780, vol. 2). In dieselfde tyd (op 8 April) het Frederick Wade in ‟n brief aan sy moeder geskryf dat sy *7th London Regiment* tydens hulle verblyf by Dominion-kamp naby

Reninghelst, op Paassondag teen die *7th Transport Regiment* sokker gespeel en met 2-1 gewen het. Dit het vir groot opwinding gesorg omdat daar altyd ‟n gees van wedywering tussen die twee regimente was. Hy skryf verder: “I encourage their football efforts as it takes their minds away from the monotony of this rather stale job as things are at present” (Wade, 1996:54). Die militêre dagboeke by die Suid-Afrikaanse Weermag se argief toon dat daar in September 1917 en in Februarie, Augustus en September 1918 gereelde sokkerkragmetings tussen die Suid-Afrikaanse infanteriste plaasgevind het (SANDFA, WO1D, Box 1a & b; SANDFA, WD/WW1 PRO, Box 22, file WO95/1780, vol. 1: 1916 April – 1918 February).

Om verwarring te voorkom indien dit sou mag lyk asof hierdie wedstryde nooit deur oorlogsaksies onderbreek is nie, word na enkele insidente ter illustrasie van die teendeel verwys: Sappeur Albert John (beter bekend as “Jack”) Martin van die *Royal Engineers* vertel dat hulle op 19 Mei 1918 sokker op die veld voor die Vlamertinge Kasteel gespeel het. Dit

was in volle sig van die Duitsers se observasie-ballonne. Die volgende dag is die speelveld met twee tot drie dosyn bomme gepeper. Dit het 'n einde aan hulle spele gemaak (Van Emden, 2009:209). Dan was daar ook die aand van 23 September 1918, toe *2nd Leinster Regiment* die *2nd Hampshires* in ‟n sokkerwedstryd gepak het. Die besoekers het nie net gewen nie, maar die spel is ook bederf deur ‟n laagvlieënde vyandelike vliegtuig (Hitchcock, 1937:276, 279, 281).

Baie sokkeraktiwiteite het ook in 'n formele liga formaat plaasgevind. Waarskynlik die oudste verwysing na ‟n militêre sokkerliga is die een wat net voor die *Slag van Neuve Chapelle* (10-13 Maart 1915) ten einde geloop het (Anon., 1915:7).

Vroeg in November 1915 was James Jack kompanie-bevelvoerder van die *2/Cameronians* toe hy van 5 tot 10 November, tydens hulle divisie se reserwe by Sailly,‟n sokkerliga bestaande uit een span uit elke peloton georganiseer het (Terraine, 1964:118). Dr. Alex Frew verwys weer na ‟n sokkeruitkloptoernooi wat op 25 Augustus 1916 in volle swang was. Hy was die bataljon se agterspeler, maar die skeidsregter in die finale wedstryd. Dit blyk dat hulle toe by Ypres was. Verder het Frew gesê dat nadat hy op 18 September 1916 as dokter daar diens begin doen het, daar ‟n groot sokkerveld aan die Rouen-kant en nie ver van hulle hospitaal was nie en dat wedstryde elke Sondag plaasgevind het (Strange Library: 67, 129).

Terwyl die Suid-Afrikaanse Infanterie by Hermaville gestasioneer was, het die 2de Regiment op 7 Maart 1917 teen die *Royal Army Medical Corps* (RAMC) sokker gespeel en hulle met 3-0 geklop. Omdat dit die laaste wedstryd om die beker was wat maj.genl. William T. Furse aan die 9de Divisie geskenk het, het elke lid van die wenspan ‟n medalje ontvang. Die beker-oorhandiging is deur genl. Henry Lukin behartig (SANDFA, WO1D, Box 1a).

Lt.kol. Rowland Feilding het op 2 Mei 1917 as bevelvoerder van die *6th Battalion Connaught Rangers* vanuit Birr-kaserne (Locre) geskryf dat hulle bataljon kort tevore twee keer teen bataljons van die *Carson 36th Division* sokker gespeel en al twee keer verloor het. By die tweede geleentheid was daar ‟n toeskouertal van tussen 2 000 en 3 000 soldate, al was daar nie veel ruimte om die speelveld nie. Dié dag, ‟n Sondag, was egter ‟n pragtige dag vir sulke vermaak. Met sy aankoms was Feilding nogal angstig en in sy verbeelding het ‟n vyandelike vliegtuig oorgevlieg, of het ‟n Duitse battery hul kanonne op hulle ingestel, of ‟n skielike bombardement skrapnel het op hulle neergedaal. As die mees senior offisier moes hy die besluit neem en die feit dat almal bitter graag die twee Ierse spanne teen mekaar wou sien

speel, het die deurslag gegee. Ten minste het die kragmeting in ‟n goeie gees verloop, inteenstelling met die vyandelikheid wat op Ierse bodem sou geheers het (Feilding, 1930:169).

2/Lt. Robert Stevenson was ‟n offisier in die *3rd/7th London Regiment* (waarvan die helfte volgens hom uit Suid-Afrikaners bestaan het) en in sy dagboek verwys hy op Vrydag 3 Augustus 1917 na interpeloton-sokkerkompetisies wat georganiseer is (Hall, 1986:1, 7). So ook het 2 SAI hulle einde Augustus 1917 by Trescault bevind, waar hulle van 22 tot 25 Augustus elke middag inter-kompanie-sokker gespeel het (SANDFA, WO1D, Box 1a).

Nadat 'n algehele skietstilstand op 11 November 1918 bereik is, het die nie-vegtende aktiwiteite van die oorlog tydens demobilisasie soos voorheen voortgegaan. So byvoorbeeld

het B en C Kompanie van die 2de Regiment (1 SAI) op 2 Desember 1918 by Bac du Prince teen Hoofkwartier gespeel (SANDFA, WW1 GSWA, Box 147) en op 19 Januarie 1919 is daar uit Marche in België soos volg berig:

> “Rain has fallen excessively for the past week, terminating yesterday with a heavy fall of snow, which refused to lie on the ground under such sodden conditions. … although the weather might have been more favourable, it did not interfere with the recreation and animated spirits of the troops. Brigade soccer competitions have also been held, the 4th Regiment winning the first round of the League by five goals to three against the 542nd ASC.” (*Nongqai*, 1919:165.)

Kersfees-skietstilstand (Desember 1914)

Ondanks al hierdie *ad hoc*-wedstryde en ligakompetisies, was daar drie insidente tydens die oorlog wat die publiek se verbeelding aangegryp het en dit steeds doen. In al drie speel sokker 'n prominente rol. Eers was daar, met Kersfees 1914, die nie-amptelike skietstilstand en meegaande verbroedering met die vyand, toe op 25 September 1915 die Slag van Loos en derdens die Slag van die Somme op 1 Julie 1916.

Die Kersfees-skietstilstand verwys na verskeie kort, nie-amptelike opskortings van vyandelikhede wat tydens die Eerste Wêreldoorlog op Oukersaand of op Kersdag 1914 tussen Duitse en Britse of Franse soldate voorgekom het. Dit verwys veral na Britse en Duitse soldate wat tydens die Kersfees van 1914 langs die Wesfront gestasioneer was, maar in mindere mate ook in 1915. Met laasgenoemde Kersfees was daar ‟n soortgelyke skietstilstand tussen Duitse en Franse soldate en tydens die Pase van 1916 was daar ‟n skietstilstand aan die Oostelike Front (Christmas truce: Wikipedia).

Sktr. Bertie Felstead van Londen vertel die volgende storie tydens sy diens in Noord-Frankryk. Hy was by die *Royal Welch Fusiliers* ingedeel en hulle was met Oukersaand 1915 naby die dorpie Laventie gestasioneer. Dié aand het hulle die Duitsers vanuit hulle loopgrawe ‟n 100 meter weg, die Walliese lied “Ar Hyd y Nos” in Duits hoor sing. Hulle het hiermee dus hul vyand se nasionaliteit erken. Felstead-hulle het toe met “Good King Wenceslas” geantwoord. Met hierdie Kersliedere is die welwillendheid aan beide kante só opgekikker dat hulle uit hul loopgrawe geklim en mekaar gegroet, geseënde Kersfees toegewens en presente uitgeruil het. Hierna het ‟n spontane sokkerspel ontwikkel. Dit was ‟n ruwe soort sokker waar omtrent 50 spelers aan ‟n kant die bal na willekeur rondgeskop het. Felstead sê hy het

saamgespeel omdat hy van sokker gehou het. Hy is nie seker hoe lank dit geduur het nie, waarskynlik ‟n halfuur. Dit is toe stopgesit deur ‟n Britse sersant wat hulle na die loopgrawe teruggejaag het met die opmerking dat hulle daar was om die vyand te beveg en nie om met hulle vriende te maak nie. Hierdie skietstilstande het nie met Kersfees in 1916 en 1917 plaasgevind nie, omdat die onophoudelike slagting teen daardie tyd die griewe en vyandelikheid aan beide kante al hoog laat loop het (Bertie Felstead, 2001:g.p.).

RSM George Beck se ervaring was ietwat anders. Volgens sy dagboekinskrywing op 24 Desember 1914 het hulle daardie aand die *2/Royal Dublin Fusiliers* in die loopgrawe naby die dorpie St. Yves (naby Ypres) vervang. Geen skote is geskiet nie. Die Duitsers het toe vanuit hulle loopgrawe geroep en gevra of hulle sokker wou speel. Om 02:00 (Kersdag) het

‟n Duitse orkes “Home Sweet Home” en “God Save the King” gespeel. Gedurende daardie nag het van hulle drank en sigare van die Duitsers in Niemandsland ontvang. Op Kersdag is daar nog steeds geen skote geskiet nie en presente is uitgedeel. Blykbaar sou die Duitsers enigiets vir boeliebief en konfyt verruil. Dieselfde het op 26 Desember 1914 gebeur en vir ‟n paar dae (sic) voortgeduur (WW1: g.p.).

Lt. Charles Brewer van die *2/Bedfordshires* het in 'n brief geskryf: “Higher up in the line – you would scarcely believe it – they are playing a football match” (Brown & Seaton, 1984:144). Knr. C.L.B. Burrows van die 104 Battery (*22nd Brigade*), het in sy dagboek geskryf dat hulle infanterie in Niemandsland 'n sokkerwedstryd teen die Duitsers gespeel en sigarette uitgeruil het. Ernie Williams van die *6/Cheshires* was by Wulverghem met Kersfees en volgens hom het die Duitsers daar 'n bal te voorskyn gebring en 'n spontane spel, sonder skeidsregter, reëls of telling, het ontstaan. Hulle het dit terdeë geniet. Selfs vanuit Duitse geledere is daar sulke getuienis, byvoorbeeld Hugo Klemm wat onthou dat soldate van beide kante oral gestaan en gesels het en dat 'n sokkerspel ontstaan het. Lt. Johannes Niemann, van dieselfde regiment, vertel dat 'n Engelsman met 'n sokkerbal vorendag gekom het. Hulle het die doele met pette aangedui en op die bevrore modder begin speel. Die Duitsers het 3-2 gewen (Brown & Seaton, 1984:145-146).

Volgens lt. George Adolph Hutton was hulle by Brunelles gestasioneer toe die Duitsers op Kersdag 1914 uit hulle loopgrawe gekom en “A Merry Christmas” geroep het. Spoedig daarna het hulle aandenkings en sigarette uitgeruil en het daar vir omtrent 48 uur ‟n skietstilstand gevolg. Hy praat van 'n sokkerwedstryd wat vir Nuwejaarsdag beplan was (Liddell Hart Centre for Military Archives). Ander bronne bevestig dit. Enkele pogings is ook aangewend om op Tweede Kersdag weer sokker te speel, maar dit het weens hernieude bombardemente nie gerealiseer nie (Brown & Seaton, 1984:144, 146). Elders aan die Front het die *2/Argyll* en *Sutherland Highlanders* ook met die Duitsers ooreengekom om op Kersdag 1914 in Niemandsland sokker te speel, maar onverwagte grofgeskut het dié reëling in die wiele gery (Terraine, 1964:94).

Daar is skeptici wat dié gebeure bevraagteken en sê dat een klein insident buite verhouding oordryf is en dit selfs as “latrine rumour” afgemaak. Desnieteenstaande is daar genoeg primêre bewyse wat die speel van sokker tydens die Kersdag-skietstilstand bevestig. Daar kan ook aanvaar word dat dit nie 'n elf-aan-'n-kant-spel met doelhokke was nie, maar eerder 'n ongeorganiseerde slorderige “spel” soos uit die Middeleeue (Brown & Seaton, 1984:ix, 146). Volgens kol. Walter Norris Nicholson was hulle die tweede Kersfees van die oorlog, met ander woorde in 1915, by Senlis en “strict orders had been issued against any form of truce

on the trench line" (Nicholson, 1939:74). Ed Harris verwys ook na 'n berig van 19 Desember 1915 wat van *GOC 47th (London) Division* gekom het om alle eenhede daaraan te herinner dat 'n herhaling van die 1914-Kersfees-verbroederliking nie geduld sou word nie (Harris, 2009:168). Miskien het hierdie reëling tussen divisies of brigades verskil. Daar is egter talle ander verwysings na dié verbod.

Gereelde bombardemente tydens Kersfees 1916 het gesorg dat daar geen skietstilstand was nie en teen Kersdag 1917 was daar, soos reeds gesê, reeds te veel kwade gevoelens en vernietiging om vir 'n vriendskaplike gees te sorg. Tog, teen alle verwagting in, was daar met

Nuwejaarsdag 1918 'n oplewing van die broederlike gees van weleer (Brown & Seaton, 1984:197, 203-204).

Die *South Wales Echo* het op 1 Januarie 1915 in een van sy heel eerste hoofartikels die volgende berig:

> "When the history of the war is written one of the episodes which chroniclers will seize upon as one of its most surprising features will undoubtedly be the manner in which the foes celebrated Christmas. How they fraternized in each other‟s trenches, played football, rode races, held sing-songs, and scrupulously adhered to their unofficial truce will certainly go down as one of the greatest surprises of a surprising war." (Brown & Seaton, 1984:179)

Sir Arthur Conan Doyle het hierdie skietstilstande 'n "amazing spectacle" genoem en dit geëer as "one human episode amid all the atrocities which have stained the memory of the war" (Brown & Seaton, 1984:xii). Dit is inderdaad 'n aangrypende gedagte dat twee vyandelike partye op so 'n vriendskaplike vlak temidde van die oorlog kon verkeer. Dan is daar ook die politiesnaïewe gedagte dat nasies eerder hulle verskille op die sportveld moet bylê as op die oorlogsfront (Brown & Seaton, 1984:142).

Die Slag van Loos (Frankryk, 1915)

‟n Seiner met die naam van Bert Chaney het in sy dagboek ‟n interessante voorval beskryf wat tydens die Slag van Loos, wat op 25 September 1915 begin het, plaasgevind het. Sy inskrywing lui: "Someone took a football over the top with him and it was kicked from one to the other across No Man‟s Land until forgotten in the final bayonet charge through the enemy barbed wire"(Moynihan, 1973:112).

Die *Daily Mail* het ook hieroor berig en die verhaal aan die 1ste Bataljon van die *London Irish Rifles* gekoppel. Op die vooraand van die Slag van Loos in September 1915 wou die soldate ses sokkerballe na die Duitse linies dribbel om hulle Britse bravado en dapperheid ten toon te stel. Ten einde dit te verhoed, het die bevelvoerder vyf van die ses balle wat hy in die hande kon kry stukkend geskiet. Die sesde bal was versteek en is toe tog in die aanval oor Niemandsland en onder masjiengeweer- en mortiervuur gebruik. Dit was sers. Frank Edwards wat die bal uit die loopgraaf gedribbel het. Hy het die bal 20 tree gedribbel toe ‟n koeël hom in die bobeen getref het. Nadat die bal tussen ‟n aantal "spelers" aangegee is, het die Duitse doringdraadversperring dit stukkend gesteek. Na dié slag waarin 50 000 Britse soldate gesterf het, is die modderige bal gevind en na Britanje teruggeneem waar dit 50 jaar lank in die regiment se museum in Camberwell (suidoos Londen) uitgestal is. Daarna het dit in ‟n houer in die onder-offisiersmenasie beland, totdat dit ontdek en gerestoureer is (*Daily Mail*:g.p.).

Hierdie insident is eers in 2009 deeglik nagevors en deur Ed Harris in *The footballer of Loos* geboekstaaf. Loos was terloops die toneel van die eerste groot offensief van die Britse leër aan die Westelike front. Die *7th* en *8th Battalions East Surreys* het deel hiervan uitgemaak, met die *1/18th London Irish Rifles* wat die eerste aanslag gelei het. Dit was die eerste gedokumenteerde geval waar 'n sokkerbal as deel van 'n militêre offensief gebruik is (die geskop van 'n sokkerbal tydens die skietstilstand op Kersdag 1914 was natuurlik vriendskaplik van aard). Frank Edwards en sy sokkermal maats sou egter daarvan kennis

geneem het (indien hulle nie ook self betrokke was nie) en dit kon die saadjie vir die optrede by Loos geplant het.

Frank Edwards het jare later self sy storie aan BBC-radio vertel. Hy het 'n sokkerbal gehad wat hy net voor die aanval opgeblaas het. Sy offisier, 2/lt. S.F. Major, het hom toe beveel om dit af te blaas, want dit sou hulle aandag van hulle taak aflei. Volgens skutter Walter (sic) Dalby het 'n paar van hulle sokkerballe gehad en het ene lt. Dale dit voor die aanvalsbevel kon kom, stukkend geskiet. Frank Edwards het egter nóg 'n bal in sy rugsak gehad en dit is dié een wat hy met die bevel, "Over you go lads!", soos 'n wafferse doelwagter "veld" ingegooi en opgevolg het. Frank se sokkermaats, Micky Mileham, Bill Taylor en Jimmy (sic) Dalby, het soos ware voorspelers hom én die bal gevolg. Die bal is deur almal om die beurt gedribbel te midde van 'n stortvloed van koeëls, bomme en skrapnel wat om hulle neergereën het.

Maj.genl. Foulkes en 2/lt. Major het hulle later in onderhoude herinner aan dié beeld van sokkerspelende soldate wat in die rookwolk verdwyn het. Laasgenoemde was chloorgas wat die aanvallers vooruit gestuur het om die vyand te verlam. Ongelukkig het die wind halfpad deur Niemandsland gedraai en het baie van hulle toe self die slagoffers daarvan geword. Frank het ook 'n bietjie daarvan ingekry. Die gas het baie vinnig hulle konsentrasie van die bal na die oorlog verplaas, soos hulle gesukkel het om hul gasmaskers in plek te kry. Frank is kort nadat hulle die eerste Duitse loopgraaf bereik het in die hand en bobeen gewond, sodat hy nie verder aan die aanval kon deelneem nie. Volgens een van die draagbaardraers, Patrick MacGill, het 'n Duitse koeël die bal getref waar dit in hulle doringdraadversperring vasgesit het (Harris, 2009:11, 32, 99, 101, 106, 113, 134).

Kort hierna, in Oktober 1915, het *The War Illustrated* 'n dramatiese volblad-illustrasie hieroor gepubliseer. Die enigste verskil was dat dit 'n jong offisier was wat met die bal gelei het en dat sy regiment se naam op die bal geskryf was (Harris, 2009:15, 34). Hierdie illustrasie het 10 maande later waarskynlik tot 'n soortgelyke insident tydens die Slag van die Somme gelei.

Die Slag van die Somme (Frankryk, Julie 1916)

Was die Slag van Loos 'n sukses, dan was die verhaal van Frank Edwards as die "Footballer of Loos" vandag veel beter bekend. Dit is egter nie die geval nie. Daarom is Billie Nevill se verhaal, wat tydens die Slag van die Somme afgespeel het, meer bekend. Nevill is ook in die voorval noodlottig gewond, terwyl Edwards sy wonde oorleef het.

Colin Veitch (1985:363) skryf in sy artikel "„Play up! play up! and win the war!" Football, the nation and the First World War 1914-15" dat kapt. Wilfred Percy ("Billie") Nevill van die *East Surrey Regiment* op 1 Julie 1916 om 07:30 sy troepe (B Kompanie) uit die loopgrawe by Carnoy deur Niemandsland gelei het deur "n sokkerbal na die Duitse linies, 300 tree verder, te

skop. Dié bekende simbool moes hulle selfvertroue en moed gee. Dit was die eerste dag van die Slag van die Somme en ook die teken om aan te val en so het die donkerste dag in die Britse leër se geskiedenis aangebreek. Daardie aand het hulle 57 470 gewondes gelys, van wie 19 240 offisiere en manskappe gesneuwel het. Nevill het vier balle van Londen saamgebring toe hy van verlof teruggekeer het – een vir elk van sy pelotons. Hy het ‟n prys uitgeloof vir enige van sy pelotons wat die bal tot binne die Duitse linies kon dribbel. Dié

wenpeloton kon egter nie sy prys ontvang nie, want kapt. Nevill het saam met baie van sy manskappe in dié aanval gesneuwel.

Twee van hierdie balle is later in die nabyheid van waar hy gesneuwel het, gevind en word nou in Britse militêre museums bewaar. Die een bal is in die Princess of Wales‟s Royal Regiment Museum in Dover-kasteel en die ander in die Queen‟s Royal Surrey Regiment Museum by Guildford (*The Athletic News*, 1916:1; Wilfred Nevill:g.d.). Blykbaar is van die balle gemerk “Great European Cup-Final: East Surreys v. Bavarians. Kick Off at zero [hour]” en “No referee” (Holmes, 2004:254; Harris, 2009:15, 34-35). Die bewaring van hierdie verslete sokkerballe in erkende museums onderstreep weer eens die belangrike rol wat sokker aan die Wesfront gespeel het. Nevill moes seer sekerlik bogenoemde illustrasie in *The War Illustrated* van Oktober 1915 gesien het en dit moes tot sy optrede aanleiding gegee het (Harris, 2009:34).

SLOT

Dit is uit die voorafgaande teks duidelik dat sport en spele 'n groot rol in die lewens van die soldate gespeel het. “All ranks have had opportunities for bathing, amusement, sports, etc., which has exercised a very beneficial effect in toning up all round” (SANDFA, WW1 GSWA, Box 146). Sokkerligas aan die Front was só gewild dat sommige soldate selfs hul verlof gekanselleer het net om aan die liga deel te neem (Nicholson, 1939:260).

2/Lt. Robert Elliott (“Bob”) Stevenson van Port Elizabeth was een van 78 offisiere in die *3rd/7th London Regiment* (“… nearly half of them were South Africans”), en hy wys in sy dagboek daarop dat daar wel oomblikke van ontspanning tydens die oorlog was en hoé belangrik dit vir hulle was: “Every opportunity was taken to escape from the horror and „to charge up the batteries of courage‟ by taking full advantage of every moment out of the trenches; and by enjoying every bit of entertainment and recreation available” (Hall, 1986:1). Aubrey Smith het ook in een van sy briewe huistoe geskryf dat “A few days‟ leave from the front acted on one‟s spirits like a dose of Alpine air” (Smith, 1922:252).

Tony Collins maak die volgende opmerking ten opsigte van spansport tydens die oorlog:

> “Rugby occupied a distant second place compared to the popularity of soccer with troops on active service … it is strange that the game was so little played in France during the war. There was never any difficulty raising sides to play Association, and there was scarcely a squadron, cavalry, engineers or signalers, or a platoon that did not possess its own team and its own wonderfully coloured jersey. Yet Rugby games were few and far between.” (Collins, 2009:56)

Dit is nie duidelik of hy net na die soldate van Britse afkoms verwys nie, want die onderhawige navorsing het gevind dat baie rugby onder die Suid-Afrikaners, Australiërs en

Nieu-Seelanders gespeel is. Collins noem as rede dat die gevaar van beserings en die gebrek aan geskikte speelterreine sokker bo rugby as gunstelingsport geplaas het. Daarbenewens was sokker ‟n “practical exercise in class collaboration” (Collins, 2009:56). Alle range het sokker gespeel, terwyl rugby (in elk geval aanvanklik) as die spel vir offisiere beskou is. Sokker was so gewild dat tydens die winter van 1917 elke peloton ‟n sokkerbal ontvang het. Selfs soldate

wat tuis rugby gespeel het, het sokker aan die Front verkies (Collins, 2009:56). Aan elke vegtende front is dié spel gespeel en soos tuis (Brittanje) het dit selfs perdewedrenne in gewildheid oortref (Fuller, 1990:85).

Al hierdie sokkerspelery het nie sonder teenkanting geskied nie. Dit was veral die Franse boerebevolking wat daardeur verontrief is. Die volgende aanhaling uit Ralph Mottram se memoirs gooi meer lig daarop:

> “One of the best things about the British Army was the insistence on sport. It exercised the limbs, distracted the mind and offered an alternative to the various, if primitive, temptations of the place. But it meant treating with the local farmer for the use of suitable pastures and open spaces, and it was incredibly difficult to make most of them understand the reason. Why should they give up profitable land for a diversion known to them as „le fool-ball‟ (sic)?” (Mottram, 1929:102)

Klagtes oor skade aan hulle eiendom het daartoe gelei dat 1 SAI op 23 April 1917 die volgende berig uitgestuur het: “Several complaints have been received from the local farmers of troops using pasture fields which are not rented by the British Army for drill and as football grounds. This means that claims for damages will be submitted. Please ensure that the unauthorised use of fields is discontinued” (SANDFA, WD/WW1 PRO).

Dit blyk uit hierdie studie dat sport nie net van waarde vir die individuele soldaat was nie, maar ook vir die magte in die geheel. Die Eerste Wêreldoorlog was die keerpunt vir sport wat vroeër wel nie-amptelik en wyd beoefen is, maar nou vir die eerste keer 'n amptelike en integrale deel van die Britse weermagstelsel geword het.

SUMMARY

British and South African soccer at the Western Front during the First World War

In the light of the forthcoming centenary celebrations in commemoration of World War I, this study can be regarded as topical – especially as sports historians ignored this field until recently. General secondary sources in which World War I is discussed in detail usually make no mention of sport and games and the significant role thereof at and behind the front lines.

The historic-scientific method of research was used to reconstruct and analyse the past as faithfully as possible. Depositories in South Africa and the United Kingdom were used, as well as the Internet.

Sport played a major role in the lives of the soldiers. From the study it appears that boredom was one of the primary causes of the need for sport among them. Troops also had a need for a morale booster and sport served this purpose. Even though a commander such as Gen. Douglas Haig did not realise the value of sport, all ranks played soccer and the game was so popular during the winter of 1917 that every platoon received a soccer ball. It was the worst

winter since 1894/5 and playing soccer had to help keep the men warm. Inter-company matches were even played on a frozen river.

Soccer leagues at the Front were extremely popular and some soldiers even cancelled their leave just to participate. The game was played mainly during periods of rest. The mornings were reserved for military training and cleaning, while the afternoons and evenings were set aside for play. Sometimes soccer was also played close to the front lines. On more than one occasion shelling the following day destroyed their playing fields or low-flying enemy aircraft disrupted matches. Matches of an international nature even took place. For example, the South African Scottish played against a team of French artillerymen.

On festive occasions, soccer was even played against the enemy, as illustrated by the Christmas truce of 1914. The Christmas truce refers to several brief, unofficial cessations of hostilities that occurred on Christmas Eve or Christmas Day between German and British or French troops, particularly those between British and German troops stationed along the Western Front during Christmas 1914 and, to a lesser extent, in 1915. Soldiers on both sides then sang Christmas carols and later spontaneously emerged from the trenches to exchange, souvenirs, food and cigarettes. At more than one place along the front line goals were marked with clothing and a soccer ball was kicked around by a group of soldiers.

On 25 September 1915, at the Battle of Loos, Frank Edwards and his comrades dribbled a ball from the trenches to the German lines to lead the offensive. Later, at the Battle of the Somme, it was Billie Nevill who followed this example on 1 July 1916. He kicked four soccer balls from the trenches and he and his troops dribbled them to the German lines. This familiar symbol had to give them self-confidence and courage. It was also a display of British bravado and bravery. In both cases the British were mowed down by machine-gun fire and suffered huge losses. Once a total cease-fire had been declared on 11 November 1918, the non-combatant aspects of the war continued as before during demobilisation.

From this study it appears that sport was not only of benefit to the individual soldier, but also to the armed forces as a whole. World War I was the turning point at which sport, previously practised non-officially and widely, became an official and integral part of the British military system for the first time.

Erkenning

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PUSH AND PULL FACTORS OF THREE AFRIKAANS ARTS FESTIVALS IN SOUTH AFRICA

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ABSTRACT

Afrikaans arts festivals are facing increasing competition and, at times, lack differentiation given the increasing numbers of festivals in the South African festival market. This ultimately threatens the sustainability of these events and its role-players, including artists, local economies and the community. The purpose of this research was to analyse the push and pull motivations of visitors to three South African Afrikaans arts festivals (KKNK, Aardklop and Innibos), in order to understand these visitors' travel behaviour and be better able to cater for their needs. Surveys were conducted during 2011, with approximately 400 completed questionnaires at each festival. Statistical analyses entailed an ANOVA on the individual motivational items across the three events, followed by factor analyses regarding the push and pull motives of attendees at each festival. Homogeneous travel motivation behaviour was evident. Visitors across all three festivals travel for Escape and Exposure as push factors. Art and Festival Experience emerged as a common pull factor. This implies that the management of these festivals should not only focus their marketing campaigns on the identified travel motives, but also focus on each festival's unique characteristics, in order to contribute to the sustainability of each of these valuable events.

Key words: Travel motivation; Push and pull factors; South African Afrikaans arts festivals.

INTRODUCTION

Festivals are of increasing relevance to the South African tourism sector. The number of festivals in South Africa has increased significantly during the past years (Van Zyl & Strydom, 2007). In 2012, Kruger and Saayman (2012) counted more than 400 annually held festivals in South Africa. This growth is not surprising if the various socio-economic and cultural benefits associated with these festivals are considered. Some of these benefits include the representation of cultural wealth, which positively impacts the local residents and visitors (Yolal *et al*., 2009), infrastructural improvements (Arcodia & Whitford, 2006), creation of a unique destination image (Dwyer *et al*., 2006), local pride and a „sense of community" (Gartner, 1996), as well as the sought-for economic benefits (Page & Connell, 2009).

Local authorities/municipalities are attracted to the benefits that come with the hosting of festivals. As a result, more and more festivals (and in many cases, with similar programme items), appear on the festival calendar. This, of course, ultimately leads to increasing competition in the market (Van Zyl & Strydom, 2007). Afrikaans arts festivals, in particular,

are finding themselves in this predicament, and the cost is already evident as evidenced by the declining visitor numbers that they are currently experiencing (Pretorius, 2012). Shows, plays and artists move from one festival to another covering an array of cultural or arts events in South Africa (Viviers *et al.*, 2012). The resulting similarities in the productions on offer by the different festival programmes further contribute to this dilemma (Kruger, 2009). Consequently, people now tend to opt for festivals or alternatives „closer to home", as opposed to those festivals that require longer travelling distances and which they would perhaps have formerly visited (Viviers *et al.*, 2012). As a result, a decline in visitor numbers could threaten the sustainability of the Afrikaans South African arts festival market, as well as the immediate livelihoods of the artists involved.

Travel motivation research provides valuable information and insight that organisers and marketers of destinations and events can use to better cater to the needs of their visitors (Slabbert & Viviers, 2012). Research into travel motivation regarding arts festivals in the South African Afrikaans arts festival context is therefore essential as festival managers can, once provided with a better knowledge of their market in this regard, establish a unique festival experience that helps differentiate their events from competitors in the field.

There has been a great deal of travel motivation research in the context of festivals (Yuan *et al*., 2005; Schofield & Thompson, 2007; Savinovic *et al*. 2012). However, research regarding South African Afrikaans arts festivals (Saayman & Saayman, 2006; Antrobus & Snowball, 2010) is limited. Van Zyl"s (2006) investigation of „motivating factors of local residents for attending the *Aardklop* National Arts Festival" is one such study. However, although Van Zyl examines push and pull factors of a South African Afrikaans arts festival, the focus exclusively remains upon the local residents and not on all attendees. The limitation of these types of studies, together with the current problem of extreme competition, calls for new input in this research area.

PURPOSE OF THE STUDY

The push and pull theory, originally developed by Dann (1977, 1981), and further elaborated on by Crompton (1979), has proven to be a very useful tool in determining travel motivation (Dann, 2012). This will serve as the model for this study. The aim of this study was, therefore, to determine the push and pull factors contributing to visitor attendance at three South African Afrikaans arts festivals. The findings will be useful in providing some information about these events for the tourist trade with some implications for the management of these events with a view to their sustainability.

LITERATURE REVIEW

According to Fodness (1994), motives can be considered as the driving forces behind all behaviours. The push and pull theory of Dann (1977, 1981) and Crompton (1979) represents a model that is a two-dimensional approach, based on the one foundational presumption that people travel because they are internally pushed and externally pulled by forces to involve themselves in tourism activities (Uysal & Hagan, 1993).

Push factors

With reference to Crompton (1979), the first dimension, the push factors, refer to invisible

drivers, for instance, those of escape, thrill or education that accordingly correspond to „socio-psychological motives". Thus, these forces are of an individual nature (Pearce, 1997) and, therefore, vary between each person, either gradually or drastically. As push factors are characterised by intangibility and individuality (Botha *et al.*, 1999), it is challenging to identify a range of common underlying motivations that push tourists towards a specific behaviour, in this instance, to the attendance of an arts festival.

With reference to festival attendance, Van Zyl (2006) summarises seven relevant push factors based on the findings of Mohr *et al.* (1993), Uysal *et al.* (1993) and Getz (2005). These include: (1) family togetherness; (2) socialisation; (3) escape; (4) event novelty; (5) excitement; (6) community pride; and (7) self-esteem. More generally, Crompton (1979) determined seven primary push factors that motivate people to participate in leisure activities, namely: (1) escape from perceived mundane environment; (2) exploration and evaluation of self; (3) relaxation; (4) prestige; (5) regression; (6) enhancement of kinship relationships; and (7) facilitation of social interaction. Kim *et al.* (2003) offer a reduced form of universal underlying motives pushing people to travel. Their four broad domains of push factors include: (1) family togetherness and study; (2) appreciating natural resources and health; (3) escaping from everyday routine; and (4) adventure and building friendships.

Naturally, these findings represent summaries and cannot be transferred to each leisure activity as the activities have been conducted under different circumstances. Hence, each factor varies in terms of its intensity, referring to the particular socio-psychological construct that individuals create, as well as their social environments that influence the willingness to travel (Uysal & Hagan, 1993) and finally, the destination itself. Although common motives can be detected, the driving push factors correspond to each festival solely (Crompton & McKay, 1997; Nicholson & Pearce, 2001). This illustrates the complexity with which individuals, in this context, festival visitors make their decisions and that a general type of the festival attendee does not exist.

Pull factors

The second dimension „pulls" people to undertake leisure activities. This can be seen as an external variable. Crandall (1980), as well as Ross and Iso-Ahola (1991), describe these pull motivations as „physical factors" that are offered by the particular event or destination intended for visit. Crompton (1979) names pull forces „visible factors", which comprise, for instance, buildings, leisure and sport facilities, together with natural resources or artificial attractions. Pearce (1997) identifies pull motivations as „destination factors" for they consist of facilities offered by the place to which they are meant to travel. Uysal *et al.* (2008) recap these assumptions stating that pull motivations incorporate all external forces stirred up by the product or destination, and that subsequently stimulate people to participate in a leisure activity.

For South African Afrikaans arts festivals, Van Zyl (2006) identified four pull factors for local residents to the *Aardklop* National arts festival, namely: (1) entertainment domain; (2) food and beverages; (3) information and marketing; and (4) transport. In a broader context,

Crompton (1979) identified two major underlying pull factors as (1) novelty and (2) education regarding travel motivation. In the context of research in terms of festival attendance, at least one of these two dimensions is found frequently (Ralston & Crompton, 1988; Mohr *et al.*, 1993; Uysal *et al.*, 1993; Formica & Uysal, 1996; Kim *et al.*, 2001; Lee *et*

al., 2012). Nicholson and Pearce (2001) surveyed festival attendees at four events in New Zealand with different themes: an air show; an award ceremony; a wild food festival; and a wine, food and music festival. Their results indicate that tourist pull motivations alter according to the subject of the festival and are directly related to it. In Uysal and Li‟s (2008) literature review concerning the most frequently mentioned motivational dimensions, novelty (19.0%), entertainment (5.8%) and attractions (4.1%) appeared on the external pull side.

Push and Pull factors for festival/event attendance

The following push and pull items relating to festivals/events attendance were identified in the literature and was therefore used for the purposes of this study (Table 1).

***TABLE 1*: PUSH AND PULL ITEMS OF EVENTS FROM LITERATURE**

	Item	Previous research
PUSH	To get away	Dann, (1977); Crompton (1979); Mohr *et al*. (1993)
	Relax	Scott (1996); Van Zyl (2006); Dann (2012)
	Spend time with family	Uysal *et al*. (1993); Getz (2005);
	Spend time with friends	Van Zyl (2006); Yolal *et al*. (2009)
	Meet new people	Lee *et al*. (2004); Yoon & Uysal (2005); Devesa *et al*. (2010)
	Benefit of children	Crompton & McKay (1997); Devesa *et al*. (2010)
	Annual commitment	Van Zyl (2006); Devesa *et al*. (2010)
	Explore environment	Smith *et al*. (2010)
PULL	Different to other festivals	Pearce (1997)
	Variety of productions	Uysal & Li (2008); Pretorius (2012)
	Quality productions	Smith *et al*. (2010); Pretorius (2012)
	Sociable festival	Jang & Wu (2006); Yolal *et al*. (2009)
	Closest festival	Van Zyl (2006)
	Well-known performers	Scott (1996); Uysal & Li (2008)
	Stalls	Nicholson & Pearce (2001)
	Purchase art	Smith *et al*. (2010)
	Afrikaans festival	Nicholson & Pearce (2001); Van Zyl (2006)

Relationship between Push and Pull Factors

As previously outlined, a relationship between push and pull factors does exist. This is emphasised by Brayley (1990) and again by McGehee *et al*. (1996) who believe that pull factors are attributes that respond to and reinforce push factors. As a result, a traveller places

value on a destination based upon the extent to which the destination is able to reply to the individual push factors of the traveller. Hence, whether a destination‟s offering matches the internal desires of a tourist depends greatly on the tourist‟s perception of the product offered (Maslow, 1954; Smith, 1983; Brayley, 1990; Crompton, 1992; Goossens, 2000).

Following the examples presented in the push and pull parts mentioned, the ability to pull people to visit an event is conditional upon the individual‟s perception of the extent to which they meet the prospective visitor‟s intrinsic push motivational needs. In this regard, Moutinho (1987:16) proclaims that motivation in general "is a state of need, a condition that exerts a „push‟ on the individual towards certain types of action that are seen as likely to bring satisfaction". As indicated in the first part of this literature review, people have highly individualised push motivations. Consequently, the responding pull motivations point toward the same distinctiveness. Dann (1977) stated that analytically and often both logically and temporally, push factors precede pull factors. The understanding of an exclusive push factor is supportive for marketers and festival managers when knowing the responding pull motivation exerted by the festival.

Applicability in marketing and festival management

Snepenger *et al*. (2006) points out that motivation-based models can be of crucial assistance when forecasting tourists‟ compound behaviours. As such, the push and pull theory helps identify intrinsic motivations which serve as motivations why people partake in leisure activities. This is vital for effective marketing (McLean *et al.*, 2007). On the other hand, the pull model aids to understand "how well the destination characteristics fit the needs of the travellers", which Goeldner and Ritchie (2006:259) offer as of significance when deciding on what marketing activities to undertake.

This theory, therefore, appears highly applicable in terms of marketing and management planning as it determines the engagement of people in leisure behaviour from an internal and external view, and furthermore, can bring both forces into a relationship. Fodness (1994) indirectly underlines the theory‟s potential by arguing that effective marketing can only be exercised when the motivation of tourists has been identified and understood completely. Uysal and Hagan (1993) agree by noting that the understanding of tourists‟ motivation equips marketers with the knowledge to better define current tourism behaviour, as well as to predict future travel patterns.

METHODOLOGY

Festival selection

The 3 South African Afrikaans arts festivals were selected due to their significant characteristics. As this research seeks to analyse the South African Afrikaans arts festival market in a broader sense, festivals were chosen whose locations spread throughout the country: one in the very south (*KKNK*), one in the very north (*Innibos*) and one in the North-West Province (*Aardklop*). Moreover, the events differ considering their period of existence (*KKNK* since 1994; *Aardklop*, from 1998 and *Innibos*, from 2004), duration of festival (*KKNK* 8 days; *Aardklop* 5 days; and *Innibos* 4 days), and the time of the year the festival is

held (*KKNK* April; *Innibos* June; and *Aardklop* October). These differences provide the researchers with a general overview of the existing market and consequently serve the purpose of this research.

Subjects

At all three festivals, trained fieldworkers covered the entire festival area. A stratified

sampling method was used asking visitors at 3 different localities at the festival: (1) paid area (people on the immediate venues who paid the entrance fee); (2) unpaid area (people who did not enter the paid area); and (3) show venues (people who paid tickets in order to attend a specific show). According to Krejcie and Morgan (1970), from a population of 1 000 000 (N), 384 respondents (n) are considered representative and hence result in a 95% level of confidence with a ±5 sampling error. Four hundred and seventy-nine (479) useable questionnaires at the *KKNK* (3 to 11 April 2011), 427 at *Innibos* (30 June to 3 July 2011) and 408 at *Aardklop* (4 to 8 October 2011) were collected, thus making the sample size valid.

Measurement tool

The data was collected through questionnaires. The first section of the questionnaire took account of demographic data; the second section addressed behavioural aspects. In the third part, the push and pull aspects were measured using a Likert-scale consisting of 17 motivational items. All the motivational aspects (within the push and pull contexts) that were identified in the literature relating to events/festivals were modified for purposes of Afrikaans arts festivals‟ target population and incorporated in the questionnaire (Table 1). The 5-point Likert scale (from 1 = not at all important to 5 = extremely important), was applied in order to express the intensity of significance of that particular item.

Analysis of data

Microsoft Excel was used to capture the data and SPSS (SPSS Inc., 2007) was used to analyse the data. An ANOVA was conducted to identify possible differences among the 3 festivals‟ motivational items and, finally, exploratory factor analyses were performed regarding the push and pull factors for each of the 3 festivals.

RESULTS

The results will be discussed in 3 sections. Firstly, an overview of the visitor profiles of all three festivals will be presented. This overview will be followed by the results of the ANOVA on the individual travel motive items and finally by the results of the factor analyses.

Visitor profiles

All 3 events tend to attract predominantly women, for almost two-thirds of the visitors are female (Table 2). In terms of average age, *Aardklop* (42) and the *KKNK* (45.78) seem to attract people who are in their mid-40‟s whereas *Innibos* (33.9) exerts a pull for a younger audience (29% students).

With the exception of *Aardklop*, the people who visit festivals tend to be those from the province in which the event takes place. The size of the largest travel group was measured at *Innibos* as 6.15 persons, followed by that at the *KKNK* (4.00) and then by the groups at *Aardklop* (3.30).

Taking into account that the *KKNK* lasts 8 days instead of just 4 or 5, it is not surprising that attendees tend to stay longer (4.19 nights) than they do at *Aardklop* (2.5 nights), or at *Innibos* (2.31). The *KKNK*, the festival founded earliest, had the highest number of repeat visitors (5.9), followed by *Aardklop* (4.6), and finally *Innibos* (2.52). *Aardklop* (3.48) visitors

purchase significantly more tickets than do attendees at *Innibos* (0.91) or at the *KKNK* (2.48).

***TABLE 2*: VISITOR PROFILES OF ALL THREE FESTIVALS**

Variables	***Aardklop***	***Innibos***	***KKNK***
Location	Potchefstroom	Mbombela	Oudtshoorn
Language	Afrikaans	Afrikaans	Afrikaans
Length of festival	5 days	4 days	8 days
Total number of respondents	408	427	479
Gender	Female 62%	Female 58%	Female 67%
	Male 38%	Male 42%	Male 33%
Average of age	42.00	33.90	45.78
Main province of origin	Gauteng	Mpumalanga	Western Cape
Main occupational group	Prof 23%	Stud 29%	Prof 16% SE 16%
Average size of travel party	3.30	6.15	4.00
Average length of stay	2.90 days	3.00 days	4.43 days
	2.31 nights	2.50 nights	4.19 nights
Average number of times attending the festival	4.60	2.52	5.90
Average number of tickets bought	3.48	0.91	2.48
Other most attended festival	*KKNK*	*Aardklop*	*Aardklop*

Prof=Professionals; Stud=Students; SE=Self-employed

ANOVA: Individual travel motive items

Figure 1 offers a graphic illustration of the mean values of all the individual travel motive items for each of the festivals. The 3 festivals show strong common underlying motivations (with mean scores higher than 3.5). Push items included „to get away", „to spend time with friends" and „to relax". Pull items included the attributes „sociable festival" and „Afrikaans festival". The item with a low mean value (below 3.00) for all 3 festivals was „to purchase art" (Table 3.1).

Another significant difference between *Innibos* and the other 2 festivals lies in the item „annual commitment". At *Innibos*, this accounts for the lowest mean score (3.00). According to the pull motivations, it can be shown that *Innibos* also differs significantly from its competitors. This is also evident when considering the festival offerings „variety of productions" (3.43), „quality productions" (3.60) and „well-known performers" (3.36). Another difference between the festivals can be observed when considering the item „closest festival". In this instance, *Aardklop* differed significantly (with a higher mean value 3.69) from the other 2 festivals (Table 3.2).

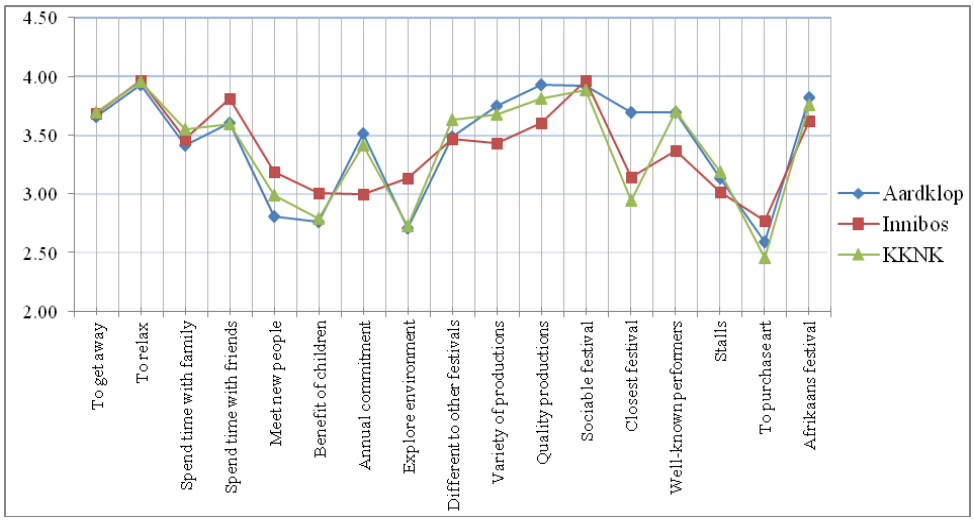

***FIGURE 1*: MEAN SCORES OF ITEMS ACROSS THE THREE FESTIVALS**

***TABLE 3.1*: ANOVA FOR PUSH ITEMS**

	Items	*Aardklop* Mean	*Innibos* Mean	*KKNK* Mean	F-value	p-Value
PUSH	To get away	3.66	3.69	3.69	0.085	0.919
	Relax	3.93	3.96	3.95	0.078	0.925
	Spend time with family	3.41	3.46	3.55	0.958	0.384
	Spend time with friends	3.60	3.81	3.59	3.281	0.038
	Meet new people	2.80 (B)	3.18 (A)	2.98	6.373	0.002*
	Benefit of children	2.76	3.01	2.79	2.475	0.085
	Annual commitment	3.51 (A)	3.00 (B)	3.41 (A)	12.428	0.000**
	Explore environment	2.71 (B)	3.14 (A)	2.73 (B)	9.343	0.000**

* p<0.01 ** p<0.0001

A = Higher value with significant difference; B = Lower value with significant difference

***TABLE 3.2*: ANOVA FOR PULL ITEMS**

Items	*Aardklop* Mean	*Innibos* Mean	*KKNK* Mean	F-value	p-Value
Different to other festivals	3.48	3.46	3.63	2.046	0.130
Variety of productions	3.74 (A)	3.43 (B)	3.67 (A)	6.505	0.002*
Quality productions	3.92 (A)	3.60 (B)	3.81 (A)	6.933	0.001*

PULL	Sociable festival	3.92	3.96	3.88	0.493	0.611
	Closest festival	3.69	3.14	2.94	26.648	0.000**
		(A)	(B)	(B)		
	Well-known performers	3.69	3.36	3.70	8.308	0.000**
		(A)	(B)	(A)		
	Stalls	3.14	3.02	3.19	1.518	0.219
	Purchase art	2.59	2.77	2.46	4.237	0.015
	Afrikaans festival	3.82	3.62	3.75	1.983	0.138

* p<0.01 ** p<0.0001
A = Higher value with significant difference; B = Lower value with significant difference

Factor analyses

The factor analysis of *Aardklop* (Table 4), resulted in 2 push and 2 pull factors. The PUSH factors included „Escape" and „Exposure", of which both scored Cronbach"s Alpha values of more than 0.70, proving validity (Field, 2000).

The mean values for these factors were 3.77 and 2.98 respectively. The items included in the factor „Exposure" were „to benefit children", „to explore the environment", „to meet new people" and „annual commitment". The items that loaded on the factor „Escape" were „to relax", „to get away" and „spend time with friends".

The PULL factors included „Art & Festival Experience" and „Shopping" which accounted for Cronbach"s Alpha values of 0.815 and 0.647 respectively, thus also proving validity (Field, 2000).

The mean values for these factors were 3.69 for „Art & Festival Experience" (including items such as „quality productions", „variety of productions", „sociable festival", „different to other festivals", „Afrikaans festival" and „well-known performers"), and 2.98 for „Shopping" (including items such as „purchase art", „stalls" and „closest festival").

TABLE 4*: FACTOR ANALYSIS *AARDKLOP

PUSH			**PULL**		
Items	**F1** „Escape"	**F2** „Exposure"	**Items**	**F1** „Art & Festival experience"	**F2** „Shopping"
Relax	-0.914		Quality productions	0.914	
Get away	-0.854		Variety of productions	0.863	
Spend time with friends	-0.508		Sociable festival	0.670	
			Different to other festivals	0.665	
			Afrikaans festival	0.516	
			Well-known	0.409	

			performers		
Benefit children		0.862	Purchase art		0.802
Explore environment		0.828	Stalls		0.800
Meet new people		0.630	Closest festival		0.659
Annual commitment		0.501			
Cronbach"s Alpha	0.692	0.703		0.815	0.647
Mean	3.77	2.98		3.69	2.98

The factor analysis of *Innibos* (Table 5) resulted in 2 push and 1 pull factor/s. This resulted in similar PUSH factors, namely, „Exposure" and „Escape". Both Cronbach"s Alpha values exceeded 0.70, thus accounting for validity. The means of these factors can be considered as important (3.14 and 3.65 respectively).

Items that loaded on the factor „Exposure" included: „to benefit children", „annual commitment", „to explore the environment" and „to spend time with family". Items that were included in „Escape" incorporated: „to get away", „to relax", „to spend time with friends" and „to meet new people".

Only 1 PULL factor was revealed, Art & Festival Experience", with the items „quality productions", „different to other festivals", „variety of productions", „stalls", „well-known performers", „Afrikaans festival", „sociable festival", „purchase art" and „closest festival". The Cronbach"s Alpha value for this factor was 0.862 with a mean of 3.37.

TABLE 5*: FACTOR ANALYSIS *INNIBOS

PUSH			**PULL**	
Items	**F1** „Escape"	**F2** „Exposure"	**Items**	**F1** „Art & Festival experience"
Get away	-0.884		Quality productions	0.793
Relax	-0.802		Different to other festivals	0.778
Spend time with friends	-0.666		Variety of productions	0.774
Meet new people	-0.415		Stalls	0.696
			Well-known performers	0.681
			Afrikaans festival	0.668
			Sociable festival	0.665
			Purchase art	0.607
			Closest festival	0.581
Benefit children		0.904		
Annual commitment		0.731		

Explore environment		0.643		
Spend time with family		0.563		
Cronbach‟s Alpha	0.713	0.703		0.862
Mean Score	3.65	3.14		3.37

The Factor analysis of the *KKNK* (Table 6) resulted in 2 push („Escape‟ and „Exposure‟) and 2 pull factors („Art & Festival Experience‟ and „Shopping‟). „Escape‟ accounted for a Cronbach‟s Alpha value of 0.734 and „Exposure‟ for a value of 0.693. „Escape‟ consisted of the items „to relax‟, „to get away‟, „to spend time with friends‟, „to spend time with family‟ and „annual commitment‟. „Escape‟ was regarded as the most important PUSH factor (mean=3.62).

„Exposure‟ consisted of the items „to explore environment‟, „to benefit children‟ and „to meet new people‟ and had a mean value of 2.84. The PULL factors „Art & Festival Experience‟ and „Shopping‟ also indicated validity with Cronbach‟s Alpha values of 0.817 and 0.724, respectively. „Arts & Festival Experience‟ (mean=3.72) consisted of items such as „quality productions‟, „variety of productions‟, „sociable festival‟, „different to other festivals‟, „Afrikaans festival‟ and „well-known performers‟. „Shopping‟ (mean=2.84) consisted of the items „stalls‟, „closest festival‟ and „purchase art‟.

TABLE 6*: FACTOR ANALYSIS *KKNK

PUSH			**PULL**		
Items	**F1** „Escape‟	**F2** „Exposure‟	**Items**	**F1** „Art & Festival experience‟	**F2** „Shopping‟
Relax	0.911		Quality productions	0.873	
Get away	0.847		Variety of productions	0.855	
Spend time with friends	0.540		Sociable festival	0.787	
Spend time with family	0.521		Different to other festivals	0.655	
Annual commitment	0.419		Afrikaans festival	0.564	
			Well-known performers	0.456	
Explore environment		0.842	Stalls		0.833
Benefit children		0.795	Closest festival		0.795
Meet new people		0.668	Purchase art		0.788
Cronbach‟s Alpha	0.734	0.693		0.817	0.724
Mean	3.62	2.84		3.72	2.84

FINDINGS

Firstly, visitors to the three festivals do not show fundamental differences regarding the visitor profile, particularly in the cases of the *KKNK* and *Aardklop*. *Innibos* does, however, differ as it concerns the average age of attendees being younger, in a larger size group, purchasing fewer tickets for productions/performances and with the majority of the visitors being students. This differing profile is not surprising, as students tend to travel for socialising, do so in larger travel groups and have limited budgets (Field, 1999; Kim & Jogaratnam, 2003; Donaldson & Gatsinzi, 2005). These findings correlate well with that of the most recent Afrikaans festival research (Kruger *et al*., 2012; Viviers *et al*., 2012).

Secondly, when exploring the individual travel motives to the three festivals in general, the most prominent motive appears to be: „to relax"; „to spend time with friends"; „quality productions"; and the fact that „it is a social and Afrikaans festival". These motivations are largely supported by the findings of Jang and Wu (2006), Yolal *et al*. (2009) and Pretorius (2012). The motive considered the least important across all three festivals is to purchase art. This finding is supported by the findings of Pretorius (2012).

Thirdly, two of the three festivals each appear to have a distinctive motive or two that are distinctive to that festival and more urgent than at the other two festivals under observation.

For instance, *Aardklop* seems to have the greater advantage of being in close proximity to its market. This finding is also evident in research conducted by Witt and Moutinho (1989), Park *et al*. (2008), Kruger *et al*. (2010), as well as that by Kruger and Saayman (2012). Exploring the environment, on the other hand, is a characteristic motive of *Innibos* (possibly due to its attractive natural landscapes and amenities). This finding is supported by similar research conducted by Fakeye and Crompton (1991), Scott (1996) and by Kruger *et al*. (2010). In addition, attendees of *Innibos* are also more motivated to meet new people than visitors at the other two festivals. This motive is found in the literature contributions of Hsu *et al*. (2009) also.

Fourthly, visiting the festival as an annual commitment is found to be a more dominant motive of attendees at the *KKNK* and *Aardklop*, than those at *Innibos*. This expression of loyalty could be assigned to both the longer period of existence of these two festivals, as well as the higher average ages of attendees at these two festivals. Kruger *et al*. (2010) and Coetzee *et al*. (2011) conducted similar research supporting these findings.

Fifthly, the quality and variety of productions, as well as having well-known performers showcased at the festival, are other more noticeable motives found amongst the festival attendees of the *KKNK* and *Aardklop*. This compares well with the study of Pretorius (2012) indicating that these two festivals focus more on the arts experience by offering a variety of quality productions, whereas *Innibos* focuses more on the social elements of a festival.

Sixthly, both „Escape" and „Exposure" loaded as push factors for each of the three festivals and, in all three cases „Escape" revealed the highest mean value. „Escape" is a factor frequently found in studies of festival and event attendance motivation (Scott, 1996; Lee, 2000; Dewar *et al*., 2001; Nicholson & Pearce, 2001; Lee, *et al.*, 2012), and represents a general motivational aspect for visiting festivals. Crompton (1979) also supports this push

motivation categorising „escape from mundane environment" as the most important factor of seven primary factors.

Seventhly, „Exposure" as an independent push factor is found less frequently in the literature. The factor includes the items „to benefit children", „to explore the environment" and „to meet new people", among others. In the literature, the exploration of the environment was identified as a significant internal driver for festival attendance motivation. For instance, Crompton and McKay (1997), Lee (2000) and Lee *et al*. (2004), all researched the motivation „cultural exploration". Scott (1996) investigated „nature appreciation" and „curiosity", while Ralston and Crompton (1988) explored the factor, „learning and discovery". Aspects relating to „meeting new people" are found in various studies where festival motivation is underlined as encountering other people (Ralston & Crompton, 1988; Crompton & McKay, 1997; Lee, 2000; Lee *et al.* 2012). Dolnicar and Leisch (2003), as well as Kleiven (2005), support the „Travel motive" research in the literature encompassing benefit to children.

Eighthly, „Art & Festival experience" loaded as a pull factor and revealed the highest mean value for each festival. This factor incorporates items like „quality productions", „well-known performers" or „different to other festivals". These embrace the event"s offerings and its quality, which refers pointedly to the festival itself (Scott, 1996; Nicholson & Pearce, 2001). In Van Zyl"s (2006) study, the „entertainment domain" as a factor featuring, amongst others,

the items „variety of activities and entertainment", „high quality of music, shows, drama opera" and „meeting celebrities" was found. These correspond very directly to the item „well-known performers". Schneider and Backman (1996) revealed a motivational aspect called „festival attributes" and Lee *et al*. (2004) discovered the factor „event attractions". Crompton (1979) identified another underlying motivational dimension in this context, novelty. Yolal *et al*. (2009) followed a more general view on „novelty" by including the item „because festivals are unique". Nicholson and Pearce (2001) added additional items such as „to enjoy the wine" or „to enjoy the food" within this factor. This illustrates that the „Art & Festival experience" corresponds with „novelty" to an extent.

Ninthly, „shopping" loaded as a separate pull factor for both *Aardklop* and the *KKNK*. In many cases in the literature, the activity of „shopping" is revealed as an aspect within a factor. Yuan *et al*. (2005) investigated wine festival attendance and found „to buy wines" to be a noteworthy motive. In the same manner, Chang and Yuan (2011) found the significance of the items „to purchase local wines", „to purchase food" and „to purchase arts and crafts" when scrutinising the motivation of food festival attendees. The quality of the stalls, as another part of this factor, was also apparent in the *Aardklop* study by Van Zyl (2006). Against the background of these results, this investigation further supports the general assumption that pull factors highly correlate with the event"s theme as discovered earlier (Scott, 1996; Kerstetter & Mowrer, 1998; Nicholson & Pearce, 2001; Yuan *et al.*, 2005; Park *et al*., 2008).

IMPLICATIONS

The management of the respective arts festival should take the profiles of their attendees and their subsequent travel motivations into consideration when compiling and marketing the festival programme/activities and general festival products.

Both *Aardklop* and *Innibos* have the advantage of a specific (more dominant) motive that is

not as important at the other festival under observation, thus making it a rather distinctive characteristic of those festivals. For example, the attendees of *Aardklop* are easily motivated by the close proximity of the festival. This can be emphasised in *Aardklop*‟s marketing efforts. *Innibos* attendees are particularly motivated by the push factors „to explore the environment‟ and „meeting new people‟ when attending the festival. Thus, marketers of this event should consider combining the festival experience with short excursions to the surrounding areas. For example, offering packages to wildlife/nature parks in the area. These excursions could also be promoted as group packages or by offering discounts to enhance the social experience. The festival organisers must maintain the social festival identity by supplying sufficient socialising points throughout the festival terrain during the festival period.

Although the *KKNK* is currently associated with travel motives with high mean values, this festival does not have a unique motivational drawing card as do both *Aardklop* and *Innibos* and, in many of the instances, these travel motives are motives that are also associated with *Aardklop*. The organisers of the *KKNK* must, therefore, make every effort to differentiate their festival by means of a unique motive. By, for instance, ensuring that newly released productions premier at the *KKNK*, or even considering the funding of a quality once-off production with well-known and popular actors/performers that can only to be seen at the *KKNK*.

Since it is clear that the attendees at all three arts festivals have a desire to relax and escape from their everyday environments as the main push factor, the festival product must be sustained in such a manner that it continues to offer opportunities to do this. This should also be communicated to the market through various media. The pull factors experienced by the attendees to these three festivals are a good indication of what Afrikaans arts festival *festinos* want from such events. The organisers at each of these festivals should also directly manage this. The desired festival experience entails a sociable, quality, Afrikaans experience making provision for a wide variety of productions with well-known performers within the festival programmes.

Although shopping was identified as a pull factor at the *KKNK* and *Aardklop*, its mean value was considered as less important, according to the Likert scale. It is also a concern that the item „to purchase art‟ at these festivals, whose purposes are to promote all forms of art, was rated as the lowest motivational aspect for all three festivals. Festival management must therefore utilise this situation in a strategic manner, emphasising the unique shopping experience of quality, handmade, arts and craft goods, thereby differentiating the festivals from a general shopping mall or “flea market” experience.

CONCLUSIONS

This study explored the push and pull factors experienced by the attendees at three Afrikaans arts festivals in South Africa. Escape and Exposure loaded as push factors for each of the three festivals and, in all three cases, Escape was the most significant. Art and Festival Experience turned out to be the most important pull factor for each of the three festivals. These results revealed insights into the travel motivations unique to Afrikaans arts festivals as tourism events.

Further, it is clear from this study that the organisers of these festivals must make every effort to differentiate their festival by means of a unique motive (or drawing card), especially since the attendee markets of these festivals are rather homogenous regarding their travel motive behaviour. This managerial approach will assist in better sustaining these valuable events and address existing competition in the arts festival market. This study has made a significant contribution to arts festival and travel motivation literature in general and was the first study of its kind to compare the travel motives of three different Afrikaans festivals in South Africa. It is proposed that similar studies be conducted at various other arts and cultural events, in order to enable comparative analyses.

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