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DIE ONDERLINGE VERWANTSKAP TUSSEN DIE FISIEKE AKTIWITEITS-, KORONÊRE RISIKO- EN UITBRANDINGSINDEKS BY DIE SUID-AFRIKAANSE UITVOERENDE AMPTENAAR

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ABSTRACT

The associations between physical activity, coronary risk-index and burnout, with specific focus on the role of physical activity on the coronary risk–burnout relationship, were studied. Altogether 833 white South African male executives were evaluated by a self-report physical activity index, coronary risk index and burnout index questionnaire. The high- (≥1000kcal.week^{-1}) and moderate active (151-999kcal.week^{-1}) executives reported statistically significant less (p≤0.05) burnout in comparison with their low active (≤150kcal.week^{-1}) colleagues. Moderate and high physical activity levels were statistically related (p≤0.05) to a reduction in the coronary risk-index. Similarly, burnout had a strong statistically significant influence (p≤0.05) on the development of coronary heart disease. Finally, physical activity portrayed a statistically significant (p≤0.05) reduction in the coronary risk-index within low, moderate and high burnout executives, but failed to influence the burnout-coronary risk relationship between the different burnout groups. It is concluded that although physical activity does not influence the burnout-coronary risk relationship between different burnout groups significantly, it does seem to have a beneficial effect on the reduction of the coronary risk-index within different burnout groups.

Key words: Physical activity index; Coronary heart disease; Coronary risk factors; Burnout; Executive; Organization.

INLEIDING

Fisiologies en psigologies bestaan daar geen ware plaasvervanger vir genoegsame oefening en fisieke aktiwiteit (FA) nie, ongeag of dit binne of buite die werksopset plaasvind (Paffenbarger, 1987:125; Unger, 1995:17). Die ontwikkeling van koronêre hartsiektes (KHS) gaan ook onderskeidelik gepaard met fisiologiese en psigologiese risikofaktore wat betekenisvol deur ’n fisiek onaktiewe lewenstyl beïnvloed kan word (Nieman, 1998:42, 182; Stoney & Hughes, 1999:486). Die uitvoerende amptenaar in Suid-Afrika bevind hom/haarself soms in ’n stresvolle werksomgewing wat dikwels destruktief op sy/haar gesondheid inwerk (Jacobs, 1991:64; Van Zyl, 1995:31).

PROBLEEM EN DOELSTELLING

Fisieke aktiwiteit (FA) toon ’n gesondheidsbevorderende en –bewaringseffek by mans (Francis, 1996:463; Thune *et al*., 1998:1633; Sesso *et al*., 2000:975). Paffenbarger (1988:433) toon in dié verband dat die fisiek hoog aktiewe roker en hipertensielyer naastenby dieselfde risiko vir koronêre hartsiekte (KHS) toon as die nie-roker en normotensiewe persoon wat fisiek onaktief (FO) is. Die verskynsel word toegeskryf aan die feit dat fisieke aktiwiteit ’n inherente beskermingsmeganisme inhou, deurdat dit die pato-fisiologiese faktore wat tot die ontwikkeling van KHS lei, kan teenwerk (Paffenbarger, 1988:426; Thune *et al*., 1998:1633).

Fisieke aktiwiteit toon ook verder ’n buffer teen die psigologiese risikofaktore, soos stres, te wees (Labbate *et al*., 1995:558). Brown (1991:560) vind dat persone wat fisiek fiks toets tydens ’n fietsergometertoets minder geneig is om siek te word tydens stresvolle lewensituasies as persone met ’n relatief lae fiksheid. Individue wat aan stresvolle lewensituasies blootgestel word, beleef ook oor die algemeen ’n verhoging in kardiovaskulêre reaktiwiteit (verhoging in harttempo, bloeddruk, sekresie van streshormone en senuweesisteemaktiwiteit), wat by sommige individue tot miokardiale infarksie kan lei (Nieman, 1998:252). Fisieke aktiwiteit blyk ook ’n teenwerkende invloed op hierdie kardiovaskulêre reaktiwiteit te hê (Pretorius *et al*., 1989:80; Labbate *et al*., 1995:555). Verder toon persone met ’n geneigdheid tot emosionele responsiwiteit tydens stresvolle werksituasies ook ’n groter geneigdheid tot die ontwikkeling van KHS (Melamed, 1996:500). Stres blyk dus binne en buite die werksomgewing predisponerend tot die ontwikkeling van KHS te wees.

Stres blyk ook tot die ontwikkeling van psigologiese uitbranding te kan bydra (Cordes & Dougherty, 1993:625; Schaufeli & Enzmann, 1998:37). Laasgenoemde ontstaan wanneer stres kronies voortduur of wanneer stressors te vinnig op mekaar volg wat dan tot psigologiese ineenstorting (uitbranding) lei (Brill, 1984:21; Ferguson, 1987:179).

Uit die voorafgaande is dit duidelik dat lae vlakke van fisieke aktiwiteit (FA) en hoë vlakke van stres tot die ontwikkeling van KHS kan bydra. In dié verband toon navorsing dat die uitvoerende amptenaar in Suid-Afrika weens modernisering, tegnologiese vooruitgang (Van Zyl, 1995:iv) en strawwe kompetisie hom/haar in ’n werksomgewing van hoë stres dog lae FA bevind (Jacobs, 1991:64; Van Zyl, 1995:31). Dreyer en Strydom (1994:1) toon in dié verband dat slegs 3% van Suid-Afrikaanse bestuurslui (n=777) fisiek aktief is by die werk en slegs 14.3% aan genoegsame vryetydse fisieke aktiwiteit wat voldoende is om hulle gesondheid te kan bevorder, deelneem. Strümpfer (1989:136) toon aan dat hoër vlakke van stres by die Suid-Afrikaanse uitvoerende amptenaar as hul Amerikaanse en Hollandse eweknieë, teenwoordig is. Hy skryf dit toe aan die groter werkslas wat deur minder beskikbare bestuurslui gedoen moet word. Dit kan die hoëvlak-werknemer dus in ’n werksomgewing plaas wat destruktief op sy/haar gesondheid kan inwerk.

Dit is verder ook bekend dat fisieke aktiwiteit ’n buffer-effek teen stres kan vorm (Pretorius *et al*., 1989:80; Labbate *et al*., 1995:558). Wat die effek van FA egter op kroniese stres, wat reeds oorgegaan het tot uitbranding is, is tans min oor bekend. Kroniese stres en uitbranding blyk ook verder ’n belangrike rol in werksproduktiwiteit (Dreyer, 1995:82; Wright & Bonett, 1997:491), mortaliteit (Dreyer, 1995:83) en gesondheidsorgkostes (Cooper & Cartwright, 1994:468) in die werksomgewing te speel. Dit is derhalwe noodsaaklik om die fisiologiese en psigologiese vermoëns by die uitvoerende amptenaar in stand te hou, aangesien per capita van

die bevolking Suid-Afrika nie oor baie van dié tipe mannekrag beskik nie (Strydom *et al*., 1998:2). Dit word ook bereken dat om ’n uitvoerende amptenaar in Suid-Afrika tot dié rang op te lei enkele jare gelede alreeds ongeveer R11 000 000 gekos het (Grobler, 1990:2).

Die vraag wat eerstens met hierdie studie beantwoord wil word, is of deelname aan fisieke aktiwiteit enige verband vertoon met uitbranding by die uitvoerende amptenaar; tweedens of daar enige verband tussen fisieke aktiwiteit en die koronêre risiko-indeks by Suid-Afrikaanse blanke bestuurslui bestaan en derdens of uitbranding enige verband met die koronêre risiko-indeks van Suid-Afrikaanse blanke bestuurslui vertoon. Ten slotte word die invloed wat fisieke aktiwiteit op die verband van uitbranding met die koronêre risiko-indeks kan hê, ondersoek. Antwoorde hierop behoort belangrike inligting te verskaf rakende intervensieprogramme vir hoëvlakwerknemers ten einde hulle fisiek en psigies in stand te hou.

METODE VAN DIE ONDERSOEK

Keuse van proefpersone

Agthonderd drie-en-dertig (833) manlike bestuurslui tussen die ouderdomme van een-en-twintig en een-en-sewentig (21–71) jaar se inligting is in die studie gebruik. Dit is by verskillende maatskappye oor die land ingesamel (SANGALA-projek). Die gemiddelde ouderdom van die respondente was 41.26 jaar.

Meetmetodes

Die volgende vraelyste is vir die doel van die studie gebruik:

- Die fisieke-aktiwiteitsindeks van Sharkey (1984:5) (FAI):

Fisieke aktiwiteitsdeelname word as ’n indeks uitgedruk, deurdat die numeriese waardes aan die inoefeningsvereistes van intensiteit, duur en frekwensie van deelname toegeken met mekaar vermenigvuldig word.

Wanneer ’n persoon dus 30 minute (Duur=4), vier keer per week (Frekwensie=4) aan ’n aërobiese aktiwiteit (hardloop, draf, swem, fietsry, muurbal, ens.) deelneem en rapporteer dat hy moeg word (Intensiteit=3), sou sy fisieke aktiwiteitsindeks (FAI) soos volg bereken word:

TABEL 1. **BEREKENING VAN DIE FISIEKE AKTIWITEITSINDEKS (FAI)**

INTENSITEIT	DUUR	FREKWENSIE
1 = Nie moeg nie	**1** < 10 min	**1** = Een keer/maand
2 = Effens moeg	**2** = 10-19 min	**2** = Paar keer/maand
3 = Moeg	**3** = 20-29 min	**3** = 1-2 keer/week
4 = Baie moeg	**4** > 30 min	**4** = 3-5 keer/week
5 = Uitgeput		**5** = Byna daagliks

FAI = Intensiteit x Duur x Frekwensie
= 3 x4 x4
= 48

Vir die statistiese verwerking is die respondente ten opsigte van deelname aan fisieke aktiwiteit in drie groepe verdeel. Respondente met indekswaardes kleiner of gelyk aan 15 is as “laag aktief” geklassifiseer. Die respondente met indekswaardes tussen 16 en 44 is as “matig aktief” geklassifiseer, terwyl ’n waarde van 45 en hoër as hoog aktief aanvaar is. Volgens Dreyer (1991:45) verteenwoordig laasgenoemde aktiwiteit ’n kilokalorieverbruik van ongeveer 1000kkal.week^{-1}.

◆ Die uitbrandingsvraelys van Pines *et al*. (1981):
Hierdie 21-itemvraelys word volgens ’n likertskaal beantwoord deur ’n waarde (1-7) aan elke vraag toe te ken, met 1=nooit en 7=altyd. Die uitbrandingsindeks word deur middel van ’n spesifieke formule bereken (Pines *et al*., 1981) wat op ’n enkele waarde tussen 1 en 7 kan uitloop. ’n Telling tussen 1.0-2.0 is as baie laag, 2.1-3.0 as laag, 3.1-4.0 as matig, 4.1-5.0 as hoog en 5.1-7.0 as baie-hooguitgebrand geïnterpreteer (SANGALA, 2000:9).

◆ Die koronêre risiko-indeks (KRI) van Bjürstrom en Alexiou (1978:524-525):
Hierdie vraelys is saamgestel uit 14 bekende koronêre risikofaktore (KRF) wat tot die ontwikkeling van koronêre hartsiektes (KHS) kan bydra, nl. ouderdom, familiegeskiedenis, liggaamsmassa, rookgewoontes, oefeningsgedrag, cholesterol, sistoliese bloeddruk, diastoliese bloeddruk, geslag, stres, teenswoordige KHS-simptome, geskiedenis van KHS, diabetes en jig. Binne elke faktor is ses verskillende keuses teenwoordig wat elk numeries gegradeer is en die persoon van ’n lae tot ’n hoë risiko klassifiseer. Die waarde wat by elkeen van die 14 koronêre risikofaktore verkry is, word dan bymekaargetel om ’n enkele risiko-indeks weer te gee. Waardes <21 word as baie goed, tussen 22-27 as goed, tussen 28-30 as matig, tussen 31-35 as swak en >36 as baie swak, ten opsigte van die koronêre risiko-indeks geïnterpreteer (SANGALA, 2000:5).

Insamelingsprosedure

Die SANGALA-projek, wat ’n dwarsdeursnit-beskikbaarheidsteekproef is, is ’n nasionale projek wat ten doel het om die sportbeoefening en deelname aan fisieke vryetydsaktiwiteit te bevorder. “Corporate”-SANGALA is spesifiek op die Suid-Afrikaanse bestuurslui gerig en deur die Suid-Afrikaanse Biokinetika Vereniging hanteer. Die genoemde vereniging het biokinetici reg oor die land getaak om inligting by maatskappye in te samel en gesondheidsopvoeding te doen. Die projek is in 1998 geloods en die inligting wat tot die einde van Junie 2001 verkry is, is in die studie gebruik.

Statistiese verwerking van die resultate

Die CSS:Statistika (Microsoft Corporation, 1986) rekenaarpakket is gebruik om die statistiese verwerking te doen. Met behulp van ’n eenrigtingvariansie-analise is bepaal of fisieke aktiwiteit ’n verband met onderskeidelik uitbranding en koronêre risiko-indeks het en ook of uitbranding enige verband met die koronêre risiko-indeks van Suid-Afrikaanse manlike bestuurslui het. ’n Tweerigtingvariansie-analise is daarna gebruik om fisieke aktiwiteit se effek op die verband van uitbranding met die koronêre risiko-indeks te bepaal. In gevalle waar statisties betekenisvolle verskille voorgekom het, is die Newman-Keuls post hoc-toets (Thomas & Nelson, 1990:144) gebruik om te bepaal watter groepe betekenisvol van mekaar verskil.

RESULTATE EN BESPREKING

Die gemiddelde ouderdom van die respondente was 41.26 ± 9.2 jaar. In Tabel 2 word die invloed van fisieke aktiwiteit (FA) onderskeidelik op die uitbrandingsindeks en die koronêre risiko-indeks weergegee. Dit blyk uit die tabel dat die fisiek hoog ($\geq$1000kkal.week^{-1}) en matig aktiewe (151-999kkal.week^{-1}) bestuurslui ’n betekenisvol ($p \leq 0.05$) laer uitbrandingsindeks (UBI) toon as die fisiek laag aktiewe ($\leq$150kkal.week^{-1}) bestuurslui. Die bestuurslui in beide die fisieke laag, matig en hoog aktiewe groepe val egter almal binne die lae uitbrandingskategorie (UBI tussen 2.1 en 3.0) (SANGALA, 2000:9). Laasgenoemde toon dus by implikasie dat fisieke aktiwiteit die uitbrandingsindeks by respondente, selfs in ’n lae

uitbrandingskategorie, betekenisvol kan verlaag.

Tabel 2 toon ook verder dat matige en hoë fisieke aktiwiteitsvlakke onder bestuurslui met ’n statistiese betekenisvolle ($p \leq 0.05$) laer koronêre risiko-indeks (KRI) gepaard gegaan het. Dit stem ooreen met navorsing wat aantoon dat deelname aan selfs matige aktiwiteit ’n beskerming teen koronêre hartsiektes kan bied (Paffenbarger, 1988:433; Pate *et al*., 1995:402; Drygas *et al*., 2000:235).

TABEL 2. **DIE VERBAND VAN FISIEKE AKTIWITEIT (FA) MET DIE UITBRANDINGS-INDEKS (UBI) EN DIE KORONÊRE RISIKO-INDEKS (KRI) BY SUID-AFRIKAANSE BLANKE MANLIKE BESTUURSLUI**

FISIEKE AKTIWITEIT	**UITBRANDINGSINDEKS**			**KORONÊRE RISIKO-INDEKS**		
	N	$\bar{x}$	S.A.	N	$\bar{x}$	S.A
Laag aktief	351	a) 2.98 [(c)]	0.754758	351	d) 30.54 [(e,f)]	8.25121
Matig aktief	236	b) 2.83[(a)]	0.687778	236	e) 25.63 [(d,f)]	7.58067
Hoog aktief	246	c) 2.73 [(a)]	0.703713	246	f) 23.07 [(d,e)]	6.44839

Lae uitbranding = 1.0 – 3.0 op die uitbrandingsindeks
Matige uitbranding = 3.1 – 4.0 op die uitbrandingsindeks
Hoë uitbranding = 4.1 – 7.0 op die uitbrandingsindeks

Statisties betekenisvolle ($p \leq 0.05$) verskille tussen die ses subgroepe soos bepaal met die Newman-Keuls post hoc-toets word met die alfabetiese kode a, b, c, d, e en f langs die gemiddelde waardes aangedui.

Uit die literatuur blyk dit dat sowat 50% van die Suid-Afrikaanse bestuurslui ’n fisieke aktiwiteitsprofiel van ≥ 1000 kkal.week^{-1} vertoon (Van Zyl, 1995:65). Dit behoort dan ook gesondheidsbevorderende en –konserverende voordele in te hou, nie net vir die persoon self nie, maar ook vir die maatskappy (Pestana *et al*., 1996:679; Katzmarzyk *et al*., 2000:1435).

Rakende die verband tussen uitbranding en die koronêre risiko-indeks van bestuurslui (Tabel 3) is statisties betekenisvolle ($p \leq 0.05$) verskille tussen die lae, matige en hoë uitbrandingsgroepe gevind. Dit wil voorkom dat die risiko vir die ontwikkeling van KHS betekenisvol blyk te verhoog by die respondente met matige en hoë uitbranding. Dit stem ooreen met vorige navorsing in dié verband (Appels & Mulder, 1988:758; Appels & Schouten, 1991:53; Appels & Otten; 1992:351). Appels en Mulder (1988:758) asook Appels en Schouten (1991:53) het die effek van uitermatige psigologies-emosionele uitputting (later meer spesifiek as uitbranding gedefinieer) op KHS onder 3900 middeljarige normale mans oor ’n verloop van vier jaar ondersoek en gevind dat uitbranding ’n betekenisvolle voorspeller van koronêre hartsiekte-insidensie was.

TABEL 3. **DIE VERBAND VAN UITBRANDING (UB) MET DIE KORONÊRE RISIKO-INDEKS (KRI) BY SUID-AFRIKAANSE BLANKE MANLIKE BESTUURSLUI**

UITBRANDING	**KORONÊRE RISIKO-INDEKS**

	N	$\bar{x}$	S.A.
Lae uitbranding	496	a) 24.95968 [b,c]	7.31364
Matige uitbranding	293	b) 29.29352 [a,c]	8.15785
Hoë uitbranding	44	c) 33.79546 [a,b]	10.36672

Lae uitbranding = 1.0 – 3.0 op die uitbrandingsindeks
Matige uitbranding = 3.1 – 4.0 op die uitbrandingsindeks
Hoë uitbranding = 4.1 – 7.0 op die uitbrandingsindeks

Statisties betekenisvolle ($p \leq 0.05$) verskille tussen die drie subgroepe soos bepaal met die Newman-Keuls post hoc-toets word met die alfabetiese kode a, b en c, langs die gemiddelde waardes aangedui.

In 'n verdere longitudinale studie, opgevolg vir 9.5 jaar, toon Appels en Otten (1992:354) dat psigologiese en fisieke uitbranding 'n duidelike voorspeller van sterfte as gevolg van KHS is. Hulle het ook gevind dat die relatiewe risiko vir KHS by die persoon met hoë uitbranding onderskeidelik drie keer hoër was oor 40 maande en nege keer hoër was oor 10 maande, as die persoon wat geen uitbranding gerapporteer het nie.

As uitbranding en die KRI so 'n betekenisvolle verband toon, ontstaan die vraag in welke mate deelname aan fisieke aktiwiteit hierdie verband tussen uitbranding en die koronêre risiko-indeks (KRI) kan beïnvloed. Die vraag is veral relevant, aangesien fisieke aktiwiteit ook as beskermingsmaatreël teen KHS kan dien (Tabel 2).

TABEL 4. **DIE INVLOED VAN FISIEKE AKTIWITEIT (FA) OP DIE VERBAND VAN UITBRANDING (UB) MET DIE KORONÊRE RISIKO-INDEKS (KRI) BY SUID-AFRIKAANSE BLANKE MANLIKE BESTUURSLUI**

UITBRANDING	**FISIEKE AKTIWITEIT**	**KORONÊRE RISIKO-INDEKS**		
		N	x	S.A.
Lae UB	Laag aktief	186	a) 28.33 [c,g]	7.45195
	Matig aktief	141	b) 24.41 [d,g,h]	7.03163
	Hoog aktief	169	c) 21.70 [a,d,g,h]	5.63324
Matige UB	Laag aktief	134	d) 32.50 [b,c,f]	7.98094
	Matig aktief	88	e) 27.06 [g]	7.47532
	Hoog aktief	71	f) 25.98 [d,g,h]	7.07408
Hoë UB	Laag aktief	31	g) 35.38 [a,b,c,e,f,i]	9.88493
	Matig aktief	7	h) 32.28 [b,c,f]	13.03475
	Hoog aktief	6	i) 27.33 [g]	8.06639

Laag aktief = 0 – 15 op die fisieke aktiwiteits indeks

Lae UB	=	1.0 – 3.0 op die uitbrandingsindeks
Matig aktief	=	16 – 44 op die fisieke aktiwiteits indeks

Matige UB

= 3.1 – 4.0 op die uitbrandingsindeks

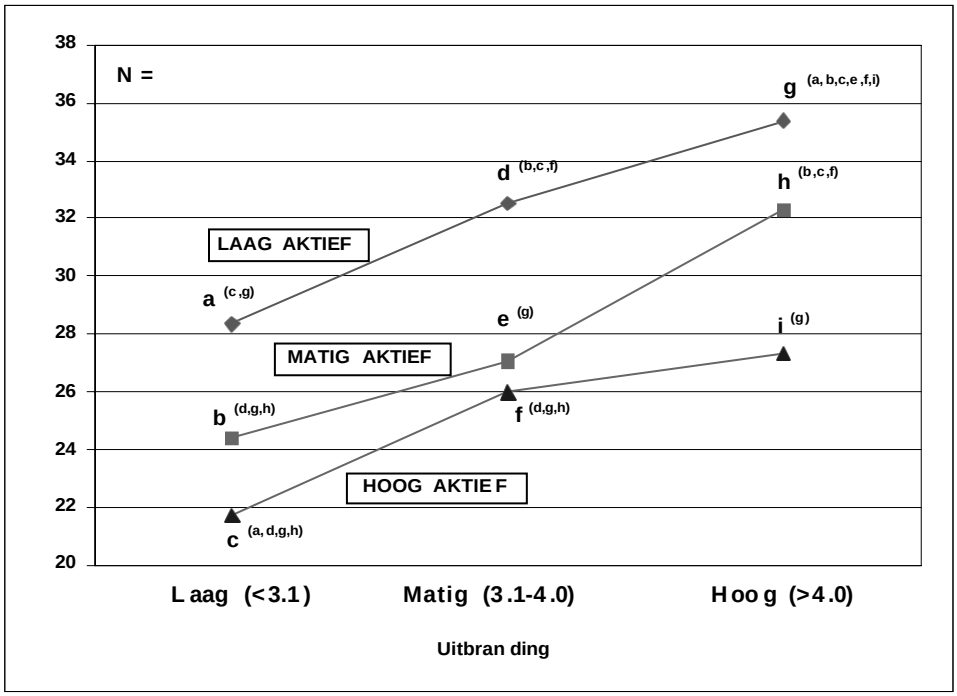
Hoog aktief = >45 op die fisieke aktiwiteits indeks

Hoë UB = 4.1 – 7.0 op die uitbrandingsindeks

Statisties betekenisvolle ($p \leq 0.05$) verskille tussen die nege subgroepe soos bepaal met die Newman-Keuls post hoc-toets word met die alfabetiese kode a, b, c, d, e, f, g, h, en i langs die gemiddelde waardes aangedui.

In Tabel 4 en Figuur 1 word die effek van fisieke aktiwiteit op die verband tussen uitbranding en koronêre risiko-indeks van Suid-Afrikaanse bestuurslui aangebied. Binne elkeen van die onderskeie uitbrandingsgroepe (laag, matig en hoog uitgebrand) in Tabel 4 toon die hoogaktiewe bestuurslui 'n statisties betekenisvolle ($p \leq 0.05$) kleiner risiko vir die ontwikkeling van KHS as diegene wat laagaktief is.

Geen statisties betekenisvolle ($p \leq 0.05$) verskille is tussen die matig en laag fisiek aktiewe besturslui binne dieselfde uitbrandingsgroepe gevind ten opsigte van die KRI-uitbranding verband nie (Figuur 1). Die rede hiervoor kan moontlik wees dat die oefeningsrespons van die matig-aktiewe groep te laag was (tussen 151 en 999 kkal.week^{-1}) om enige fisiologiese of psigologiese invloed te kon bewerkstellig.



FIGUUR 1. **DIE INVLOED VAN FISIEKE AKTIWITEIT OP DIE VERBAND TUSSEN UITBRANDING EN DIE KORONÊRE RISIKO-INDEKS**

Uit Figuur 1 is dit verder ook duidelik dat die hoog uitgebrande, hoog fisiek aktiewe uitvoerende amptenaar 'n kleiner risiko vir KHS (27.33) toon as die uitvoerende amptenaar wat laag uitgebrand en laag fisiek aktief is (28.33). Hoewel die genoemde verband nie statisties betekenisvol is nie, blyk die tendense uit Figuur 1 duidelik dat uitbranding die risiko

om KHS te ontwikkel verhoog, dog dat deelname aan fisieke aktiwiteit 'n betekenisvolle beskermingseffek toon (laag- vs hoogaktief).

GEVOLGTREKKINGS

Uit die resultate van die ondersoek blyk dit dat die fisiek hoog en matig aktiewe bestuurslui statisties betekenisvol laer uitbranding toon as die fisiek laagaktiewe bestuurslui, selfs al was die respondente gemiddeld almal binne die lae uitgebrande kategorie. Verder toon deelname aan fisieke aktiwiteit ook 'n duidelike verlaging in die risiko vir die ontwikkeling van KHS onder die Suid-Afrikaanse blanke manlike uitvoerende amptenaar. Navorsing toon dat sowat 50% van bestuurslui in Suid-Afrika aan genoegsame FA ($\geq$1000 kkal.week^{-1}) deelneem om hul gesondheid te kan verbeter (Van Zyl, 1995:65).

Uitbranding toon ewe-eens 'n statisties betekenisvolle invloed op die ontwikkeling van KHS onder die Suid-Afrikaanse bestuurder. Wanneer die invloed van fisieke aktiwiteit op die verband tussen uitbranding en koronêre risiko-indeks ondersoek word, blyk die salutogene en beskermende effek van fisieke aktiwiteit baie duidelik. Hoewel die intra-groepverskille by die verskillende uitbrandingsgroepe tussen lae en hoë deelname aan fisieke aktiwiteit

betekenisvolle verskille toon, is die intergroepverskille nie in alle opsigte statisties betekenisvol nie (Figuur 1). Die voordelige tendens wat deelname aan fisieke aktiwiteit inhou, kom egter konsekwent by al die uitbrandingsgroepe voor.

SUMMARY

THE INTERRELATIONSHIP BETWEEN THE PHYSICAL ACTIVITY-, CORONARY RISK- AND BURNOUT INDICES IN SOUTH AFRICAN EXECUTIVES

High-level employees are valuable assets for every company and a significant investment is required to train employees up to executive rank. These employees are often exposed to stressful and detrimental working conditions that could lead to chronic diseases related to an unhealthy lifestyle. One way to counter these occupational stressors is for executives to become more physically active. Research also indicates that regular participation in physical activity may evoke a protection against detrimental effects of some unhealthy lifestyles. In this respect Paffenbarger indicates that executives who smoke or suffer from hypertension but indulge in a highly active lifestyle indicate approximately the same risk of developing coronary heart disease than the non-smoker or normotensive executives.

The above-mentioned salutogenic effect of physical activity is also applicable to psycho-emotional stressors.

According to research, the South African executive has, to a great extent, become sedentary. Only 3% of executives (in this study) reported a high on the job physical activity participation, while 50% participated in off the job physical activity that might be sufficient to improve health and well-being. Stümpher also indicates that the stress levels of South African executives are higher than their colleagues in the United States of America or the Netherlands. These high-risk conditions (inactivity and high stress levels) associated with high-ranking positions in companies may put executives at high risk, not only with regard to personal health, but also with regards to an increase in health-care costs for companies and a decrease in high-level productivity. Various companies, both locally and internationally, have therefore

developed strategies to improve or maintain the physical and psychological wellness of their employees.

The purpose of this study was to investigate the effect of leisure time physical activity participation on the Burnout and Coronary Risk indices of South African executives. The influence of burnout on the Coronary Index was also determined. Lastly, the interrelationship of physical activity participation and the Burnout and Coronary Risk indices was analysed.

In this study 833 male executives from various South African companies were studied. The mean age of the participants was 41.26 years. The following indices were utilised in the assessments:

- Physical Activity Index (Sharkey);
- Burnout Index (Pines *et al*.); and
- Coronary Risk Index (Bjünstrom & Alexiou)

The results of the present study indicate that executives who participate in moderate (151-999 k.cal.week^{-1}) or intensive (>1000 k.cal.week^{-1}) exercising indicate significantly lower burnout

and coronary risk index values than their more sedentary colleagues do. These results confirm the protective value of regular participation in physical activity and suggest that physical activity should form an integral part of any company's wellness programme.

A further analysis also indicates that the higher the level of burnout in the executive, the higher the risk of developing coronary heart disease.

When the interrelationship between the above constructs are analysed, it becomes clear that physical activity can indeed be regarded as a protective modality, as it presented significant lower coronary risk index values in respondents who reported low, moderate and high burnout index values.

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AN ASSESSMENT OF THE PHYSICAL FITNESS AND CORONARY HEART DISEASE RISK FACTORS OF WHITE FEMALES IN THE ZULULAND AREA THAT ATTEND HEALTH AND FITNESS CLUBS

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ABSTRACT

Health and fitness clubs play an important role in addressing the causes of hypo-kinetic diseases and coronary heart disease (CHD). In order to be well prepared, service providers should be aware of the health and fitness profiles of their clients when they join their clubs. In the current study 243 white female subjects between ages 13 to 70 years were assessed, the results analysed for risk factors and the findings compared with existing norms in literature. This study found that 19.8% of subjects smoked >10 cigarettes per day which is a cause for concern. Although this is lower than the general female population of Durban the current subjects joined a health and fitness centre and could thus be regarded as health conscious. Before joining almost half (49.4%) of the subjects were inactive. The incidence of hypertension (systolic >140 mmHg and/or diastolic >90 mmHg) as a risk factor for (CHD) among 16.5% of subjects was relatively low when compared to that reported for females in Durban. Cholesterol levels were also lower than the average for Durban females because 28.6% of the subjects were found to be borderline (5.2-6.2 mmol.l^{-1}) and 16.7% to be of a high risk (>6.2 mmol.l^{-1}). When using BMI, 19.3% of subjects were >37.3 kg.m^{-2} and therefore in a high-risk group for CHD. Multiple risk factor analysis revealed that 42.0% of subjects displayed two or more risk factors for CHD while 12.0% had three or more and 2.0% had four or more.

Key words: Risk factors; Health; Fitness; White females; Fitness assessment.

INTRODUCTION

Health and fitness clubs play a very important role in preventing hypo-kinetic conditions. Of particular importance are the modifiable risk factors for coronary heart disease (CHD). The South African population is, especially in urban areas, increasingly becoming aware of the benefits of physical exercise for improvement of health and the quality of life. More than ever, individuals join fitness clubs in their quest to stay fit and healthy. Many individuals join fitness clubs because they have limited knowledge of fitness and health aspects and have come

to seek advice as to the best programmes to follow. Many individuals that seek to participate in exercise have limited leisure time and wish to do the most in the shortest space of time. Therefore, it is imperative for fitness clubs to offer services suited to the particular needs of their customers. Without a clear knowledge of the health and fitness profile of its target market it is difficult for health and fitness clubs to offer appropriate services.

When an individual joins a health and fitness club he/she usually has a very poor idea of his/her health and fitness status and the potential benefits of exercise. One of the main

benefits is the reduction of modifiable health risk factors. Coronary artery disease has been identified as a major national health problem and prior to 1994 was the leading cause of death in the white population of Durban (Seedat *et al*., 1994). Organisations involved in preventive health measures, which includes health and fitness clubs, should be particularly sensitive to identifying risk factors, and implementing effective ways to reduce such risk factors. The major modifiable risk factors for CHD are cigarette smoking, hyper-cholesterolaemia, physical inactivity, diabetes mellitus, hypertension, stress, and obesity (Robergs & Roberts, 1997).

In the present study a survey of the incidence of modifiable risk factors and other physical shortcomings among first time entrants to a local health and fitness club was done and recorded. This research could therefore be of valuable assistance to decision-makers in the health and fitness industry, as it can help to determine the needs of the average customer.

METHODS AND PROCEDURES

Data are reported for 243 white female subjects who joined the Empangeni Health and Fitness Centre between January 1999 and December 2001. Table 1 represents the general characteristics of the subjects. All subjects gave written consent prior to participation in the project. All subjects also completed the PAR-Q questionnaire (Corbin & Lindsey, 1994). Subjects were free to withdraw from the test procedure at any time. Testing were done between 16h00 and 18h00 from Monday to Thursday. The testing centre was fully air-conditioned which enabled a stable environment as regards temperature and humidity. Subjects were dressed in comfortable exercise clothing during the tests.

TABLE 1. **GENERAL CHARACTERISTICS OF SUBJECTS (N=243)**

Parameter	Mean	Min	Max
Age (yr)	32.7 ± 11.0	13	70
Mass (kg)	66.1 ± 13.0	44	130
Height (cm)	165.0 ± 5.0	151	181

Tests were performed as follows:

The examiner interviewed each subject individually and recorded information regarding the date of birth, exercise habits, smoking habits and health status. Height and mass was measured next. Fat percentage was calculated from the skinfolds taken with a slimguide calliper by means of the method described by Pollock *et al*. (1980). Blood pressure was measured at rest in the sitting position by the conventional stethoscope/sphygmomanometer method. Random total blood-cholesterol concentration was measured by means of a Boehringer Accutrend GCT apparatus. The method described by the manufacturer was followed precisely. Random cholesterol is a useful screening tool and can be compared to results of other researchers who

have used the same method. Physical working capacity (PWC_{170}) and predicted maximal oxygen consumption (VO_{2max}) were determined with the subject cycling on a calibrated cycle ergometer, starting at ±30W and increasing the workload by 20 to 30 W every two minutes depending on the fitness state of the subject. Heart rate (Polar heart rate monitor) and blood pressure (mercury sphygmomanometer) was recorded at the end of each two-minute period. The PWC_{170} and VO_{2max} were calculated using the methods described by Åstrand and Rodahl (1977). Sit-ups were done from supine position, with fingers touching behind the head, to a position where elbows touched the upper legs; the knees bent 90 degrees. Push-ups were done with the knees on the floor and the body, from shoulder to knee, forming a straight line until the arms were fully extended. Thereafter the body was lowered to a level where the elbows were bent 90 degrees. Calf flexibility was determined by measuring the angle between the floor and the lower leg as follows: The subject stood with feet parallel to each other and 10 cm apart. With the hands on a one meter high bench a meter away from the subject, she attempted to lean forward into dorsi-flexion as far as possible without lifting the heals off the floor. If the subject was unable to reach an angle of 45 degrees between the floor and lower leg, it was regarded as insufficient flexibility of the calf muscle. Hamstring length was measured with the subject lying on the back with the trochanter of the femur level with the mid-point of a large protractor. While the subject kept the leg muscles relaxed the tester gripped the leg just above the ankle and slowly lifted the leg to determine the angle at which the hamstring started to flex the knee. A value of less than 60 degrees was regarded as insufficient. Hip flexor length was measured with the subject lying on the back on a couch and then pulling one knee (fully flexed) down onto the chest with both hands. A noticeable lift in the thigh of the opposite leg indicated a short hip-flexor on that side. The procedure was then repeated for the other side. Shoulder range of motion was measured by standing about one meter from a couch of one metre in height. By bending in the hips, the hands and wrists were positioned on the couch. The subject then attempted to push the shoulders down as far as possible while keeping the arms straight. A slight bend in the knees was allowed. An angle of less than 180 degrees between back and arms signified insufficient shoulder range of motion.

RESULTS AND DISCUSSION

Smoking habits

Smoking is widely recognised as a major risk factor for coronary heart disease. Cigarette smoking may be one of the best predictors of CHD; the risk is directly related to the number of cigarettes smoked. Whereas smoking generally acts independently of other risk factors, it also accentuates the influence of other risk factors that may be present (McArdle *et al*., 1996). In the present study subjects smoked an average of 16.0 ± 7.4 cigarettes per day with 19.8% of subjects smoking ≥10 cigarettes per day. This is slightly lower than what was reported by Seedat and Mayet (1996). They found that 24.1% of 203 white females in the Durban area smoked ≥10 cigarettes per day. This could indicate that the subjects of the present study, who joined a health and fitness club, might have been more sensitive to the negative effects of cigarette smoking. It is, however, still disconcerting that such a large proportion of females who elect to improve their health and fitness status, continue to smoke. It is suggested that special attention be given to inform smokers joining health and fitness clubs of the negative effects of smoking. This could effectively be done by means of an individual health risk profile that highlights those areas where the individual could improve on.

Exercise habits

There is consensus that regular physical activity is a powerful protector against heart disease. The relative risk of a fatal heart attack among sedentary individuals is approximately twice that of more active persons (Blair, 1993; Morris, 1994). However, it is difficult if not impossible to measure accurately the activity level of an individual. Under normal circumstances it can only be measured as a subjective rating. In the current study it was done

by questioning the individual and then to subjectively rate the level of activity according to the answers given.

Before joining the health and fitness club 49.4% of the subjects did not participate in any physical activity, while 30.9% reported irregular participation and only 19.8% reported regular participation. It is therefore clear that a lot of room for improvement in the area of physical activity, with it's accompanying benefits, is possible for the current subjects. As they have taken the decision to start with physical exercise by joining a health and fitness club, it is important that they get expert advice as to the type of exercise most needed and to ensure that they remain committed.

The physical condition of an individual can also be determined from the PWC_{170} and the predicted VO_{2max} as these parameters depend on heart rate which in turn is affected by the state of fitness of the subject. When predicting VO_{2max} from workload and heart rate unfit individuals will always under-score. Therefore, if a specific population scores higher than the norm for the general population in the above parameters, then one of the factors responsible for this could be a higher degree of fitness. The mean PWC_{170} for the subjects of this study was 130.4 ± 29.6 W with a maximum of 220 W and a minimum of 57 W. This is somewhat higher than the population norm (117.5 W) reported by Andrews (1990) for 548 female subjects aged 18 to 55 years. This could indicate that the present population is somewhat more active than the general population and might play a role in them joining a health and fitness club. The mean predicted VO_{2max} for the subjects of the present study was 2.5 ± 0.5 l/min with a maximum of 3.6.min^{-1} and a minimum of 1.1.min^{-1}. Relative values were 40.0 ± 10.0 ml.kg^{-1}.min^{-1} with a maximum of 65.0 ml.kg^{-1}.min^{-1} and a minimum of 13.0 ml.kg^{-1}.min^{-1}. This compares well with the 39.0 ml.kg^{-1}.min^{-1} reported by McArdle *et al*. (1996) as the average value for females in the USA.

Resting blood pressure profile

Chronic hypertension can lead to heart failure, myocardial infarction or stroke. It can, however, be effectively treated with lifestyle changes and medication. Beneficial lifestyle changes such as a prudent diet, weight control, and moderate exercise performed on a regular basis, are more desirable than the pharmacological approach for treating mild hypertension (McArdle *et al*., 1996).

Although hypertension is the most common cardiovascular disease in human populations, subjects in the current study displays a surprisingly low incidence of hypertension (Table 2). Hypertension (systolic >140 mmHg and/or diastolic >90 mmHg) as a risk factor for CHD was prevalent in 16.5% of subjects in the present study. This prevalence is clearly lower than the 17.7% prevalence of hypertension (≥160/95 mmHg) reported by Seedat and Mayet (1996) for white females from the Durban area. Again it could point to a bias in favour of healthier females joining health and fitness clubs. In the light of the very positive effect physical activity has on hypertension, recruitment strategies should also be targeted at persons who normally do not join health and fitness clubs but who could benefit the most.

TABLE 2. **SYSTOLIC AND DIASTOLIC BLOOD PRESSURE PROFILE OF WHITE FEMALES (N=243)**

Systolic		
Classification	**Range (mmHg)**	**Distribution (%)**
Normal	<130	81.07
High normal	130-139	11.52
Mild hypertension	140-159	6.58
Moderate hypertension	160-179	0.41
Severe hypertension	180-209	0
Very severe hypertension	≥210	0
Diastolic		
Normal	<85	77.37
High normal	85-89	8.23
Mild hypertension	90-99	13.99
Moderate hypertension	100-109	0
Severe hypertension	110-119	0
Very severe hypertension	≥ 120	0

Norms from: American College of Sports Medicine (1995)

Total Cholesterol profile

Abnormal blood lipid profiles appear to contribute significantly to atherosclerotic diseases and thereby constitute a real risk for CHD (Smith, 1991; Stamler *et al*., 1986). Although total cholesterol is not such a powerful predictor as the distribution of the various lipoproteins, it is still a valuable screening tool for due to the ease of measurement and economic viability it is widely used. A total cholesterol level of >5.2 mmol/l is regarded as a risk factor for CHD (American College of Sports Medicine, 1995). In the present study (see Table 3), if judged on the classification of the Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults (1993), 54.8% had a desirable cholesterol level (<5.2 $mmol.l^{-1}$), 28.6% was borderline high (5.2-6.2 $mmol.l^{-1}$), and 16.7% had high cholesterol (>6.2 $mmol.l^{-1}$). These values are somewhat lower than those reported by Seedat and Mayet (1996) for white females of the Durban area. These authors (Seeadat & Mayet, 1996) found that 50% of females that they screened had cholesterol levels of ≥5.7 $mmol.l^{-1}$ and 24.1% had levels of ≥6.5 $mmol.l^{-1}$. The females of the present study appear to be at lower risk than the females in Durban. There is, however, room for improvement and dietary adaptations and participation in regular aerobic type exercise is recommended.

TABLE 3. **BLOOD TOTAL CHOLESTEROL LEVELS IN THE PRESENT STUDY (N=43)**

Classification	**Range ($mmol.l^{-1}$)**	**Distribution %**
Desirable	<5.2	54.76
Borderline high	5.2-6.2	28.57
High	>6.2	16.67

Over-fatness and obesity

Although not a primary risk factor for CHD, obesity is recognised as an independent risk factor (Pollock *et al*., 1980). Obesity has a close relationship with other risk factors such as hypertension, elevated cholesterol and diabetes mellitus. Weight loss and accompanying body fat reduction, whether through diet or exercise, generally normalise cholesterol and trigliseride levels and have a beneficial effect on blood pressure and Type II diabetes (McArdle *et al*., 1996).

Table 4 shows the distribution of the subjects of the present study for body fat % and BMI. The mean fat % of the subjects in this study was 26.2 ± 6.7% with a minimum of 10.0% and a maximum of 50.0%. The mean BMI of the subjects of this study was 24.2 ± 4.9 $kg.m^{-2}$ with a minimum of 16.6 $kg.m^{-2}$ and a maximum of 46.1 $kg.m^{-2}$. Using body fat % as a risk factor it can be seen from Table 4 that 28.0% of the subjects of the present study would be at increased risk for CHD. A BMI of above 37.3 $kg.m^{-2}$ (McArdle *et al*., 1996) is associated with an increased incidence of high blood pressure, diabetes, and CHD. In the present study 19.3% of the subjects fell into this category.

TABLE 4. **BODY FAT % AND BODY MASS INDEX OF FEMALE SUBJECTS AS A FACTOR FOR CHD (N=243)**

Body fat %		
Classification *	**Range (%)**	**Distribution**
Desirable	<25	42.80%
Normal	25-29.9	28.80%
Obese	≥30	28.00%
Body Mass Index		
Contribution to all cause mortality *	**Range ($kg.m^2$)**	**Distribution**
Moderate	0-19.9	14.80%
Very low	20-24.9	59.79%
Low	25-29.9	22.22%
Moderate	30-34.9	9.88%
High	35-39.9	1.65%
Very high	≥40	1.20%

* McArdle *et al*. (1996)

Multiple Modifiable Risk Factors

Risk appraisals have been developed to quantify an individual's susceptibility to CHD. Most of these appraisals assign point values to different aspects of lifestyle. Often these values are arbitrary and not based on actual data of mortality and morbidity. Despite this limitation, such appraisals do play an important role in screening for current risks and lifestyle behaviours. The following risk factors for CHD are commonly recognised: Cigarette smoking (>$10.day^{-1}$), Physical inactivity, Hypo-kinetic conditions such as diabetes, Hypertension (>140/90 mmHg), Obesity (Fat mass >30% or BMI >27.3 $kg.m^2$) and hyper-cholesterolaemia (>$5.2mmol.l^{-1}$). It is difficult to determine quantitatively the importance of any single risk factor in comparison to any other because the factors are interrelated. Many risk factors are associated with each other as well as with CHD. The interaction of three or more of the primary risk factors when elevated in the same person most definitely magnifies their individual effects (McArdle *et al*., 1996).

Table 5 gives a profile of risk factors of subjects in the present study. In the present study 42.0% of subjects had two or more risk factors, 12.0% had three or more risk factors and 2.0% had four or more risk factors. This is clearly a cause for concern and should be noted by the persons in charge of exercise programme prescription in health and fitness clubs. The elimination or reduction of one or more risk factors will cause a corresponding decrease in the probability of developing CHD.

TABLE 5. **MULTIPLE MODIFIABLE RISK FACTOR PROFILE (N=243)**

Number of risk factors* present	Distribution (%)
1	33.74
2	29.63
3	10.29
4	1.23
5	0.41
6	0.41

* Cigarette smoking (>10.day^{-1}), Physical inactivity, Hypo-kinetic conditions such as diabetes, Hypertension (>140/90), Obesity (Fat mass >30% or BMI >27.3 kg.m^{2}) and hyper-cholesterolaemia (>5.2 mmol.l^{-1}).

Fitness components

Table 6 shows the results for selected fitness parameters. The mean value of 23.5 for sit-ups per minute for the current subjects compares favourably with the 25.0 found by Andrews (1990) for South African females aged 18 to 55 years of age. The mean for modified push-ups is relatively low at 15.9 per 30 seconds.

TABLE 6. **MEANS AND STANDARD DEVIATIONS FOR, AND PREVALENCE OF SELECTED FITNESS COMPONENTS (N=243)**

Fitness component	Mean ± standerd deviation
Sit-ups in 1 minute	23.49 ± 8.11
Push-up in 30 seconds (supported on the knees)	15.87 ± 5.35
	Distribution (%)
Short calf muscles	51.44
Short hamstring muscles	16.87
Short hip flexor muscles	35.39
Inadequate shoulder ROM	14.4

More than 51% of the subjects had short calf muscles. This could be due to the tendency of females to wear shoes with elevated heels. The incidence of short hip flexors (35.9%) and short hamstrings (16.9%) could contribute to mechanical back pain (Coetsee, 1995). Special attention should be given to stretching exercises as a component of a well-balanced structural exercise programme.

CONCLUSION

Although the fitness and health profile of white females joining health and fitness clubs seems

to be better than the general population of Durban, there is still much room for improvement. It is suggested that health and fitness service providers take note of these findings and implement effective measures in reducing the modifiable risk factors in their clients. In this way they will significantly contribute to the health status of the South African public.

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PHYSICAL EXERCISE AND PSYCHOLOGICAL WELLNESS IN HEALTH CLUB MEMBERS: A COMPARATIVE AND LONGITUDINAL STUDY

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ABSTRACT

This paper constitutes a comparative and longitudinal investigation of physical exercise and psychological wellness in a sample of health club members in Zululand, South Africa. The research was contextualized within a public health and community psychological model of mental health promotion. Physical exercise was categorized as regular or irregular, depending upon whether it met the criterion of exercising for an average of thirty minutes a day at least three times per week or not. A Wellness Profile was constructed from various questionnaires chosen on the basis of their relationship with the general construct of psychological wellness and administered to samples of health club members and university students. In the comparative investigation, health club members were more psychologically well than university students. Whether they were members of a health club or not, participants who were regular exercisers were found to be more psychologically well than irregular exercisers. In the longitudinal investigation, health club members who exercised regularly over a period of two or more months increased significantly in psychological wellness. The significance of the findings in themselves and for the promotion of public and mental health is discussed.

Key words: Physical exercise; Psychological wellness; Health clubs.

INTRODUCTION

In recent years, a paradigm shift has occurred in health care whereby a pathogenically orientated medical model has been complemented and extended by a public health approach with an emphasis on both illness prevention and health promotion (Kuhn, 1962; Trent, 1995; Oldenburg, 2001). This paradigm was made possible by the World Health Organization (WHO) positive definition of health in terms of not merely the absence of disease, but also as state of complete physical, mental and social well-being (WHO, 1946).

Well-being or wellness can be conceptualized as the positive component of optimal health. Health interventions typically involve three strategies of disease and illness treatment, disease and illness prevention and health and wellness promotion. Following the success of modern biomedicine and public health campaigns in treating and preventing disease and illness, recent years have seen the proliferation of heath clubs concerned with the promotion of health and wellness (Corbin & Lindsey, 1997). Such clubs provide opportunities for various forms of physical exercise as well as social support for members, which factors are known to be related to mental health (Weinberg & Gould, 1999). Are health club members more mentally healthy and/or psychologically well than non-members? If so what sort of psychological wellness do they experience? What are the implications for the promotion of mental health? These were the sorts of questions that motivated this research.

A community psychological model of mental health promotion, essentially views mental health promotion as a form of general health promotion, with primary, secondary and tertiary components of both prevention and promotion. A model proposed by Edwards (1999; 2001b) is initially phenomenological in orientation, approach and perspective. There is recognition that conceptual distinctions made between illness and health, and various components such as physical, mental and social well-being are essentially arbitrary. From a phenomenological perspective, phenomena such as illness and health are revealed to us from direct experience in our ongoing being-in-the-world. For example health may be experienced as an energized feeling of well-being, leading to community psychological conceptualizations such as the Chinese term *chi* or Zulu word *impilo.* It is this emphasis on experience which makes the model more specifically and essentially psychological.

Based on this general public health and community psychological approach and including the views of Corben and Lindsey (1997), Pretorius (1998), Wissing and Van Eden (1998), Repucci *et al.* (1999) and Cohen (2000), the following assertions on psychological wellness seem apposite.

- Conceptualizations of psychological wellness in the literature are very diverse, which is understandable when we consider that it is a transient situation, which is multifactorial in etiology, process and promotion. For example, factors that define psychological wellness will differ at different ages and in different circumstances.
- In general, wellness can be conceptualized as the positive component of optimal health, and psychological wellness conceptualized as the positive component of psychological health.
- Psychological wellness has multidimensional personal, transactional and environmental determinants, which become more complex as the human life cycle progresses. Environmental factors also include non-psychological factors such as housing, food and employment.

- It is better to promote psychological wellness than prevent factors impeding wellness. There are thus many routes to psychological wellness and methods to promote it. For example, Cohen (2000) has put forward competence, empowerment and resilience as exemplar concepts for promotion within a wellness framework. The focus of the present paper is on physical exercise.

Physical exercise may be defined as a subset of physical activities that are planned and purposeful attempts to improve health and well-being. The use of exercise as a medium for health promotion is based upon international research evidence for the general and mental health benefits of physical activity, exercise and fitness interventions (Hayes & Ross, 1986; Morris & Summers, 1995; Scully, 1998; Weinberg & Gould, 1999; Fox, 2000; Edwards, 2001a). Research has proliferated on the duration, frequency and intensity of various forms of exercise (Morehouse & Gross, 1977). For example, the American College of Sports Medicine has recommended exercise programmes based upon findings that, in general, healthy adults receive cardiovascular benefits if they exercise for at least 20 to 30 minutes, three to five times a week at 60% to 90% intensity. Yet despite such health promotion and education, there is evidence that only 15% of adults in the USA participate in such vigorous exercise activity (Weinberg & Gould, 1999).

Regular, moderate intensity exercise interventions seem particularly valuable, where the type, intensity and duration of the exercise programmes are tailored to suit the particular exercisers (Berger, 1994 & 2001). Studying desirable changes in mood and meaning in exercise programmes, researchers have emphasized regular, noncompetitive activity involving rhythmic, abdominal breathing of 20 to 30 minutes duration in comfortable, predictable contexts as in Tai Chi, Yoga, aerobic exercise and weight training. Various qualitative and quantitative methods have been used to both describe the experience/meaning and measure such changes (Berger, 1996 & 2001; Edwards, 2001a & 2001b; Stelter, 2000 & 2001). Public health interventions attempting to improve quality of life through increased exercise adherence clearly need to take such personal meanings into account, as well as the learning principle that people will repeat behaviours that are intrinsically rewarding.

Sinyor *et al*. (1983) were able to demonstrate that aerobically trained persons were able to recover faster from experimentally induced psychosocial stress than untrained persons on physiological, biochemical and psychological measures. Various similar physiologically orientated studies have demonstrated similar effects (Anshell, 1996; Scully, 1998; Summers, 1999). Related studies by Roth and Holmes (1985 & 1987) have indicated that physical fitness moderates the stress–illness relationship and that increasing fitness, through aerobic training, decreases the experience of stressful life events. Learning theory and Lazarus' (1993) model of stress as a transaction between persons and their environments predict that persons who engage in regular physical exercise will have more experience of and control over stress, as induced through such exercise and as generalized to other stressful life events, than those who do not exercise.

The aims of the present research were:

- to examine psychological wellness in health club members.
- to compare the psychological wellness of health club members with non-members.
- to examine longitudinal, causal effects of regular exercise on psychological wellness.
- to explicate the implications of this relationship for the promotion of mental health.

It was hypothesized that health club members would be significantly more psychologically

well than non-members as would regular exercisers compared to irregular exercisers and that physical exercise would improve psychological wellness over time.

METHOD

A Wellness Profile was constructed from various questionnaires chosen, and in some cases adapted, on the basis of their relationship with the general construct of psychological wellness as conceptualized in this paper and as established in previous research. Personal communication with South African colleagues Marie Wissing and Tyrone Pretorius was particularly valuable in this respect. These psychological wellness components and their sources have been extensively described and analyzed (Edwards, 2002). Based on the research of Holmes and Rahe (1967), McNair *et al.* (1971), Diener *et al.* (1985), Antonovsky (1987 & 1993), Dean *et al.* (1990), Turner (1990), Frenz *et al.* (1993), Noakes and Granger (1995) and Pretorius (1998) the profile includes assessments of mood, lifestyle, satisfaction with life, sense of coherence, fortitude, stress, coping and an overall weighted wellness percentage. The lifestyle, sense of coherence and fortitude scales are fairly robust, whereas the mood, satisfaction with life, stress and coping scales are more sensitive to life changes.

In the comparative investigation, the Wellness Profile was administered to 106 health club members from four local clubs in the Zululand region of South Africa and 110 first year psychology students at Zululand University. The health club sample consisted of 54 men and 52 women. Average age was 30 years, with age range from 12 to 61. There were 60 English, 21 Afrikaans, 20 Zulu, two Swazi, one Xhosa and one Sotho speakers. The student sample consisted of 24 men and 86 women. Average age was 24 years with an age range from 17 to 47. In terms of home language, there were one Tsonga, one Xhosa, four Siswathi, five Tsonga and 99 Zulu speakers. The assumption was made that health club and student samples represented different populations. No measure assessed whether students were also health club members and/or health club members were students. It was assumed that the samples of over 100 members would control for any confounding or interaction effect of subjects representing both student and health club populations.

Regular exercise was defined as meeting the criterion of exercising for an average of 30 minutes a day at least three times per week.

In the longitudinal study, 26 of the original 106 health club members, who were still exercising regularly for a minimum period of two months, were re-evaluated at the preplanned six-month cut off date for the research. This large, expected drop-out rate reflects established norms of about 25% of the general population engaging in vigorous exercise and about 50% of participants dropping out of exercise programmes within the first six months (Weinberg & Gould, 1999), as well as the irregularity with which exercisers attend health clubs. The minimum time period of two months was chosen on the basis of previous studies reporting some exercise effects after five weeks, with the largest effects being observed after 10 to 15 weeks (Roth & Holmes, 1987; Scully, 1998). During re-evaluation, participants provided update information as to age, gender, home language, years of exercise experience, estimate of any wellness changes over the past two months, as well as type, amount, intensity and duration of their regular exercise.

The sample of 26 persons in this longitudinal investigation consisted of 11 women and 15 men. Average age was 31.7 years, with an age range from 16 to 52 years. In terms of home language, there were four Zulu, seven Afrikaans and 15 English speakers. Participants had

been attending health clubs for an average of five years and nine months, with a range from two months to 20 years. Although seven participants were new health club members, two of these new members also had previous health club exercise experience. Of the 26 participants, 24 had improved in total wellness on re-evaluation. This 92% improvement rate is excellent, considering that most were seasoned health club exercisers. The two participants whose wellness decreased on re-evaluation had both suffered serious personal stress at the time of assessment.

The SPSS statistical programme was used to analyze data. In the following results, certain wellness components are abbreviated as follows: health club member (health) satisfaction with life (satis), sense of coherence (soc), fortitude (fort) and coping (cope). The single (*) and double asterisks (**) indicate the usual convention for significant findings at the 5 and 10% level of significance respectively

RESULTS

TABLE 1. **SUMMARY TABLE FOR MEANS OF HEALTH CLUB MEMBERS (N=106) AND STUDENTS' (N=110) WELLNESS COMPONENTS**

Subject	Mood	Life	Satis	Soc	Fort	Stress	Cope	%Wellness
Health	33.6	4.9	25.2	61	58	105	11.9	61.8
Student	33.7	3.9	25.7	62	59.9	135	10.9	56.6
F statistic	0.07	29.3**	0.3	0.2	1.3	4.6**	7.3**	6.2**

Table I refers to means and *F* statistics for the analysis of variance of wellness components of health club members and university students. Multivariate analysis to correct for any effects of age, gender, language, and exercise, confirmed that health club members were significantly more psychologically well than students, especially due to their healthier lifestyle, decreased stress and improved coping. Significant interaction effects were observed for gender and stress, language and fortitude and for exercise with wellness, mood, lifestyle and coping, which lead to further multivariate analysis of wellness components comparing regular and irregular exercisers, as corrected for the effects of health club membership, age, gender, language and lifestyle. In that regular exercise as defined in terms of occurring at least three times per week for at least 30 minutes per session was one of the lifestyle components, the other lifestyle components were regarded as covariates in this analysis.

TABLE 2. **SUMMARY TABLE FOR MEANS OF REGULAR (N=121) AND IRREGULAR (N=95) EXERCISERS**

Exerciser	Mood	Life	Satis	Soc	Fort	Stress	Cope	%Wellness
Regular	34.6	5.1	26	61.9	59.8	112.3	11.8	60.7
Irregular	32.4	4.4	24.7	61.5	58.5	130.8	10.9	56.3
F statistic	5.6**	95.2**	2.9	0.1	1.1	1.7	6.4**	7.6**

Table 2 indicates the significant influence of regular exercise on wellness, with special reference to mood, lifestyle and coping in the total sample of 216 participants. Table 3 refers to pre- and post-test means for the longitudinal investigations on 26 regularly exercising health club members, which were carried out to test causal connections between regular exercise and improved psychological wellness.

TABLE 3. **PRE- AND POST-TEST MEANS AND *T*-STATISTICS FOR WELLNESS**

COMPONENTS OF 26 REGULAR EXERCISERS

Test	Mood	Life	Satis	Soc	Fort	Stress	Cope	%Wellness
Pretest	33	6.1	25.8	59.9	57.7	99.7	12	61.5
Posttest	36.6	6.3	26.6	65	62.5	60	13.2	71.7
t-statistic	2.03*	0.96	0.99	4.1**	3.4**	3.1**	2.42*	5.4**

From inspection of Table 3's pre and post test mean scores and *t*-statistics, it is clear that there were significant improvements over time for the wellness components; mood, sense of coherence, fortitude, stress, coping and wellness percentage. From the means for lifestyle and satisfaction with life, it appears that exercisers were already living very healthily (scoring six out of a possible seven) and were already, at pretest, fairly satisfied with their lives (scoring 26 out of a possible 35 on the satisfaction with life scale). This latter score could also reflect exercisers' relative dissatisfaction and ongoing process of striving for more life satisfaction, as, for example in the sense of being their own hard task-masters in a form of idealist striving for goals such as health, strength and wellness.

Multiple regression analysis and tests for repeated measures indicated that the significant wellness improvement within-group effect was not significantly influenced by any of the following independent variables:- health club affiliation; length of membership; age; gender; home language; years of exercise experience; estimation of wellness improvement or the type, amount, duration and intensity of exercise. Thus it may be concluded that the major reason for the improvement in wellness was regular exercise of at least two months duration.

Multivariate analysis revealed the following significant independent variable effects: the influence of age on satisfaction with life (F=6.56) and stress (F=5), language on satisfaction (F=7.6) with life and coping (F=5.1) and estimate of wellness on stress (F=5). These effects are explained as follows. Satisfaction with life was found to stabilize and improve with age. Stress scores were higher in the twenties and thirties, lower in the teens and over forty age group. Zulu language speakers scored higher on satisfaction with life and coping scales, then English and Afrikaans speakers respectively. Participants who estimated their wellness improvement conservatively, at approximately 50 to 60%, scored higher on mood than those who estimated their wellness improvement lower or higher. As we are dealing with small numbers in this multivariate analysis, these latter findings and interpretations should be regarded with caution.

DISCUSSION

The results confirmed the research hypotheses and emphasized the importance and value of models of public health and positive health such as those of Seeman (1989), Tannahill, (2000) and Edwards (2001b). Taken together the results also provide strong argument for the promotion of mental health through regular exercise in general and membership of a health club in particular, for those members of society who are able to afford such membership. Many large companies and institutions have in fact instituted health clubs on their premises. In view of findings as to decreased work absenteeism and increased productivity and general wellness (Corbin & Lindsey, 1997; Fox, 2000) this trend is likely to continue. Health professionals in general and mental health workers in particular should routinely consider referrals of persons with mental health and/or stress related problems to health clubs as well as recommending regular exercise.

Randolfi (2002) has suggested the following reasons as to why an activity such as exercise that is physiologically almost identical to the physiological response of psychological stress is helpful as a coping technique: detoxification of stress related compounds, outlet for anger and hostility, a form of moving meditation, enhanced feelings of self- esteem and self- efficacy, periodic solitude and introspection, opportunities for social support, the power of human touch, reduction of muscular tension, endorphin theories, increased somatic awareness, training for competition, improvement in sleep and rest, fitter to fight stress and disease.

This research has been limited to a psychosocial perspective on stress, with special reference to the perceptions and/or experiences of life events and coping with the stress of such events. Stress itself is an extraordinarily diverse phenomenon with biochemical, physiological, psychological, social and spiritual concomitants with different effects on different people at different times and contexts (Selye, 1976; Lazarus, 1993). In view of the many unanswered questions about the stress response, with its extensive physiological and psychological concomitants, Scully (1998) has argued that the role of exercise is probably best described as preventive rather than corrective.

The results support previous qualitative studies on the value of the exercise experience in enhancing positive mood states and satisfaction with life (Berger, 1996 & 2001; Stelter, 2000 & 2001; Edwards, 2001a & 2001b). These findings provide clear support for the public health benefits of regular exercise in terms of this association with improved mood and satisfaction with life. Health club members were participating in physical activities of various types including aerobic activities, circuit training and other weight training activities, which included free weights and resistance machines. The study revealed the value in what are extremely brief assessments of mood and satisfaction with life in clinical research studies where some form of standardized quantitative measures is needed. Most persons can complete both scales in less than five minutes.

The findings do not exclude sources of wellness, health and strength beyond the physical, particularly social. They simply provide further argument for the taking care of the human, lived body as mediator for such sources of wellness, energy, health and strength (Stelter, 2000; Edwards, 2001b) and support earlier qualitative studies on mental health promotion, fitness and the exercise experience (Fox, 2000; Edwards, 2001a). As also revealed in earlier research, participant observation and qualitative interviews with health club participants indicated various aspects of the exercise experience and many reasons why people exercise. Particular dynamics that revealed themselves in relation to improved health and strength were the intrinsic ‘feel good’, nature of the bodily experience and the social support derived from exercising with others in the gym environment. In a related yet more extensive, sociologically orientated study with 401 participants, Hayes & Ross (1986) found that exercise and good physical health improve psychological well being (as negatively assessed in terms of absence of symptoms of depression and anxiety) through mediation by internal mechanisms rather than through interactions or evaluations by others. While this effect was a general finding, it was more apparent in lower and middle rather than upper income groups.

In explicating the main dimensions of fortitude or psychological strength measured in the present research, evidence is provided that people who exercise regularly are psychologically stronger than irregular exercisers. Regular exercisers have more positive appraisals of themselves, their families and support from others. In their greater fortitude they have greater strength to manage stress and stay well. Pretorius (1998) found a similar association between

fortitude and stress resistance. Strumpfer (1995), Pretorius (1998) and Wissing and Van Eden (1998) have argued for the broadening of the salutogenic paradigm to a fortigenic paradigm to include not only the origins of psychological health but also the nature manifestations, dynamics and enhancement of psychological health, strength and well-being. This research supports this view. The Fortitude Scale has an additional family and communal emphasis, particularly valuable in more collectively orientated societies where emphasis is on humanization and socialization towards greater social rather than individual contributions and

responsibility. In addition, the present study is an extension of these studies in its specific inclusion of the operational concept of wellness as inclusive of both psychological health and strength. In this sense, emphases on public and mental health, salutogenesis and fortigenesis are best conceptualized in terms of components or perspectives in a new wellness paradigm.

In general the findings support and extend earlier studies on the effect of physical exercise on mental health and psychological well-being (Hayes & Ross, 1986; Stephens, 1988; Pate *et al.*, 1995; Scully, 1998; Biddle *et al.*, 2000; Fox, 2000; Biddle & Faulkner, 2001) and as related to the specific wellness components in the present study (Sinyor *et. al*., 1983 & 1987; Roth & Holmes, 1985; Berger, 1994 & 1996 & 2001; Anshell, 1996; Summers, 1999). Earlier research advocating the validity of the wellness components is also supported in this research (Holmes & Rahe, 1967; McNair *et al*., 1971; Diener *et al.*, 1985; Antonovsky, 1987 & 1993; Dean *et al.*, 1990; Flannery & Flannery, 1990; Frenz *et al.*, 1993; Noakes & Granger, 1995; Pretorius, 1998).

CONCLUSION

Health club members were found to be more psychologically well and significantly less stressed than students, particularly in terms of their healthier lifestyle and ability to cope with stress. The main reason for this difference was regular exercise. Whether they were members of a health club or not, participants who were regular exercisers were found to be significantly more psychologically well than irregular exercisers. The clear implication for general and mental heath practitioners is to routinely consider recommending regular exercise and/or referral to a health club.

Another specific finding of this research was the validation of very significant causal relationships between regular physical exercise of at least two months duration in health clubs and various components of psychological wellness. The significant wellness improvement within the group of 26 exercisers was not significantly influenced by various other independent variables such as particular health club affiliation; length of membership; age; gender; home language; years of exercise experience; estimation of wellness improvement and the type, amount, duration or intensity of exercise.

The development and application of the public health evidence base to improve the health of populations has improved considerably over the past three decades. Education with regard to the benefits of positive health behaviors such as regular exercise in various contexts is internationally practiced in public health promotion campaigns (Repucci *et al*., 1999; Fox, 2000; Oldenburg, 2001). This research provides further support for this movement.

The concept of psychological well-being and/or wellness has great potential for promoting health in general and mental health in particular in its positive emphasis on survival, health and strength, through managing stress, coping with crises and developing competencies, skills,

supplies, and resources such as regular exercise and membership of a health club.

Finally, the research simply provided empirical, experimental, evidence for a causal relationship that has received experiential and cultural recognition for millennia. Physical exercise promotes mental health and wellness. Given the limited percentage of the population

engaged in regular, beneficial exercise, the really challenging task remains to find better and more effective ways to promote such knowledge and behaviour for the benefit of all people.

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ABSTRACT

Leisure and recreation are now accepted as identifiable research areas. Retrospective and prospective assessments of research in the field are therefore not only desirable but also necessary to consolidate what has been learned, clarify concepts and theories and provide a focus for future research. No such assessments have appeared over the last two decades in Africa. This might be a reason why leisure and recreation research here have not yet achieved the same scholarly level and diversity as in North America. The research assessment framework of Goodale and Witt has been applied to retrospectively assess the published scholarly work in the fields of leisure and recreation for the period 1980-2002 and to prospectively ascertain the opinions of 86 active scholars and practitioners in the relevant fields on future research directions in 10 African countries. The overall assessment suggests a moderate growth in quantity, weaknesses in conceptualisation and theory development and an ad hoc and eclectic approach with no real principal issues for future research. Recorded research has a short-term focus and is mostly of the fact-finding type and results are not disseminated adequately. The disciplinary roots of the research lie in the social sciences. The main barrier to the development of research seems to be the uninformed or partially informed attitude of members of the public and decision makers regarding the role and value of recreation in society.

Key words: Leisure and recreation research; Assessment; South Africa; Africa; Research plan.

INTRODUCTION

In North America and Europe, leisure studies have gained a strong sense of scholarly legitimacy in the academic domain since the 1980's. Most university departments and nearly all of the leading scientific journals in this specific field were founded in the 1970's and early 1980's. Leisure and recreation are now accepted as identifiable research areas and this is reflected in the number of research publications, the many forums that exist for the exchange of research findings and the variety of scholarly journals dedicated to recreation and leisure studies.

PROBLEM STATEMENT

Although recreation and leisure studies are regarded as relatively young fields of scholarship, retrospective and prospective assessments of the field are not only desirable but also necessary. According to Jackson and Burton (1989), periodic assessments consolidate what has been learned, clarify concepts and theories and provide a focus for the future. As such,

different reviews of leisure and recreation research have appeared over the last two decades primarily in North America (Burdge, 1983; Iso-Ahola, 1986; Stockdale, 1987; Jackson, 1988). At the same time, however, leisure and recreation research in Africa has not yet achieved the same scholarly level and diversity as in North America. Isolated efforts have been made to

create an awareness of what has already been accomplished in leisure and recreation research in South Africa in the form of monographs on published research (H.R.S.C. Sports Investigation, 1982; Burnett & Katzenellenbogen, 1993). The necessity of establishing a focused and systematic view of leisure and recreation research has been expressed by very few South African academics in the field (Scholtz, 1986; Wilson, 1992). The only South African research programme for sport and recreation was proposed in 1985 as a result of the then Minister of National Education's request that a national research programme for sport and recreation be developed by the South African Association for Sport Sciences, Physical Education and Recreation (S.A.A.S.S.P.E.R.) in conjunction with the Human Sciences Research Council (S.A.A.S.S.P.E.R., 1985). A literature study has revealed no similar co-ordinated assessment or research programme for the rest of Africa. The benefits and focus to be accrued from occasional assessment reviews as described by Jackson and Burton (1989) have therefore not been available to South Africa and Africa. This might even be a reason why leisure and recreation research on the African continent has never become the scholarly topic it could be or properly demonstrated its capacity for making a major contribution to the understanding of an important area of human behaviour. Without such assessment reviews, leisure and recreation studies could remain as they were in the 1960's in North America. Burton (1980) says the situation at this time was not unlike that of Columbus during his fifteenth century voyages to the New World – at his departure; not knowing where he was going, at his arrival; not knowing where he was and on his return; not knowing where he had been.

PURPOSE OF THE RESEARCH

The purpose of this research is to identify and assess the:

1) growth in the quantity of leisure and recreation research over the past two decades in Africa;
2) diversity of issues and topics;
3) disciplinary roots of published contributions in the field;
4) principal issues for leisure and recreation research during the next decade in South Africa and Africa; and
5) perceived barriers to recreation and leisure research.

METHODS AND PROCEDURES

Working definitions

According to Burdge (1983) leisure research refers to studies of the philosophical and historical development of leisure phenomena, economic issues involved in programmes and services, sociological and psychological factors in leisure behaviour, planning and administrative policies and procedures. Recreation research deals with activities, facilities and programmes.

Spatial and time demarcation

A literature review indicated that the most recent holistic overview of leisure and recreation journal articles, dissertations and commissioned reports in South Africa, covered the period up to 1980 (H.R.S.C. Sports Investigation, 1982). Wilson's (1992) overview focused only on studies dealing with need surveys in sport, recreation and tourism in South Africa. No similar reviews for the rest of Africa were found. For the purposes of this study, leisure and recreation research published in the period 1980 to the first four months of 2002 have therefore been

assessed. Only leisure and recreation research pertaining to Africa have been included in the assessment.

Assessment framework

The research assessment framework of Goodale & Witt (1985) has been applied. The assessment encompasses an extensive literature review of scholarly works in the fields of leisure and recreation complemented by a questionnaire survey to ascertain the opinions of active scholars and practitioners in the relevant fields.

Data collection

A primary literature search for published journal articles, unpublished dissertations, theses and commissioned research reports was done utilising the electronic data bases of Nexus, Web of Science Records, International Bibliography of the Social Sciences, ERIC, Humanities Abstracts, Geobase, ISAP, Sabinet, SA Studies, Sport Discuss, Science Direct Platform and Academic Science Elite. The literature search covered the disciplines of Recreation Science, Leisure Sciences, Physical Education, Sport Science, Management, Education, Geography, Sociology, Psychology, Tourism, Anthropology, Community Development, Dance, Social Work and Public Administration. The search was structured according to key words relevant to the working definitions of leisure and recreation research. A secondary literature search was done utilising the references quoted in published articles in relevant journals in Africa. A short questionnaire was used to assess the opinions of active scholars and practitioners. The questionnaire was designed to assess their judgement of the quality and quantity of published research, perceived barriers to leisure and recreation research and the principal issues to be addressed in future research for the next decade.

Respondents

The questionnaire was conducted amongst 86 active scholars and practitioners (n=86) in the field of leisure and recreation research in Africa. Respondents were deemed "active scholars" when they had published in a relevant scientific journal on a leisure and recreation topic during the past five years or were currently full-time academics in the fields and "active practitioners" if they had been involved full-time in the practice of leisure and recreation services over the past five years. Respondents came from South Africa, Kenya, Botswana, Nigeria, Zimbabwe, Mozambique, Namibia, Mauritius, Madagascar and Egypt. A response rate of 74.42% (n=64) was obtained. Respondents represented government institutions (15.63%); academic departments at tertiary institutions (42.19%); sport and recreation service departments/bureaux at tertiary institutions (14.06%); commercial recreation service providers (7.81%); non-governmental organisations (10.94%); statutory bodies (1.56%) and voluntary recreation organisations (7.81%).

RESULTS AND DISCUSSION

Quantity of recreation and leisure research over time

A total of 366 research items (published articles, unpublished dissertations, theses, reports and commissioned reports) were identified for the period under discussion. Figure 1 presents a breakdown of the quantity of recreation and leisure research over the period 1980-2002 (first four months).

1996-2000

1991-1995

4.10%

21.31%

28.96%

1986-1990

1980-1985

FIGURE 1. **QUANTITY OF RECREATION AND LEISURE RESEARCH FROM 1980-2002**

No dramatic growth in the quantity of research is demonstrated by the above results. The research output for the timeframe 1980-1995 appears relatively stable. The timeframe 1996-2000 reflects a slight increase of output to 28.96%. A finer analysis of the research produced during that specific timeframe (n=106) reveals a focus (21.71%) on topics dealing with recreation and leisure from a cultural perspective (traditional games, dance) followed by topics on the benefits of recreation participation (9.43%; n=10), outdoor and adventure (9.43%; n=10), preference and needs surveys (5.66%; n=6); historical aspects (5.66%; n=6); policy issues (5.66%; n=6); environmental issues (5.66%; n=6) and training and education matters (5.66%; n=6). Academic institutions are the main source of recorded research output. Theses, dissertations and articles in refereed scientific journals represent 45.92% of the output. Reports commissioned by government institutions (national, provincial and local) constitute 33.31% of the output. The majority of these deal with preference and need surveys (demographic studies) on specific geographic areas or consumer groups (senior citizens, women, marginalized youth, disabled). Reports commissioned by the private sector answer for 18.42% of the output and deal primarily with topics related to eco tourism (environmental studies), the tourism potential of recreation areas, events and activities and outdoor ventures. Greater publications (textbooks, chapters in books) constitute only 2.35% of the research output and focus primarily on management aspects of recreation and leisure, socio-political issues and sport tourism topics. Although an increase in the quantity of the recreation and leisure research has been recorded, the quality of none of the research items has been assessed.

Dominant research themes in leisure and recreation

A characteristic of the research output is the great diversity in research topics. Table 1 reflects the range of topics and themes produced in the specified timeframe.

TABLE 1. **DOMINANT THEMES IN RECREATION AND LEISURE RESEARCH (1980-2002)**

RESEARCH THEME	N	%
Recreation preferences and needs	72	19.66
Cultural aspects (traditional games and dance)	49	13.38
Management and administration	39	10.66
Outdoor activities (adventure and high risk activities)	24	6.56
Recreation behaviour of tourists (sport tourism)	22	6.01
Policymaking and planning	21	5.74
Spatial analysis (facilities, urban and regional studies, parks and reserves)	20	5.46
Historical perspectives	17	4.64
Benefits of recreation (social and health impact, therapeutic)	16	4.37
Leisure and recreation behaviour (motivation and satisfaction)	15	4.10
Economic models and impact	11	3.01
Methods	9	2.46

Philosophical aspects	9	2.46
Therapeutic (disabled)	8	2.19
Education and training	7	1.91
Gender issues	6	1.64
Barriers to participation	6	1.64
Sport for All	5	1.37
Environmental attitudes (energy, conservation)	4	1.09
Leisure and recreation theory	3	0.82
Catalogues of recreation activities	3	0.82
Law	2	0.55
TOTAL	**366**	**100.0**

From Table 1 there is evidence that empiricism or simple fact-gathering studies (needs surveys, preference patterns, explanations of traditional games and dances) is the dominant focus of the research. This undoubtedly causes a short-term focus on leisure and recreation provision. Theoretical analyses and conceptualisation are notably under-emphasized. The range of topics might suggest considerable fragmentation, lack of integration and a lack of a common intellectual interest. According to Rojek (1989) signs of maturity and professionalism in a field of study are measured by the extent to which theoretical and conceptual development manifests itself in that field. When the reflected results are evaluated against this statement, it seems as if research over the past two decades has failed to be cumulative and to provide paradigms for future focused research.

Disciplinary roots of the research items

The 366 research items were further categorised according to the underlying discipline from which results were interpreted. Table 2 presents the findings in this regard.

TABLE 2. **DISCIPLINARY ROOTS OF RESEARCH ITEMS**

DISCIPLINE	**N**	**%**
Recreation Science	88	24.04
Geography (environmental studies; urban and regional planning, spatial analysis)	51	13.93
Management Sciences	49	13.39
History	26	7.10
Sociology	25	6.83
Psychology (motivation participation; impact on mood states; psychological benefits)	18	4.93
Education	18	4.93
Anthropology	15	4.10
Human Movement Science	14	3.83
Public Administration	11	3.01
Political Science	10	2.73
Economics (price barriers, economic impact)	9	2.46
Tourism (eco-tourism; sport tourism; sex tourism)	8	2.19
Policy Studies	7	1.91
Development Studies	4	1.09
Research Methodology	3	0.82
Architecture (facility design and accessibility)	3	0.82

Town and Regional Planning	1	0.27
Sport Science	1	0.27
Social Work	1	0.27
Physiology	1	0.27
Philosophy	1	0.27
Library Science	1	0.27
Law	1	0.27
TOTAL	**366**	**100.0**

Evidence indicates that the majority of recreation and leisure research is based in and interpreted from a Social Sciences' perspective (56.55%). Studies embedded in the Economic and Management Sciences (22.96); Earth Sciences (13.93); Educational Sciences (4.93%); Engineering and Built Environment Sciences (1.09%) and the Natural Sciences (0.27%) complete the profile. The number of studies recorded in Recreation Science (24.04%) as part of Social Sciences and the Earth Sciences or Geography (13.93%) could be interpreted as showing that leisure and recreation research have not moved far away from their original dichotomous roots of recreation programme provision and spatial facility provision. The recorded studies in the Management Sciences indicate that leisure and recreation have realised and responded to the increasing need for knowledge to establish and maintain management practices. If applied effectively, this could help shape management practices and influence the ways in which specific programmes and facilities are managed. Although it was not within the scope of this study to analyse the methodological approaches or techniques of the recorded research items, it seems as if the current state of leisure and recreation research can be classified as multidisciplinary according to the classifications provided by Burdge (1983). The dominant Social Science perspective could serve as a guideline for the rational positioning of Leisure and Recreation departments within the academic framework of tertiary institutions. The diversity of disciplinary roots also suggests that providing recreation services to communities could never be the function or responsibility of a single government agency.

Principal issues for research during the next decade

Any assessment of research in a specific field should also include a perspective on the future according to Jackson and Burton (1989). Respondents were therefore asked to list priorities for future leisure and recreation research. Up to five topics could be listed.

TABLE 3. **PRINCIPAL ISSUES FOR FUTURE RESEARCH**

RESEARCH TOPIC	**N**	**%**
Needs analyses of specific groups	24	12.57
Benefit-based management of recreation service delivery (recreation's impact on society)	23	12.04
Transformation in/through recreation service provision	13	6.81
Facility and spatial development	12	6.28
Adventure trends and developments	11	5.76
Training and development of recreation managers/leaders	10	5.24
Programme and activity planning and development	7	3.66
Policy development	7	3.66
Leisure tourism	7	3.66
Determinants of participation motivation	7	3.66
Recreation awareness of communities and policy makers	6	3.14

Recreation delivery strategy for rural areas	6	3.14
Volunteers in recreation	5	2.62
National participation patterns and trends	5	2.62
Management issues	5	2.62
Recreation in the workplace	5	2.62
Funding strategies for providing recreation services	4	2.09
Campus recreation	4	2.09
Establishing recreation structures in communities	3	1.57
Therapeutic recreation interventions	3	1.57
Performance management/appraisal of recreation centers (cost-benefit analyses)	2	1.05
Value of life long sports	2	1.05
Experiential learning	2	1.05
Research perceptions of policy makers and practitioners	2	1.05
Youth development through recreation	1	0.52
Time-usage studies	1	0.52
Sustainable recreation provision	1	0.52
Sport versus recreation	1	0.52
Securing parent involvement in recreation provision	1	0.52
Relationship between recreation and culture	1	0.52
Recreation legislation	1	0.52
Recreation and the transfer of life skills	1	0.52
Recreation and education	1	0.52
Leisure in urban life	1	0.52
Influence of technology on leisure utilization	1	0.52
Indigenous/traditional games	1	0.52
Environmental conservation	1	0.52
Democracy and recreation	1	0.52
Creating recreation networks/data bases	1	0.52
Commercial recreation	1	0.52
TOTAL	**191**	**100.0**

The lack of coherence and intellectual focus reported earlier is evident from the 191 topics listed by active scholars. The focus on fact-gathering research (empiricism) is reinforced. There is clearly no majority agreement on the principal issues to be researched in the immediate future. The impression emerges that scholars have merely indicated the isolated topics they are currently interested in and do not see a bigger research pattern or picture. Empiricism should, however, not be regarded entirely from a negative perspective. It could be interpreted as a positive sign that some projections of future research are related to social changes and trends within communities. Research that quantitatively substantiates the role and impact of recreation provision on social issues such as poverty alleviation, health issues, HIV/AIDS, stimulation of the economy and nation building are necessary and should be undertaken without delay. A long-term focus on conceptualising the impact of recreation in societal values, especially in African societies, is, however, imperative in order to establish sustainable recreation policy.

Perceived barriers to recreation and leisure research

Identifying barriers limiting or preventing the undertaking of leisure and recreation research or the use of results is crucial. Active scholars were asked to indicate the perceived barriers to

recreation and leisure research in order to form an indication of required resources and strategies should regional research plans be formulated. Perceived barriers were categorised and are reflected in Table 4.

TABLE 4. **PERCEIVED BARRIERS TO LEISURE AND RECREATION RESEARCH**

BARRIER	**N**	**%**
Financial constraints	39	21.31
Lack of experienced researchers	27	14.75
The indifferent and uninformed/partially informed attitude of policy makers and decision takers	23	12.57
Lack of public interest and understanding of recreation as a social issue of priority	22	12.02
Inadequate dissemination of results	16	8.74
Access to research areas	15	8.20
Lack of coordination between researchers	11	6.01
Lack of supporting resources (books, technology, facilities)	8	4.37
Time constraints	6	3.28
Cultural differences between researchers and clients	5	2.73
Political interference and instability	4	2.19
Irrelevant research topics	2	1.09
Hostility between academics and practitioners	2	1.09
Absence of research ethics	1	1.09
Lack of clear research briefs	1	0.55
TOTAL	**183**	**100.0**

Financial constraints (21.31%) are perceived to be the main barrier. One scholar commented that provincial and local government as funders and commissioners of leisure and recreation research have withdrawn thus leaving a void in funding options. Researchers are, to a great extent, dependent on either internal funds, funds from commissioned or contract research or funds from statutory research councils. Researchers have to compete for funds against a background of a lack of public interest and failure to accept recreation as a social priority (12.02%). The seemingly indifferent and uninformed attitude of policy makers and decision takers (12.57%) multiplies the effect of financial constraints. The cumulative effect of uninformed public as well as indifferent policy makers (24.59%) might be recreation's downfall in Africa and will undoubtedly be reflected in policy documents and budget allocations. The lack of experienced researchers (14.75%) should be a reason for concern. If a value framework for sustainable public recreation services is to be established, experienced researchers are crucial. The perceived lack of such researchers could be the cumulative result of financial constraints, the status of recreation as a profession and social service or even policy makers that ignore the value of research results as management tool. The perceived inadequate dissemination of results (8.74%) has been noted but is debatable. It is common knowledge that ample scientific avenues for the dissemination of research exist. These include scientific journals, electronic databases and conferences. Reasons for this perception might be fourfold: 1) scholars are not aware of the existing dissemination channels; 2) academics and practitioners might not subscribe to journals or attend conferences; 3) articles reporting on research results are mainly written by academics for academics and the style of writing might not appeal to practitioners; and 4) research commissioned by specific organisations has limited generalizability as it is not disseminated in the public domain. Comments by respondents

questioning the quantity of published research might not be valid given the range of issues reported on as well as the number of recorded research items. Inaccessibility of potential

research areas (8.20%) is notable. Respondents have commented on safety risks as well as public hostility towards researchers in specific geographic areas. Lack of coordination between researchers (6.01%) is a disconcerting finding given the already limited pool of active leisure and recreation researchers and the perceived negative public opinion. Although the attitude and awareness of the public and the decision makers are perceived as a primary barrier, it is interesting to note that it is not identified as high priority future research topic. This confirms the earlier findings as indicated in Tables 1 and 3 that active scholars are myopically focusing on fragmented, individual topics rather than collective research issues.

OVERALL ASSESSMENT

The results presented and subsequent discussions lead to the following overall assessment of leisure and recreation research:

1. Moderate progress has been made in terms of quantity over the past two decades.
2. Lack of funding as well as the perceived inadequate number of experienced researchers could restrict the optimal intellectual development of this field of study in Africa.
3. Weaknesses exist in conceptualization and theory development.
4. Leisure and recreation research have not yet reached a state of maturation as the research has a short-term focus and is mostly of the fact-finding type.
5. The great diversity of recorded research topics suggests an *ad hoc* and eclectic approach with no clear principal issues to direct future research.
6. A perception exists that research results are not adequately disseminated although reality contradicts this. It seems as if respondents are unaware of all available dissemination channels as well as the range of completed research.
7. The disciplinary roots of leisure and recreation research lie in the social sciences.
8. Practitioners might be unable to make effective use of research results.
9. The perception exists that policy makers are either uninformed or partially informed about recreation service delivery's potential to enhance social capital.
10. No evidence of replication that could lead to determining trends in leisure and recreation behaviour was found.
11. Contract research findings are seldom circulated in the public domain.
12. Respondents perceived the overall research environment as hostile (unsafe, lacking resources, technological and policy support).

RECOMMENDATIONS

The following recommendations are suggested to guide leisure and recreation research (research plans) in Africa in the foreseeable future:

1. Unless the nature and role of recreation in building social capital is clarified and substantiated to the public as well as to the decision makers, this lack of awareness will be detrimental to recreation and leisure services' sustainable existence.
2. Recorded research items should be analysed in terms of methodological approaches to determine the interdisciplinary progress and level of maturation of the discipline.
3. As a matter of urgency active scholars should be assembled for a research round table to determine a coordinated and directed future research strategy to collectively

influence and inform policy makers.

4. Leisure and recreation research in Africa can ill afford uninformed or partially informed members of the public and decision makers. Research should provide reliable and valid data on benefit-based recreation management to educate the uninformed.
5. A more accessible database and strategy for the dissemination of results to both academics and practitioners should be established and operated.
6. Leisure and recreation behaviour should be studied from a longitudinal perspective to establish trends as substantive input for policy formation.
7. Governments should demonstrate their attitude to acknowledge leisure and recreation as pressing social issues by providing research funds on a par with funds allocated to elite sport participation.
8. Research results should be disseminated to the general public and practitioners in the form of sustainable user-friendly awareness campaigns.
9. Addressing the perceived barriers to research as well as actively recruiting post-graduate students with relevant research topics could extend the limited pool of experienced leisure and recreation researchers.
10. Current and future researchers must be schooled in and exposed to interdisciplinary research methodologies to elevate research to the next level of maturation.
11. Regional research teams/units focusing on both conceptualisation and empiricism should be established to produce research results benefiting Africa's total population.
12. A continental research plan for Africa consisting of different regional research plans should be developed and implemented as an issue of priority.

CONCLUSION

Although the quantity of research items produced over the past two decades indicates an active interest in the discipline, the focus of leisure and recreation research in Africa does not suggest a mature level of scholarly legitimacy. Coordinated regional research plans as well as a holistic continental research plan should be a priority to active leisure and recreation scholars in Africa.

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(Subject editor: Dr. J. Bloemhoff)

FISIEKE AKTIWITEIT, LEWENSTYL EN GESONDHEIDSTATUS BY SWART MANLIKE MIDDELVLAKBESTUURDERS

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ABSTRACT

Optimal health could be significantly influenced by parameters such as physical activity and a healthy lifestyle. The objective of this study was to determine whether a relationship exists between leisure-time physical activity, lifestyle and health status of black male midlevel managers. Two hundred and twenty one (221) participants were selected from black midlevel management in a company in the public sector of the North West Province. The type, intensity, frequency and duration of participation in leisure time physical activity were determined by the physical activity index (PAI) as suggested by Sharkey. The lifestyle habits and health status were determined by using the Belloc and Breslow index (BB) and the illness rating scale (IRS) of Wyler et al. respectively. Analyses of data indicated significant differences between physical activity and lifestyle as well as between lifestyle and health status. No significant differences between physical activity and health status were present. A multiple regression analyses indicated a relationship between sleep patterns and health. The health status of the employees could be improved by the implementation of physical intervention programmes, which could be beneficial for the company on the long-term.

Key words: Executive employees; Leisure-time physical activity; Health; Lifestyle; Midlevel management.

INLEIDING

Navorsing oor die laaste aantal jare, verskaf waardevolle inligting rakende die voordele wat fisieke aktiwiteit en lewenstyl op bestuurslui se gesondheid kan hê (Bouchard, 1994; Pate, 1995).

Studies op bestuurslui in Suid-Afrika het reeds aangetoon dat hul werksomstandighede nie altyd bevorderlik vir hul gesondheid is nie (Grobler, 1990) en dat die werksomstandighede dikwels daartoe bydra dat uitvoerende amptenare hulself fisiek, persoonlik en andersins verwaarloos (Uys & Coetzee, 1989). Hierdie verwaarlosing kan groot finansiële uitgawes vir enige maatskappy veroorsaak deurdat dit produktiwiteit, personeelomset, werksafwesigheid en gesondheidsorgkostes kan affekteer (Shephard, 1999).

Shephard (1992) beweer dat verlaagde produktiwiteit ’n gevolg kan wees van kwalitatiewe en kwantitatiewe beperkinge van die individu se prestasie wat manifesteer in werksafwesigheid, personeelwisseling en siektes. Werksafwesigheid kan in die meeste gevalle nie toegeskryf word aan spesifieke gesondheidsprobleme nie en is in sommige maatskappye verantwoordelik vir die verlies van tot ongeveer 220 werksdae per jaar (Shephard, 1987). Die voortdurende

wisseling van werknemers is ook ’n wesenlike probleem by menige maatskappye weens die

hoë koste verbonde aan die opleiding van nuwe werknemers (Shephard, 1987).

Aanvullend hiertoe, dui navorsing aan dat deelname aan gereelde fisieke-aktiwiteitsprogramme tot 'n verhoogde werksproduksie (Sarvela *et al*., 1991; Shephard, 1999), 'n hoër lewenskwaliteit (Shephard, 1992), 'n verbeterde gesondheidsvlak (Bouchard, 1994) en 'n laer risiko tot kardiovaskulêre siektes aanleiding kan gee (Grobler, 1990; Shephard & Bouchard, 1994).

Walker *et al*. (1987) dui aan dat die implementering van fiksheidsprogramme 'n belangrike bydrae kan lewer tot die voorkoming van siektes oor die algemeen, asook tot die bevordering van gesondheid. Maatskappye is hierom gewillig om fiksheidsprogramme aan hul bestuurslui te bied op grond van die aanname dat fisieke-aktiwiteitsdeelname gesondheid bevorder, destruktiewe lewenstylgewoontes kan verander, finansiële uitgawes ten opsigte van gesondheidsorg kan verlaag (Grobler, 1990) en die kanse vir 'n premature koronêre insident kan verlaag (Cox *et al*., 1988).

Uit die literatuur is dit dus duidelik dat maatskappye daadwerklik behoort om te sien na die belangrikste kommoditeit, naamlik die werknemers. Dit is waarskynlik die motivering wat aanleiding daartoe gegee het dat 90% van maatskappye wat onlangs in die VSA geëvalueer is, ten minste een gesondheidsbevorderende aktiwiteit aan sy bestuurslui bied (Messer *et al*., 2000).

Die doel van hierdie studie is om die verband wat fisieke aktiwiteit en lewenstyl op die gesondheidstatus van swart manlike middelvlakbestuurders kan uitoefen, na te gaan. Dit behoort belangrike inligting te voorsien wat gebruik kan word by intervensie-programme vir die instandhouding van hoëvlak werknemers.

METODE

Keuse van proefpersone

Die studie is beskrywende navorsing wat die swart manlike middelvlakbestuurders se profiel met betrekking tot fisieke aktiwiteitsdeelname, lewenstyl en gesondheidstatus in 'n Suid-Afrikaanse maatskappy ondersoek. Die ondersoek-populasie in die studie is swart manlike middelvlakbestuurders van 'n maatskappy in die openbare sektor in die Noordwes provinsie van Suid-Afrika. Twee-honderd-een-en-twintig (n=221) swart manlike middelvlakbestuurders van die maatskappy is gevra om vraelyste te voltooi in verband met hul vryetyd fisieke aktiwiteit, lewenstyl en gesondheidstatus.

Meetinstrumente

Fisieke aktiwiteitsindeks [FAI]

Hierdie metode soos deur Sharkey (1997) aangebied, is gebruik om die fisieke aktiwiteitsindeks van elke deelnemer te bepaal. Die metode leen hom daartoe om die fisieke aktiwiteit as indeks uit te druk deur numeriese waardes aan die inoefeningsvereistes, naamlik intensiteit, duur en frekwensie van deelname toe te ken, waarna dit met mekaar vermenigvuldig word en as die FAI uitgedruk word. Die indeks van Sharkey is reeds in verskeie studies (Van der Merwe, 1998; Boshoff, 2000) gebruik, om sodoende fisieke aktiwiteit te gradeer. Die respondente is op grond van hul indekswaardes onderskeidelik in drie groepe verdeel, naamlik onaktief (0-16), matig aktief (17-44) en hoog aktief (≥45).

Die lewenstylvraelys [BB] van Belloc en Breslow (1972)

Die sewe lewenstyl gewoontes volgens Belloc en Breslow (1972) is gebruik om die lewenstyl by die respondente te kategoriseer. Die sewe gewoontes waarop ja of nee geantwoord moet word, sluit die volgende in:

- Eet drie maaltye daagliks, sonder om tussenin te peusel.
- Eet daagliks ontbyt.
- Deelname twee tot drie maal per week aan matige oefeninge.
- Handhawing van konstante liggaamsgewig.
- Geen rook.
- Geen of min alkoholgebruik.
- Voldoende slaap (7-8 ure per nag).

Hierdie vraelys is deur verskeie studies (Dreyer, 1991; Boshoff, 2000) gebruik om die lewenstylgewoontes van populasies te bestudeer. Die respondente is onderskeidelik in drie groepe verdeel op grond van die nakoming van gesonde lewensgebruike. Respondente wat 0-3 van hierdie lewenstylgebruike nagevolg het, is geklassifiseer as ’n swak lewenstyl, terwyl diegene wat 4-5 en 6-7 van die lewenstylgebruike gevolg het, onderskeidelik geklassifiseer is as ’n matige en gesonde lewenstyl.

Die gesondheidstatus

Die “Seriousness of illness rating scale” van Wyler *et al*. (1968) is gebruik om die gesondheidstatus van respondente te bepaal. Die vraelys bestaan uit ’n 126-itemskaal waar die mees algemene fisieke- en geestessiektes en simptome gelys word. Die vraelys is so ontwikkel dat ’n ernstigheidsgraad aan elke siekte of simptoom toegeken is, wat in ’n numeriese getal kulmineer. Die graad van ernstigheid reflekteer die prognose, duur, lewensbedreiging en graad van ongemak wat ervaar word as gevolg van siekte of simptome. Die respondente is onderskeidelik in drie groepe verdeel op grond van die siektegradering, naamlik ’n goeie (≤134), matige (135-294), swak (≥295) gesondheidstatus. Omvattende navorsing is alreeds met hierdie siektegraderingskaal gedoen (Le Roux, 1999; Boshoff, 2000).

Statistiese verwerking van data

Die CSS:Statistica-rekenaarpakket (Microsoft Corporation, 1995), wat op die PU vir CHO se netwerk beskikbaar is, is gebruik om die data te verwerk. Beskrywende statistiek is gebruik om die profiele weer te gee. Sodoende is die gemiddelde, minimum-, maksimumwaarde en standaard afwykings van die veranderlikes, soos ouderdom, fisieke aktiwiteitsindeks, Belloc en Breslow (1972) se lewenstylgebruike en die gesondheidstatus te kry. Eenrigtingvariansie-analises is gedoen om verbande van lewenstyl met fisieke aktiwiteit en gesondheidstatus te ondersoek, asook om fisieke aktiwiteit se verband met gesondheidstatus te bepaal. ’n Stapsgewys-meervoudige regressie-analise is gedoen om te bepaal wat die bydraende faktore tot die variansie van gesondheidstatus is.

RESULTATE EN BESPREKING

Die beskrywende inligting van die groep swart manlike middelvlakbestuurders word in Tabel 1 weergegee. Die respondente (n=221) is gemiddeld 35.9 ± 6.3 jaar oud en vertoon ’n relatief lae gemiddelde FAI van 17.9. ’n FAI van 36 verteenwoordig min of meer die American College of Sports Medicine (ACSM) se voorskrifte vir effektiewe deelname aan fisieke aktiwiteit. In vergelyking met data ingesamel op Blanke mans (30-60 jaar) vertoon die groep respondente ook ’n relatiewe goeie SGS-waarde of te wel staat van gesondheid.

TABEL 1. **BESKRYWENDE DATA VAN SWART MANLIKE MIDDELVLAKBESTUURDERS**

Parameter	N	$\bar{X}$	S.A.	Min.	Maks.
Oud	221	35.9	6.3	22	66
FAI	221	17.9	20.6	0	144
BB	221	4.2	1.6	0	7
SGS	221	124.1	133.1	0	883

F(2.218)=4.39
N=221

Newman-Keuls post hoc-intergroepverskille (p≤0.05)
a van b.c
b van a

FAI = Fisieke aktiwiteitsindeks
Oud = Ouderdom
BB = Belloc & Breslow (lewenstylgebruike)
SGS = Siektegraderingskaal

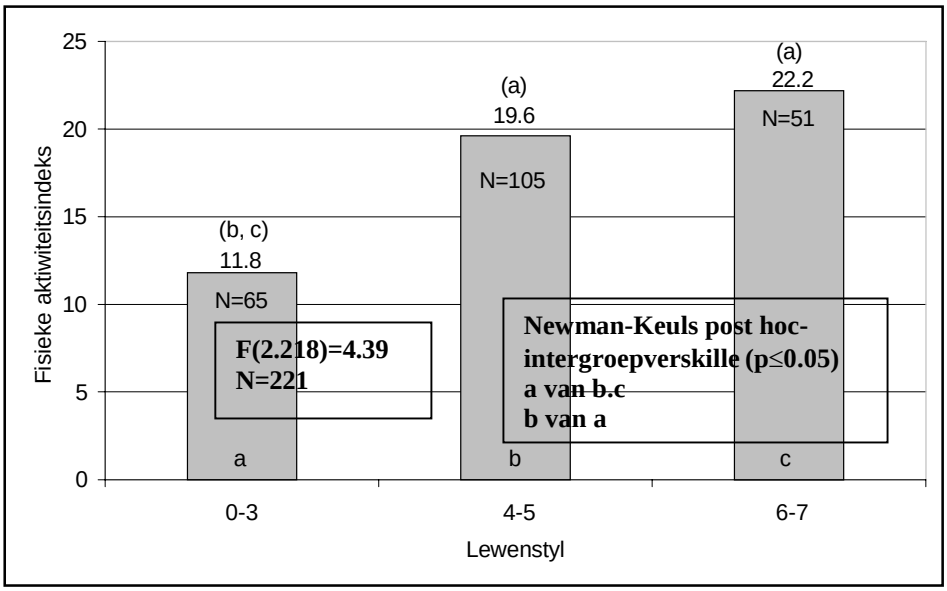
In Tabel 2 word lewenstyl se verband met deelname aan fisieke aktiwiteit en gesondheidstatus aangebied.

TABEL 2. **DIE VERBAND TUSSEN LEWENSTYL, FISIEKE AKTIWITEIT EN GESONDHEIDSTATUS BY SWART MANLIKE MIDDELVLAKBESTUURDERS**

	LEWENSTYL									
	a) 0 - 3 Swak			**b) 4 - 5 Matig**			**c) 6 - 7 Goed**			**F-waarde**
Parameter	**N**	$\bar{X}$	**S.A.**	**N**	$\bar{X}$	**S.A.**	**N**	$\bar{X}$	**S.A.**	**F=(2.218)**
FAI	65	$11.8^{b,c}$	15.3	105	19.6^{a}	22.4	51	22.2^{a}	22.1	4.39#
SGS	65	$161^{b,c}$	172.2	105	113.8^{a}	108.7	51	100.6^{a}	114.3	3.68#

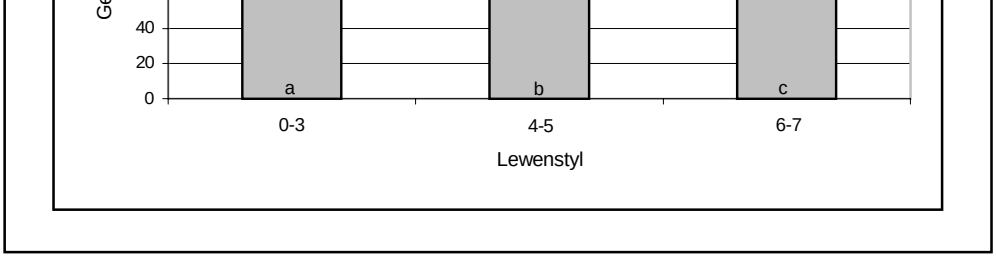
= $p \leq 0.05$

Volgens die eenrigtingvariansie-analise (Tabel 2) kom statistiese betekenisvolle ($p \leq 0.05$) verskille ten opsigte van fisieke aktiwiteit (FAI) F(2.218)=4.39 en gesondheidstatus (SGS) F(2.218)=3.68 by die middelvlakbestuurders (N=221) voor.



FIGUUR 1. **DIE VERBAND TUSSEN LEWENSTYL EN FISIEKE AKTIWITEITSINDEKS BY SWART MANLIKE MIDDELVLAKBESTUURDERS**

Die Newman-Keuls post hoc-toets toon aan dat die respondente wat ’n swak lewenstyl volg ’n statisties betekenisvol ($p \leq 0.05$) laer kwaliteit van deelname aan fisieke aktiwiteit vertoon as die respondente wat matig en goed ten opsigte van die sewe Belloc en Breslow-gewoontes presteer. Dit impliseer dat die middelvlakbestuurder wat omsien na sy lewenstyl, ook ’n statisties betekenisvol ($p \leq 0.05$) hoër kwaliteit van deelname aan fisieke aktiwiteit vertoon (Fig.1).



FIGUUR 2. **DIE VERBAND TUSSEN LEWENSTYL EN GESONDHEIDSTATUS BY SWART MANLIKE MIDDELVLAKBESTUURDERS**

Betreffende gesondheidstatus blyk dit ook dat die respondente wat minder as drie van die gewoontes volg, 'n statisties betekenisvol ($p \leq 0.05$) swakker staat van gesondheid vertoon as die ander twee groepe (BB=4-5 en BB=6-7).

Dit is dus duidelik dat lewenstyl 'n belangrike aspek is waaraan die middelvlakbestuurder aandag moet gee ten einde sy gesondheidstatus instand te hou of selfs te verbeter. Die maatskappy kan hierby baat deurdat die mediese koste en die werksafwesighede kan verminder en die personeelomset verlaag word, wanneer die middelvlakbestuurder 'n goeie gesondheidstatus handhaaf. In Tabel 3 word fisieke aktiwiteit se verband met gesondheidstatus aangetoon.

TABEL 3. **DIE VERBAND TUSSEN FISIEKE AKTIWITEIT EN GESONDHEIDSTATUS BY SWART MANLIKE MIDDELVLAKBESTUURDERS**

	FISIEKE AKTIWITEIT									
	a) 0 - 16 Laag			**b) 17 - 44 Matig**			**c) ≥ 45 Hoog**			**F-waarde**
Parameter	**N**	$\overline{\mathbf{X}}$	**S.A.**	**N**	$\overline{\mathbf{X}}$	**S.A.**	**N**	$\overline{\mathbf{X}}$	**S.A.**	**F=(2.218)**
SGS	126	113.5	112.8	75	135.7	153.2	20	153.5	168.2	1.16

Fisieke aktiwiteit vertoon bepaalde tendense met gesondheidstatus in die eenrigtingvariansie-analise (Tabel 3), maar geen statisties betekenisvolle ($p \leq 0.05$) verskille is verkry nie.

Die tendens wat na vore kom blyk te wees dat, die middelvlakbestuurder wat 'n lae fisieke aktiwiteitsdeelname het, 'n beter gesondheid vertoon as die middelvlakbestuurder wat matig of hoog fisiek aktief is. Die verskille is soos aangetoon nie statisties betekenisvol ($p \leq 0.05$) nie. Die tendens is egter teenstrydig met wat normaalweg verwag word, naamlik dat hoe meer aktief die persoon is, hoe beter is die gesondheidstatus. Die verskille tussen die groepe is ook nie groot nie en al drie groepe (laag, matig en hoog aktief) vertoon relatief uitstekende gemiddelde gesondheidstatuswaardes volgens die SANGALA-studie terugvoer, wat <134 en 135-294 onderskeidelik as "baie goed" en "goed" geklassifiseer is. Dit mag dan ook die rede wees vir die oënskynlik teenstrydige tendens wat verkry is. Wanneer 'n persoon dus in goeie gesondheid verkeer, sal deelname aan fisieke aktiwiteit nie die reeds goeie gesondheidstatus verder verbeter nie.

In 'n studie op Blanke mans in Potchefstroom vind Van der Merwe (1997) dat die mans 'n gemiddelde SGS-waarde van 287.9 vertoon het. In 'n omvattende studie op bestuurslui in

Suid-Afrika vind Boshoff (2000) dat swart manlike bestuurslui die beste staat van gesondheid vertoon het in vergelyking met Blanke, Indiër en Kleurling manlike en vroulike bestuurslui. Dit is moeilik vir fisieke aktiwiteit om ’n effek op gesondheid te hê, as die gesondheid reeds goed is. Die effense swakker gemiddelde SGS-waardes wat die fisiek hoog aktiewe respondente in Tabel 3 toon, kan ook te doen hê met die kleiner hoeveelheid respondente (n=20) in die hoog aktiewe groep.

Dit kan verder ook te doen hê met ander eksterne faktore soos werksomstandighede en ouderdom. Boshoff (2000) vind in sy studie op bestuurslui dat topvlak bestuurders meer geneig is om te oefen as middelvlakbestuurders. Swanepoel (2001) vind verder in ’n studie op Blanke manlike bestuurslui dat die fisieke aktiewe respondente ook statisties betekenisvol ($p \leq 0.05$) ouer is as matig en laag aktiewe respondente.

Dit is ook ’n verskynsel wat teenstrydig is met wat tipies in die literatuur gerapporteer word naamlik dat ouer mense laer deelname aan fisieke aktiwiteit vertoon as jonger mense

(Strydom, 1990). Hierdie verskynsel hou waarskynlik verband met die ouer bestuurder wat besef dat hy na sy gesondheid moet omsien om optimaal binne ’n uiters kompeterende werksomgewing te presteer. Die negatiewe effek van veroudering en werksverantwoordelikheid op gesondheid is goed bekend. Beide genoemde fasette (veroudering en swakker/moeiliker werksomstandighede) het ook ’n negatiewe effek op aspekte soos slaappatrone en die handhawing van liggaamsmasssa. Vir meer duidelikheid oor die invloed van sulke eksterne faktore op gesondheid is ’n stapsgewys-meervoudige regressie-analise gedoen. Die resultate van die regressie-analise dui aan hoe groot die gesamentlike bydraes van die verskillende aspekte tot die gesondheidstatus is en wat die individuele bydrae van elke aspek tot die variansie van Wyler *et al*. (1968) se siektegraderingskaal is.

TABEL 4. **STAPSGEWYS-MEERVOUDIGE REGRESSIE-ANALISE VAN GESONDHEIDSTATUS SE VERWANTSKAP MET ONAFHANKLIKE VERANDERLIKES BY SWART MANLIKE MIDDELVLAKBESTUURDERS**

Parameter	Kumulatiewe R	Kumulatiewe R^2	Bydrae tot R^2	F-Waarde
Slaap	0.284091	0.080708	0.080708	19.23 #
Oefening (BB)	0.337502	0.113908	0.033200	8.17 #
Taakomskrywing	0.366399	0.134248	0.020340	5.10 #
Ouderdom	0.378322	0.143128	0.008880	2.24
Massa	0.387862	0.150437	0.007309	1.85
Jare in beroep	0.393421	0.154780	0.004343	1.10
Alkohol gebruik	0.398730	0.158986	0.004206	1.07

= Statistiese betekenisvol ($p \leq 0.05$)

In die stapsgewys-meervoudige regressie-analise uitgevoer op die swart manlike

middelvlakbestuurders (Tabel 4), is die volgende onafhanklike veranderlikes se bydraes tot gesondheidstatus (SGS) ondersoek, naamlik ouderdom, taakomskrywing, jare in beroep, akademiese kwalifikasies, fisieke aktiwiteitsindeks, of die persoon drie maaltye per dag eet, ontbyt eet, fisiek oefen, genoegsaam slaap, rook, sy liggaamsmassa handhaaf en alkohol gebruik.

Slaap, oefening (BB), taakomskrywing, ouderdom, massa, jare in beroep en alkoholgebruik is in die analise gelys as bydraes tot die variansie van gesondheidstatus. Hierdie sewe veranderlikes dra gesamentlik slegs 15.89% by tot gesondheidstatus se variansie. Genoegsame slaap, oefening en tipe bedryf se bydraes was statisties betekenisvol ($p \leq 0.05$). Oefening verwys na die Belloc en Breslow-vraag of die respondente twee tot drie keer per week matig oefen al dan nie. Die vraag onderskei dus slegs tussen respondente wat oefen en nie oefen nie. Soos afgelei kan word uit Tabel 3 vertoon die matig en hoog aktiewe respondente ’n SGS-waarde van 135.7 en 153.5 respektiewelik en die laag aktiewe respondente ’n SGS-waarde van 113.5. Oefening se bydrae in die stapgewys-meervoudige regressie-analise dui dus op ’n negatiewe verband en nie op ’n positiewe verband nie.

Die belangrikste verskynsel in Tabel 4 is egter dat letterlik al die parameters wat gelys is, gekoppel kan word aan stres. Dit opsigself kan ook ’n moontlike invloed op die slaappatrone van die middelvlakbestuurders hê, aangesien slaap 8% bydra tot die variansie in gesondheidstatus by die swart manlike middelvlakbestuurders. Omrede stres nie deel van die vraelys uitgemaak het nie, is geen inligting hieroor beskikbaar nie, maar is daar verdere ontleding van die gegewens gedoen, om meer spesifieke inligting oor die aard van slaappatrone, liggaamsmassa, jare in die beroep en ouderdom se verband met gesondheidstatus te verkry. Dit blyk dat 70% van die fisiek hoog aktiewe respondente rapporteer dat hulle probleme ervaar om ’n konstante liggaamsmassa te handhaaf, terwyl 63% en 48% van die laag en matig aktiewes probleme met die handhawing van ’n konstante liggaamsmassa rapporteer. Verder blyk dit dat 60% van die hoog aktiewes jonger as 35 jaar is teenoor 50% en 52% van die laag en matig fisiek aktiewes. By die hoog aktiewe groep is daar dus meer jonger respondente en respondente met gewigsprobleme as wat die geval by onderskeidelik die laag en matig fisiek aktiewe respondente is.

Betreffende slaap blyk dit dat 45% van die hoog aktiewes 7-8 ure per nag slaap terwyl onderskeidelik 24% en 29% van die laag en matig aktiewes 7-8 ure per nag slaap. Dit lyk dus of die hoog aktiewes meer slaap nodig het as die laag en matig fisiek aktiewes. Die hoog aktiewe respondente vertoon dus groter persentasies met eksterne faktore wat ’n negatiewe effek op gesondheid kan hê. Die groter persentasie met ’n massa-handhawingsprobleem kan moontlik met eetgewoontes en drinkgewoontes te doen hê. Hierdie probleem (massa) mag ook ’n rede wees waarom hulle aan ’n aktiwiteit deelneem. Dit is ook verder bekend dat stres direkte verbande met verkeerde eet- en drinkgewoontes vertoon (Robbins *et al.*, 1991). Die feit dat daar ook meer hoog aktiewes jonger as 35 jaar is, maak dit waarskynlik dat daar meer hoog aktiewes met selfhandhawingsprobleme is as wat die geval is in die ander twee groepe. Dit kan ook moontlik verklaar waarom hulle meer slaap as die ander twee groepe.

Opsommend kan dus gesê word dat ’n groter persentasie van die hoog aktiewe respondente eksterne faktore vertoon wat ’n negatiewe effek op gesondheid kan hê as die ander twee groepe. Die belangrikste eksterne faktor wat by die hoog aktiewe groep negatief kan inwerk op gesondheid, is die groot persentasies (70%) wat probleme rapporteer rakende die handhawing van ’n konstante liggaamsmassa. Die feit dat daar ook slegs 20 respondente in die

hoog aktiewe groep is, maak dat uitskieters 'n groter effek op die gemiddelde SGS-waarde in die groep kan hê as wat die geval by die ander twee groepe is.

SAMEVATTING

Lewenstyl toon statisties betekenisvolle ($p \leq 0.05$) verbande met deelname aan fisieke aktiwiteit en gesondheidstatus. Respondente wat gesond leef (4 tot 7 van die Belloc en Breslow-gewoontes volg) vertoon 'n hoër kwaliteit van deelname aan fisieke aktiwiteit en 'n beter staat van gesondheid as die respondente wat minder as drie van die gewoontes volg. In die stapgewys-meervoudige regressie-analise vertoon slaap, oefening en taakomskrywing statisties betekenisvolle ($p \leq 0.05$) bydraes tot die variansie van gesondheidstatus. Fisieke aktiwiteit vertoon in 'n eenrigtingvariansie-analise nie 'n verband met gesondheidstatus nie. Die rede vir die verskynsel kan verband hou met groepgrotes en die feit dat meer hoog

aktiewes probleme met betrekking tot die handhawing van 'n konstante liggaamsmassa rapporteer as wat die geval by die laag en matig aktiewe respondente is. Al drie die fisieke aktiwiteitsgroepe (laag, matig en hoog) vertoon egter besonder goeie vlakke van gesondheid (soos gemeet met Wyler *et al.* (1968) se siektegraderingskaal) in vergelyking met beskikbare data op Blanke mans en ander bestuursgroepe (Blank, Indiër en Kleurling) in Suid-Afrika. Om die situasie van fisieke onaktiwiteit en swak lewenstyl by die swart manlike middelvlakbestuurder in die maatskappy te verhoed, behoort die maatskappy toepaslike strategieë aan te wend om die werknemers se gesondheid instand te hou of te verbeter, om sodoende die maatskappy se belange te versterk. Die implimentering van fiksheidsprogramme kan juis die probleem van fisieke onaktiwiteit sowel as 'n swak lewenstyl aanspreek, ten einde die gesondheid te verbeter of instand te hou.

Shephard (1999) het reeds aangetoon dat die maatskappy hierby baat kan vind, deurdat die werknemer minder afwesig is en dat sy werkvermoë toeneem. Die maatskappy opsigself se produktiwiteit kan toeneem en gesondheidsorgkostes kan verminder (Shephard,1999).

SUMMARY

PHYSICAL ACTIVITY, LIFESTYLE AND HEALTH STATUS OF BLACK MALE MIDLEVEL MANAGERS

Research on high level employees in the South African corporate sector indicated that the working environment is not always beneficial for good health of the employee (Grobler, 1990:2; Boshoff 2000:211), and that almost 97% of the management already showed some definite risk factors for the development of coronary heart disease (Jacobs, 1991:10). Several studies have already reported the benefits of regular physical activity and healthy lifestyles on the health status of high level employees (Bouchard, 1994:7; Jordaan, 1998:18). In this respect it became clear that participation in physical activity may decrease the risk of coronary heart disease by its salutogenic effect on emotional (Willis & Cambell, 1992:467), physiological (Shephard & Bouchard, 1994:202) and biochemical (Dreyer, 1991:97) parameters.

The objective of this study was to determine whether there were any significant changes ($p \leq 0.05$) between physical activity, lifestyle and health in black male midlevel managers. Analyses of data indicated significant changes ($p \leq 0.05$) between physical activity and lifestyle as well as between lifestyle and health status. No significant changes ($p \leq 0.05$) between physical activity and health status were present. A multiple regression analysis indicated that

sleep patterns may have an effect on health in some of the midlevel managers. Two hundred and twenty one (221) participants were included in the study. The type, intensity, frequency and duration of participation in leisure-time physical activity were determined by the physical activity index (PAI) as suggested by Sharkey. The lifestyle habits and health status were determined by using the Breslow and Belloc index (BB) and the illness rating scale (IRS) of Wyler *et al*. (1968) respectively.

This study seems to indicate that the black male midlevel manager in this company operates in a 'danger zone' regarding his physical inactivity and unhealthy lifestyle. The result of this way of living is probably already reflected in the average of 10% of the managers reporting bad health. To prevent this 'danger zone' from worsening, the company should apply some

strategies to improve the health of the employees, especially those falling in the high-risk categories.

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ELITE COACHES' PERCEPTIONS OF THE CHARACTERISTICS OF DECISION-MAKING THAT DISCRIMINATE BETWEEN EXPERT AND NOVICE BASKETBALL PLAYERS

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ABSTRACT

This study was aimed at discovering what elite coaches perceive to be the critical characteristics of decision-making that distinguish expert players from novices in basketball. A qualitative method of inquiry (the long interview) was followed. The data were gathered during interviews with five elite coaches. A framework to define decision-making was created through a systematic analysis of the data by two investigators with substantial background in top-level basketball. The key discriminating variables as defined by the elite coaches were: Anticipation (experts know where to look and have the ability to read the game better than novices); cognitive knowledge (experts have a more comprehensive knowledge of the rules and of tactics), self-knowledge (experts have more accurate sense of their own abilities) and the quality of memory processes (experts make decisions faster than novices and show more adaptability in their decision-making). The results of this research confirm expert-novice differences in anticipation and quality of memory processes found in other studies of decision-making in sport. The results also underscore the importance of knowledge structures – declarative, procedural and personal – in the development of expertise in sport performance.

Key words: Decision-making; Expert-novice differences; Coaching.

INTRODUCTION

Decision-making has been defined as a process of arriving at a conclusion based on incomplete and uncertain information. With regard to sports, decision-making has been conceptualized as the process of determining appropriate responses about movement performance within the context of a performance situation (McPherson & French, 1991). A variety of components have been related to the process of decision-making, including anticipation, recall and response selection and sport intelligence (Dorfman, 1977; Goulet *et al*., 1989; Proteau *et al*., 1989; Tenenbaum & Bar-Eli, 1993; Wrisberg, 1993; French & McPherson, 1999). Research about the nature of decision-making in sport frequently has

focused on describing the apparent differences between expert and novice performers in an effort to identify critical variables that change as performers gain expertise.

Anticipation

Dorfman (1977) referred to anticipation as the process of identifying and interpreting the information required for predicting situations. Interpretations are derived primarily from comparing experience with past events to the incoming information in relation to the present events in order to predict the next possible events. Research has demonstrated that experts are more effective than novices in their ability to anticipate what will happen in their sport. Abernethy and Russell (1987) found that experts collect a greater amount of essential information from cues because they can use the early cues better than novices can. Rothstein (1985) discovered that experts perceive more information in one glance than novices do because experts tend to recognize patterns rather than individual stimuli. Anticipation can be learned and improved in order to maximize the speed of perception (Tannenbaum & Bar-Eli, 1993), and experts have had the benefit of years of practice to gain this advantage.

Recall and response selection

In terms of recall and response selection, experts are better at coding and recalling situations than novices. The ability to remember the past experiences and associate them with current game situations enhances the quality of decision-making in sports. Experts have been found to have superior capabilities for checking, encoding and retrieving structural aspects of ball sport displays (Allard & Burnett, 1985). Recall differences between expert athletes and novices have been reported under structured and unstructured game situations in volleyball (Starkes & Allard, 1983), hockey (Starkes, 1987), badminton (Abernethy, 1991), soccer (McMorris & Beazeley, 1997) and tennis (French & MacPherson, 1999).

Investigations into the mechanisms that support recall are not new. An early report by Chase and Simon (1973) attributed the amazing recall abilities of chess masters to "information chunking" or the grouping of multiple cues into a single unit for processing. They hypothesized that recall is dependent up on a series of cognitive processes, including the coding of meaningful "chunks" of information during initial experiences, labeling and storing of these chunks in the memory, and decoding the chunks at the time of recall in subsequent experiences. Allard (1982) described chunking as the ability to organize information into memory patterns (configurations) and the coding/decoding of information as the processes of recognizing, storing and retrieving relevant information configurations. Chunking has been studied by a number of researchers in sport. Williams *et al*. (1993), for example, found that soccer experts recall large perceptual chunks within the first five seconds of viewing but only for structured game situations.

Efficiency in chunking, encoding and decoding relevant game signals results in an improved capacity for experts to support decision-making within the time constraints of a sport like basketball. Different levels of individual cognitive adaptation have been found in experts' abilities to perceive sport-specific information from the environment, the speed of processing in the memory, the rapid retrieval of the relevant information patterns and the organization of information for accurate decision-making (Garland & Barry, 1990).

Athletic intelligence

Athletic intelligence was the term used by Papanikolaou (2000) to try to encompass the combination of different kinds of knowledge that impact on expert performance in sport. It is well-documented that the expert player perceives and cognitively arrives at decisions based on

in-depth knowledge (Starkes, 1987; Chamberlain & Coelho, 1993; Helsen & Pauwels, 1993; Kioumourtzoglou *et al*., 1998a; Kioumourtzoglou *et al*., 1998b; French & McPherson, 1999). Two kinds of knowledge - declarative knowledge and procedural knowledge - have been reported to be critical in making correct decisions during sport performance (Allard & Burnett, 1985; Starkes, 1987; Tenenbaum & Bar-Eli, 1993) and may be the basis for "sport intelligence".

Declarative knowledge is related to an understanding of the game concepts, rules of the game, goals, sub-goals, player positions, etc. (Allard *et al*., 1993). In the theory of motor learning, declarative knowledge is stored in the long-term memory (LTM) where it can be securely stored as a movement representation that is characteristic of the game (Knapp, 1963). Differences in expert-novice performance pertaining to the organization and use of declarative knowledge during vigorous and continuously changing game situations, have been reported in several open skill sports (Abernethy, 1991; Starkes & Allard, 1993). The memory structures for declarative knowledge are more elaborate and more accessible to the expert player than to the novice (Tenenbaum & Bar-Eli, 1993).

Procedural knowledge is related to the practical aspect of the game. The "How do I do it" question is answered by procedural knowledge. Procedural knowledge is linked to the tactics and strategies of particular game situation (Turner & Martinek, 1994). The expert performer is distinguished by his/her procedural knowledge about "how" to accomplish a goal in a movement situation (Abernethy, 1991).

In a study of soccer expertise among young players, Ripoll & Benguigui (1999) mentioned intelligence as a blend of problem solving, retrieving declarative knowledge from the long-term memory, matching (comparing) the contents of external information to stored information, and the selection of a response that reflects the match found. From this description, it would appear that sport intelligence is the ability to select the kind of skills that are needed and to perform them in an accurate and effective manner. This ability to evaluate the current situation, taking into consideration past related events and prediction of the future outcomes, is essential for making accurate and timely decisions. Within the cognitive context, this clearly defines the challenge in sports performance (French & McPherson, 1999).

Flexibility in processing information may be an additional dimension of sport or game intelligence. Flexibility has been identified as a characteristic of both anticipation and decision-making (Williams, 1985; Nettleton, 1986). Expert players demonstrate high levels of flexibility in their decision-making. This means that they are able to adjust and re-adjust to the consistently changing game environment within a fraction of a second and that the predictions are performed in a seemingly automatic way. This flexibility in anticipation and decision-making is probably based on their knowledge of the game, which has been derived from many years of practice and competition (McMorris, 1999).

PROBLEM

If sport skill development is to be pursued in a systematic manner, sport-specific research must be pursued to identify which variables are crucial for success in a particular sport, or even for a particular position in a sport. Basketball is a high-strategy, open-skill team sport that places an emphasis on a player's ability to make quick and accurate decisions

(Kioumourtzoglou *et al.,* 1998a). By identifying those aspects of decision-making that distinguish the novice from the expert player, practice sessions can be designed that will focus on improving those aspects of decision-making that will accelerate the process of gaining expertise in basketball.

METHOD

While it is important that descriptive and experimental research continues to examine the process of decision-making in sport using traditional paradigms, additional insights may be available using qualitative methods of inquiry. This study was designed to "open the door" on the ideas held by coaches who have spent large parts of their careers trying to improve decision-making and increase levels of expertise in basketball. While it could be expected that their views would be compatible with completed research, their past success in the development of expert players, was seen as an opportunity to gain a unique perspective on decision-making in sport.

The purpose of this study was to conduct an in-depth exploration of the perceptions of elite coaches of the characteristics of decision-making that distinguish elite from novice players in basketball. Six expert coaches were used as the sources of information about the differences between expert and novice players, specifically in basketball. Other studies have drawn insights about expert-novice differences from top-level coaches. Kioumourtzoglou *et al.* (1998a) asked expert coaches to rank those abilities they considered important for excellence in basketball. The expert coaches responded to a questionnaire in which they were provided with definitions and descriptions of a list of abilities found in the literature.

Because qualitative methods of inquiry can be effective when studying unique situations or individuals (Marshall & Rossman, 1989; Kumar, 1996; Marshall & Rossman 1999), it was decided to use the open-ended long interview method (McCracken, 1988) in this study. The long interview can be a powerful instrument for gathering data from experts. Initial questions are structured to gather in-depth information as the researcher probes the mind of the informant(s) to understand the different levels of conceptualizations and perceptions of the issue at hand (Creswell, 1994). In addition to questions that focus on topics drawn from a review of literature, open-ended questions and probes are included to ensure that the informant(s) have the opportunity to express fully their perceptions. The long interview method is not intended to be objective. It is subjective with the intention of gathering the views of the informants on a specific topic with which they have personal experience.

Subjects (informants)

McCracken (1988) recommended that the long interview be conducted with a few informants who are able to give detailed account of their knowledge in a specific area. For the current study, only coaches who had been coaching at the top-level (national and international) for the last five years were eligible to volunteer. Letters of recruitment were sent to all eligible basketball coaches within South Africa. Six informants representing different "basketball backgrounds" volunteered to participate in this study (one coach was originally from Europe, three from the United States, and two from Africa).

Procedure

The initial step in this study was to develop the protocol of questions for the interview. An

important characteristic of the long interview is that it is balanced, including open questions that enable informants to express their views, as well as closed questions to direct the informants to focus on key areas (Patton, 1986). The investigators in this study were also expert coaches in basketball. One has coached on the national level and the other on the national and international level. The investigators reviewed the literature on expertise in sport in order to identify the closed questions to be used during the interviews.

The content and structure of the interview protocol was tested for clarity and completeness by taking four university basketball coaches through the protocol. The coaches were invited to assist in the re-phrasing of questions, as well as encouraged to suggest additional questions and probes that they believed would encourage expert coaches to focus on the critical differences between expert and novice basketball players.

All six interviews were conducted by the same investigator. After explaining the study and receiving permission from the informants, a complete audiotape was made of each interview. Shorter more factual questions were asked at the beginning of the interview. Then, as the informant relaxed, more complex questions were asked. The average length of an interview was 87 minutes. The shortest interview was 64 minutes and the longest interview was 110 minutes.

A professional secretary made a verbatim transcript of each interview to facilitate content analysis. This study followed the process for inductive content analysis used by Scanlan *et al.* (1989) in their in-depth study of sources of enjoyment of former elite figure skaters. The method was also used in their complementary study of the sources of stress of former elite figure skaters (Scanlan *et al*., 1991). The purpose of the method is to draw meaning from the transcripts of in-depth interviews, and to validate the product of the research through a process called consensual validation based on mutual agreement (Patton, 1986).

The first step in data reduction was for each of the investigators to review the verbatim transcripts independently. Their task was to identify "quotations" from the informants' comments that were of sufficient length to have meaning. These quotations (phrases) were used at the primary units of analysis in this study. In order to validate the identification of quotations, the two investigators met to discuss their independent efforts to identify quotations. The aim of the discussion was for the investigators to agree (to consensually validate) the collection of quotations as complete expressions of the responses of the informants (Scanlan *et al.,* 1989). The final product of this interaction was a collection of 287 quotations from the six interviews.

The second step in data reduction was to reduce the 287 quotations into "clusters of meaning," each of which had the same conceptual focus. The forming of clusters was done independently by the investigators, followed by a joint discussion where a final group of clusters was determined by consensus.

The third step in data reduction was to reduce the clusters of meaning into more general groupings based on a common theme or topic. The same process of consensual validation was

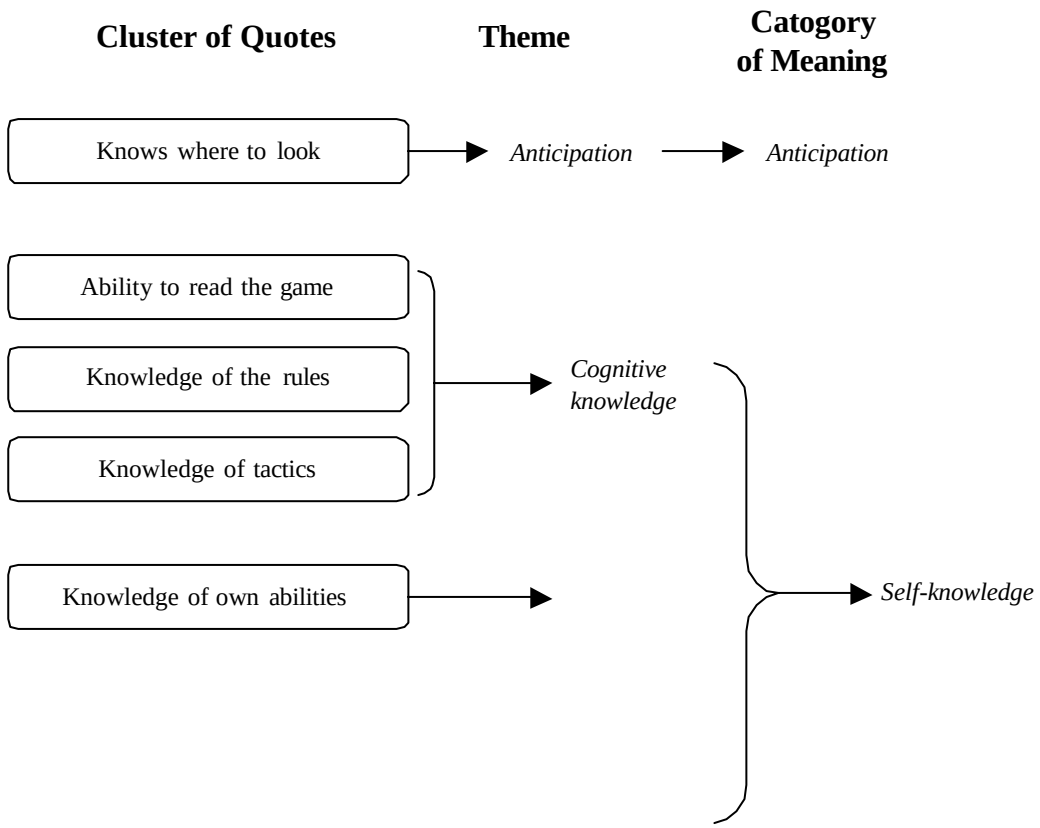
employed, where the investigators first worked independently to identify the themes, followed by a session in which a joint discussion produced a consensual version of the themes.

The final level of data reduction was to group the themes into general categories of meaning

following the process of consensual validation used throughout the study. The product of this process of data reduction was a framework of clusters, themes and categories of meaning that defines what the expert coaches who participated in this study perceived to be the characteristics of decision-making that distinguish expert from novice basketball players.

RESULTS

The results of the data reduction are presented as a framework in Figure 1. Seven clusters of meaning were drawn from the transcripts. These clusters were reduced to four major themes and the themes were grouped into two categories: anticipation and memory.



Memory

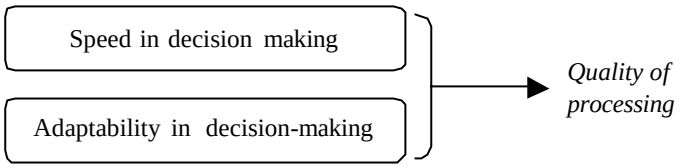


FIGURE 1. **ELITE COACHES' PERCEPTIONS OF THE CHARACTERISTICS OF DECISION-MAKING THAT DISCRIMINATE EXPERT FROM NOVICE BASKETBALL PLAYERS**

Anticipation

It is not surprising that the ability to anticipate what was going to happen in the game was identified as a characteristic that discriminates between expert and novice basketball players. This confirms previous research on anticipation in sport (Williams, 1985; Nettleton, 1986). Anticipation can be regarded as an interaction between attention and knowledge, in which the player quickly picks-up and accurately interprets cues from the environment. Expert ball players are known to use early cues better than novices do (Abernethy & Russell, 1984).

The coaches were convinced that an expert player ***knows where to look***. There is evidence from other research that expert players have acquired specific visual skills and strategies for scanning the playing environment (Starkes *et al*., 1994; Williams & Grant, 1999). Early research on sport vision, for example, established that novice players focus their gaze firmly for longer periods of time and more unsystematically than skilled players (Bard & Fleury, 1976).

Cognitive knowledge

Because French and Thomas (1987) found a significant relationship between knowledge, decision-making and skill in basketball, it is not surprising that the coaches in this study identified several dimensions of knowledge as discriminating characteristics between experts and novices. It can be concluded that experts have a larger, more complex and better organised knowledge base than novices. Although Starkes (1993) noted that experts possess both a large volume of knowledge and a substantial number of procedural skills, a complete determination has not been made of the content of that knowledge base and how that knowledge base is developed (Thomas *et al.*, 1993).

The coaches in this study were convinced that one characteristic of the expert player was the ability to use his/her knowledge base. They specified that the expert has a superior ***ability to read the game***. In coaching terms, "reading the game" includes an understanding of what is happening as well as what is about to happen. Rothstein (1985) reported that skilled athletes can perceive more information in one glance, because they tend to recognize patterns and not individual stimuli. This conclusion relates to experts' ability to chunk information based on their superior knowledge structure about their sport. Expert players perceive patterns of information and not individual stimuli. This means that their decision-making processes are guided by rules. It has been stated that rules enable the efficient use of the early cues for

quick recognition and the retrieval of relevant information in the long term memory (Ripoll, 1991; Tenenbaum & Bar-Eli, 1993; Kioumourtzoglou *et al*., 1998a).

Although knowledge of rules and knowledge of tactics can both be considered forms of declarative knowledge, knowledge of tactics and strategy has been linked to procedural knowledge (Turner & Martinek, 1994). Apparently a player must understand tactics in order to plan and implement effective motor responses in a game situation. The coaches interviewed in this study were convinced that the expert has a much greater cognitive understanding of basketball than the novice player. They referred specifically to a more elaborate knowledge of the rules of basketball as well as a more sophisticated knowledge of tactics as discriminating characteristics of experts. The expert, it appears, had an integrative cognitive ability that allows them to constently make better decisions in complex situations (Tenenbaum & Bar-Eli, 1993).

Self-knowledge

The coaches in this study also described the expert player as one who would play within his/her abilities. This was not to suggest that experts are in any way modest or self-critical, but rather that they are aware of their skill, fitness and potential, and are able to make their decisions within the context of what they are capable of doing in specific situations. Certainly self-knowledge is a product of automation of skills. The concept of "tuning" has been associated with knowledge generalisation, a process in which the rules for applying knowledge are tested and sorted so that more accurate rules to guide decision-making are developed (Helsen & Pauwels, 1993; Turner & Martinek, 1994). Perhaps something like "knowledge personalisation" occurs at the higher levels of skill development as the player becomes an "agent" who can help dictate the pattern and pace of a game.

Quality of processing

There is evidence that the ability to efficiently process information from the environment is one of the critical skills of expert performers (Williams *et al*., 1992). Experts have been found to have a greater capability to check, encode and retrieve the structural (strategic) aspects of ball-sports (Allard & Burnett, 1985). The coaches in this study were specific that experts and novices were quite different in terms of what they called ***speed in decision-making***. They considered experts to be substantially faster than beginners on every dimension of performance – perception, decision-making and skill execution. Gardner and Sherman (1995) identified the speed of processing as one feature that distinguished winners from losers in a competition. Recent research has supported the idea that expert basketball players are superior in recall ability for basketball situations, including superior speed in perception, efficiency in recall of past situations, and interpretation of patterns presented to them (Kioumourtzoglou *et al.*, 1998a; Kioumourtzoglou *et al.*, 1998b).

An additional characteristic of information processing was the ***adaptability in decision-making*** that the coaches described as a characteristic of expert players. Adaptability means that expert players are able to adjust and re-adjust to the consistently changing game environment. Experts demonstrate high levels of flexibility in decision-making under complex decision-making game situations (McPherson, 1999). This attribute has also been described as "flexibility in decision-making," and is based on cognitive knowledge about the game that has been derived from many years of practice and competition (McMorris, 1999).

CONCLUSION

Anticipation, recall and memory are considered central in the processing of decision–making during game situations. They are identified as the foundation of "sport intelligence" and are sources of expert-novice differences in sport performance (Chase & Simon, 1973; Starkes, 1987; Tenenbaum & Bar–Eli, 1993; Wrisberg, 1993; Ericsson & Charness, 1994, McPherson, 2000). Of particular interest to this study are the reported expert-novice recall differences in basketball (Allard *et al*., 1980; Allard, 1982; Allard & Burnett, 1985; French & Thomas, 1987; Allard *et al*., 1993; Kioumourtzoglou *et al*., 1998a; Kioumourtzoglou *et al*., 1998b). These results have demonstrated that expert basketball performers are superior in speed of perception, efficiency in retrieval of information and interpretation of incoming cues to create meaningful information patterns.

Studies on expert-novice differences have been pursued to establish the possible locus of expertise in high strategic sports performance. Expertise is surrounded by the task-specific individual differences in perceptual and cognitive abilities. In both components of performance, the organization and interaction of declarative knowledge and procedural knowledge on one hand, and the interaction with the ecological information on the other hand, is a critical determinant of who is an expert in a specific sport.

It is hoped that this research will encourage sport scientists to use expert coaches as sources of knowledge about sport. Their perceptions about the nature of expertise is a promising direction for qualitative inquiry in sport science. The expert coaches interviewed in this study have perceptions about expert-novice differences that are consistent with the findings of past descriptive and experimental research. This is encouraging for both coaches and sport scientists, since it indicates that there may be a rich opportunity to bridge the theory-practice gap regarding decision-making in sport, based on shared assumptions about the nature of cognitive processing. The coaches' identification of self-knowledge as a characteristic of experts should encourage sport scientists to broaden their focus on declarative and procedural knowledge to include the personal or existential knowledge.

The framework generated in this study also could be used to guide the design of practice sessions and periodisation of training for basketball. According to the coaches in this study, anticipation, knowledge of rules and knowledge of tactics are central to expertise, and adaptability as well as speed in making decisions are required at the higher levels of the game. For example, players need to be taught how to read the game. The "games sense" approach to teaching sport skills is compatible with these characteristics and may be a preferred method for developing skillful performers on the advanced as well as the beginning levels.

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THE CONTRIBUTION OF SELF-EFFICACY AND OUTCOME EXPECTATIONS IN THE PREDICTION OF EXERCISE ADHERENCE

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ABSTRACT

The positive contribution of physical activity and exercise to physical and mental health is widely acknowledged. However, participation in sport and exercise is not as high as would be expected. In addition to this, people who start exercising often do not adhere to their exercise programme. This study examined the effectiveness of Bandura's self-efficacy theory to predict exercise adherence. A sample of new members at a gymnasium was assessed on a Physical Self-Efficacy Scale, an Adherence Efficacy Scale and an Outcome Expectancy Scale. The dependent variable, exercise adherence, was assessed by monitoring the intended and actual frequency of visits to the gymnasium. Multiple regression analysis was conducted to test the hypotheses. Results indicated that physical self-efficacy was a significant predictor of exercise adherence for the total group as well as for the females seperately. For the males adherence efficacy was a significant predictor. The results partly confirm the self-efficacy theory of Bandura and underline the importance of assessing different dimensions of self-efficacy in adherence research.

Keywords: Self-efficacy; Outcome expectations; Exercise adherence.

INTRODUCTION

The contribution of physical activity and exercise to physical and mental health is widely acknowledged. Many studies have shown the positive effects of exercise on depression, anxiety, neuroticism, self-consciousness and self-esteem (Moses *et al.*, 1989; Stein & Motta, 1992; Smoll *et al.*, 1993; Berger, 1994; Kasser & Stuart, 2001).

Participation in sport and exercise is despite these benefits not as high as would be expected. Roberts (quoted in Steyn *et al.*, 1991) suggested that up to 80% of youth between the ages of 12 and 17 years quit their participation in sport. Regarding drop-out in exercise programmes, the overall trend is that 50% of participants in a specific programme will discontinue their exercising within six months of starting or renewing a programme (Dishman, 1982, Dishman, 1988). Although regular exercise is a known effective primary and secondary treatment for cardiovascular disease, cardiac rehabilitation programme participation and adherence is low (Gregory, 1998).

Various research studies in the area of exercise adherence and the prediction of exercise

behaviour have been undertaken (Theodorakis *et al.*, 1991; Courneya & McAuley, 1994; Douthitt, 1994; Theodorakis, 1994). Factors that have been explored as possible predictors of exercise behaviour are personal and situational factors (Sallis *et al*., 1989), attitudes (Merriman, 1993), enjoyment (Wankel, 1993), perceived romantic appeal and perceived athletic competency (Douthitt, 1994), as well as skill development and excitement (Chambers,

1991). Researchers have also focused on cognitive and social-cognitive approaches to predict exercise behaviour (Roberts, 1992; Biddle, 1997). Constructs like self-efficacy (Bandura, 1977, Bandura, 1982), reasoned action (Fishbein & Ajzen, 1975; Smith & Biddle, 1999), planned behaviour and perceived behavioural control (Ajzen, 1991) have been investigated.

The concept of self-efficacy is defined by Bandura (1977) as the conviction of a person that he or she can successfully perform a desired behaviour. According to the model, this conviction has an effect on the initiation, persistence and success of the task behaviour. Although there is no single variable that comes to the fore as the only predictor of exercise behaviour, the self-efficacy model of Bandura is theoretically sound and its superiority over other models of prediction has already been shown (Dzewaltowski *et al.*, 1990; Duncan & McAuley, 1993; Dishman, 1994b). According to O'Leary (1985) this theory has been used to explain a wide variety of health behaviours such as weight control, cessation of smoking and adherence to preventive health programmes.

Previous research on self-efficacy and exercise behaviour shows a few shortcomings in certain areas. Firstly, the research studies usually focus on achievement rather than adherence to exercise (Feltz, 1992). The current tendency in sport psychology is to diversify, adding to the traditional focus of elite participation, that of health-promoting exercise, lifestyle development and leisure participation. To keep in step with this trend, self-efficacy should be studied as a tool to improve healthy behaviour. The focus should be on the influence of self-efficacy on motivation rather than skill.

A trend in recent adherence research has been to design instruments measuring self-efficacy in such a way that they assess a person's judgement of whether he or she will continue exercising, even with the prospect of certain barriers (Desharnais *et al.*, 1986; Dzewaltowski *et al*., 1990; Steenkamp, 1994). The instruments actually measure expectations of adherence self-efficacy. As far as could be ascertained no research in exercise adherence thus far has examined the influence of self-efficacy as a function of the person's physical self-efficacy. A person's belief that he or she has the physical ability to be successful in the demands of his or her exercise programme is an unknown factor in adherence research. Ryckman *et al.* (1982) stressed the importance of assessing each aspect of self-efficacy independently. Furthermore, if efficacy is measured according to the types of subskills required to complete the task, the ability of self-efficacy to predict adherence will most likely be considerably stronger (McAuley, 1992). In view of this and Bandura's (1977; 1982) and McAuley's (1992) plea for micro-analysis of self-efficacy, research in this area is needed.

An important aspect of Bandura's theory is the differentiation of self-efficacy and outcome expectancy. Bandura defines outcome expectancy as a person's expectation that a specific behaviour will lead to a certain outcome (Bandura, 1977). The difference between the two constructs is explained by the fact that a person can believe that what he or she does will lead to certain outcomes (outcome expectancy), but he or she may doubt his or her ability to successfully execute the behaviour (self-efficacy).

According to Bandura (1997) both self-efficacy beliefs and outcome expectations can be

determinants of behaviour. Desharnais *et al.* (1986) and Rodgers and Brawley (1996) have however shown that the contribution of outcome expectations is independent of the contribution of self-efficacy.

Rodgers and Brawley (1991) proposed a methodological model to measure outcome expectations in participation motivation. This approach takes into account both outcome value and outcome likelihood to determine outcome expectancy. According to them, outcome likelihood and outcome value are two distinct and measurable variables in assessing outcome expectancy. The concept of outcome expectancy is largely unexamined and the above mentioned approach allows for a way in which this concept can be examined.

There is conflicting evidence of the influence of outcome expectations on exercise adherence. Dzewaltowski *et al.* (1990) reported that although self-efficacy significantly predicted adherence, outcome expectations did not add significantly towards predicting adherence. On the other hand, Desharnais *et al*. (1986) found that both outcome expectancy and self-efficacy have predictive value, but that low rather than high outcome expectancy determined adherence. Desharnais *et al.* (1986) concluded that continued participation in exercise will improve when participants' outcome expectations are lowered and their self-efficacy is raised. There is however a need for empirical evidence.

Traditional research in sport psychology has focused on performance, structured types of exercise or team related sports. The importance of psychology in non-competitive physical activity, exercise and other health-related behaviour, has led to the acceptance of a more comprehensive term, namely sport and exercise psychology (Biddle, 1997). More research is needed in the area of personal fitness and the development of a healthy lifestyle.

Factors that may be present in structured and team sport exercise programmes may influence adherence efficacy (Duncan & McAuley; 1993). It is therefore necessary to investigate adherence to exercise behaviour in the area of personal fitness. This will to some extent lessen the effect of social support, motivation and instructional factors. Oldridge (1981) believes that a critical sign of adherence is continuing with exercise in an unsupervised situation.

Researchers in the exercise domain have used Ajzen's theory of planned behaviour, which proposes that a person's intention to perform a behaviour is an important determinant of adherence to that behaviour (Ajzen, 1991). More research in this regard is needed in the area of exercise adherence.

The most common index of adherence to exercise has been attendance or frequency. Intensity and duration have also been used to assess exercise adherence (Dzewaltowski *et al.*, 1990). There is however growing support for the health benefits of moderate intensity exercise (Moses *et al.*, 1989; Dishman, 1994a). A focus on personal fitness and health behaviour, rather than on performance, implies that the assessment of adherence to the exercise programme should be done by measuring continued, regular participation and not intensity or duration.

PROBLEM STATEMENT

The aim of the present study was to determine the contribution of physical self-efficacy, adherence self-efficacy and outcome expectations towards the prediction of continued participation in exercise behaviour.

METHODOLOGY

Participants

The target group comprised new members of the University of Stellenbosch (US) gymnasium. The criterion that was used to define new members was persons who joined the gymnasium for the first time during the month prior to the experimental phase of the study. Participants who were previously members of this or another gymnasium, or who previously took part in supervised exercise programmes, were excluded from the sample used for data analysis. The final sample consisted of 84 participants (43 male, 41 female) and all were current students at the university. The mean age of the males was 20.65 and that of the females was 20.41.

Measurements

Physical self-efficacy scale (PSE)

The PSE was developed by Ryckman *et al*. (1982) and measures a person's perceived physical competence and confidence that the person can display the physical skill to others. The instrument is based on the assumption that people's expectations of their own efficacy have an influence on their cognitive, affective, and behavioural patterns (Corcoran & Fisher, 1994).

The PSE contains 22 items with two subscales, perceived physical ability (PPA) and physical self-presentation confidence (PSPC), which combine to form the global physical self-efficacy scale. The PSE is presented in the form of a six point Likert scale.

The reliability of the PSE is high with alpha-coefficients for internal consistency of 0.84 for the PPA, 0.74 for the PSPC and 0.81 for the global PSE. Test-retest reliabilities over six weeks of 0.85 for the PPA, 0.69 for the PSPC and 0.80 for the PSE were also reported (Ryckman *et al*., 1982).

The construct validity, concurrent validity and discriminant validity of the PSE were investigated by Ryckman *et al*. (1982) and found satisfactory.

Adherence self-efficacy scale (AES)

The AES was developed by Garcia and King (1991) for a study of long-term exercise behaviour. The instrument consists of 15 items pertaining to exercise adherence. Participants rate their confidence that they would exercise under certain potential conflicting situations such as when tired and when the schedule is hectic on a six point Likert scale. Garcia and King (1991) reported a Cronbach alpha of 0.90 for internal consistency and a test-retest reliability coefficient of 0.67. No evidence of empirical validity is given, although construct validity is assumed as the instrument was constructed according to recommendations by self-efficacy theorists.

Outcome expectancy scale (OES)

The OES was developed specifically for the present study. No known instrument exists that measures outcome expectations for exercise participation. The items of the OES that were used in the present study were derived from selected outcomes that Rodgers and Brawley (1991) identified in a pilot study. Each outcome is first evaluated on the value that the

participant attaches to it and then on the likelihood that it would be reached. The likelihood scale is measured on a response continuum of 0% (very unlikely) to 100% (very likely), and the value scale on a 1 (little value) to 6 (great value) point Likert scale. In this study, the internal consistency of the OES was good, with a Cronbach alpha of 0.73. Unfortunately, no evidence regarding validity is available.

Measurement of exercise adherence

Exercise frequency was assessed by using the gymnasium's computer access system. The number of sessions that a member visited the gymnasium was checked on a weekly basis for six weeks to ascertain exercise frequency. To incorporate a person's intended behaviour, a scale to measure intended exercise frequency was included in the questionnaire. The frequency of exercise sessions at the gymnasium was then compared to the actual exercise frequency and expressed as a percentage of adherence. A follow-up questionnaire was completed with participants who did not keep up with their intended exercise frequency. This identified and eliminated confounding variables such as illness and other factors, besides the predictor variables under investigation, that might have had an influence on exercise adherence.

Procedure

Voluntary participants received a questionnaire that included information on the research, instructions, the three scales PSE, AES and OES as well as the scale to measure intended exercise. The participants completed the measurement instruments and handed them back at the gymnasium. Participants who responded to the questionnaire took part in the study without further direct contact with the researcher. Adherence was monitored for the following six weeks. A follow-up on participants who did not exercise at all in any one week was done to identify possible confounding variables like illness, work commitments and examinations. No such confounding variables were found and all the participants were included in the final analyses.

RESULTS

Multiple regression analyses, with physical self-efficacy, adherence efficacy and outcome expectancy entered as predictors, and exercise adherence as criterion, were conducted for the total group as well as for males and females separately. All the tolerance statistics were well below 0.2, a criterion suggested by Menard (1995). The assumption of no multicollinearity between predictors could therefore be accepted.

The results of the regression analysis for the total group are reported in Table 1.

TABLE 1. **RESULTS OF THE STEPWISE MULTIPLE REGRESSION ANALYSIS FOR THE TOTAL GROUP**

Model summary	
R	0.364
R square	0.133
Adjusted R square	0.122
Std. Error of estimate	0.4008

ANOVA					
Source of variation	df	Sum of squares	Mean square	F	p
Regression	1	2.013	2.013	12.528	0.001
Residual	82	13.175	0.161		

Coefficients					
	Unstandardized coefficients		Std. coefficients	t	p
	B	Std. Error	Beta		
Constant	-0.624	0.332		-1.881	0.064
Physical self-efficacy	0.013	0.004	0.364	3.539	0.001

Variable	Beta in	t	Sig. of t	Collinearity statistics Tolerance
Adherence efficacy	0.126	1.044	0.300	0.721
Outcome expectancy	-0.032	-0.279	0.781	0.821

For the total group, the overall regression model was significant (F[1, 82] = 12.53 , p=0.001), with the three predictors accounting for 13% of the variance in exercise adherence. However, only physical self-efficacy (β=0.36) emerged as a significant predictor of exercise adherence, with t=3.539, p=0.001.

TABLE 2. **RESULTS OF STEPWISE MULTIPLE REGRESSION ANALYSIS FOR MALES**

Model summary	
R	0.453
R square	0.205
Adjusted R square	0.186
Std. Error of estimate	0.3809

ANOVA					
Source of variation	df	Sum of squares	Mean square	F	p
Regression	1	1.533	1.533	10.566	0.002
Residual	41	5.948	0.145		

Coefficients					
	Unstandardized coefficients		Std. coefficients	t	p
	B	Std. Error	Beta		
(Constant)	-0.489	0.334		1.466	0.150
Adherence efficacy	0.016	0.005	0.453	3.251	0.002

Variable	Beta in	t	Sig. Of t	Collinearity statistics Tolerance
Physical self-efficacy	0.238	1.442	0.157	0.695
Outcome expectancy	-0.096	-0.624	0.536	0.831

For males separately (see Table 2), the overall regression model was significant (F[1, 41] = 10.566, p=0.002), with the predictors accounting for 20% of the variance in exercise adherence. Adherence efficacy (β=0.453) emerged as the only significant predictor of exercise adherence with t=3.251, p=0.002.

TABLE 3. **RESULTS OF STEPWISE MULTIPLE REGRESSION ANALYSIS FOR FEMALES**

Model summary	
R	0.320
R square	0.103
Adjusted R square	0.080
Std. Error of estimate	0.4176

ANOVA					
Source of variation	df	Sum of squares	Mean square	F	p
Regression	1	0.778	0.778	4.459	0.041
Residual	39	6.800	0.174		

Coefficients					
	Unstandardized coefficients		Std. coefficients	t	p
	B	Std. Error	Beta		
(Constant)	-0.395	0.429		0.921	0.363
Physical self-efficacy	0.010	0.005	0.320	2.112	0.041

Variable	Beta in	t	Sig. of t	Collinearity statistics Tolerance
Adherence efficacy	-0.109	-0.602	0.551	0.712
Outcome expectancy	0.038	0.229	0.820	0.862

The results for females (see Table 3) showed that the overall regression model was significant (F[1, 39] = 4.459, p=0.041), accounting for 10% of the variance in exercise adherence. As in the analysis for the total group, physical self-efficacy (β=0.320) emerged as the only significant predictor of exercise adherence, with t=2.112, p=0.041.

DISCUSSION

The results of this study partly confirm Bandura's (1977) theory regarding self-efficacy and is also consistent with research findings that have found efficacy beliefs to significantly influence exercise behaviour (Boykin, 1996; Rodgers & Gauvin, 1998; Martin & Sinden, 2001). Outcome expectations as an individual predictor did not reveal any significant results, which corresponds with research findings of Desharnais *et al*. (1986) that self-efficacy is a more central determinant of adherence than outcome expectations. These results differ from the results found by Boykin (1996) that outcome expectancy correlated significantly with exercise adherence. Resnick (2001) also found that outcome expectations contribute to engagement in

physical activity, but his sample consisted of older participants and cannot be compared to a student sample.

Rodgers and Brawley (1991) made a distinction between proximal (primary) and distal (secondary) outcomes when outcome expectations were assessed. They suggested that there is a clear difference in motivational value between proximal and distal outcomes. One explanation for the current study failing to find any contribution from outcome expectations could be that no methodological distinction was made between proximal and distal outcomes. Illustrating this is the fact that a single item in the Outcome Expectancy Scale ("Attaining a sense of accomplishment"), did show a significant correlation with exercise adherence. "Attaining a sense of accomplishment" is a secondary or distal outcome and it could be true that for this sample a secondary rather than primary outcome or outcomes may have influenced adherence.

There is no standardised instrument to assess outcome expectations in adherence research. This makes comparisons between adherence research difficult. In this regard Dzewaltowski *et al*. (1990) suggested that different methods of assessing outcome expectations should be compared in the future to determine whether the inconsistent results are due to a measurement problem. One such problem could be the fact that expectations should be realistic rather than strong to have a positive influence on adherence. This study and research by Desharnais *et al.* (1986) made provision for this measurement problem by hypothesising that a low rather than high outcome expectation would predict adherence. However, it does not account for persons who for a given outcome, attached a low or moderate value but felt that the outcome is very likely. This casts some doubt on the traditional value-likelihood or expectancy-value model for assessing outcome expectations as proposed by Rodgers and Brawley (1991).

The prediction of exercise adherence has been explored in a number of ways, including using self-efficacy and outcome expectations. Up to now however, researchers have used adherence efficacy as the only dimension of self-efficacy beliefs to explain exercise behaviour. Part of the aim of this study was to investigate the predictive value of physical self-efficacy compared to the currently used adherence efficacy. It was hypothesised that physical self-efficacy would have a greater predictive power than adherence efficacy. This hypothesis was supported when the total group was taken into account, with physical self-efficacy the only significant predictor of exercise adherence.

Ryckman *et al*. (1982) found that persons with higher perceived physical self-efficacy had a higher self-esteem, were less self-conscious and anxious, had an internal locus of control, were more sensation-seeking, and showed a tendency to engage in adventurous physical activities. Furthermore, these persons saw themselves as physically competent and reported more varied and extensive sports experience. It could be concluded from these results that for this sample, physical self-efficacy was a better predictor of adherence than adherence efficacy. At the very least it gives a new dimension to the prediction of exercise adherence through self-efficacy.

Regarding the differences between males and females, there was a different significant predictor for each gender. For men adherence efficacy was the only significant predictor, while physical self-efficacy was the only significant predictor for females. Vandeventer (1996) also found that physical self-efficacy was positively correlated for women, but in contrast to the present study, she found this positive correlation for men also. Support for the finding that adherence efficacy did not play a significant role in the prediction of adherence for women, is

found in research by Poag and McAuley (1992). They examined the relationship between goals, efficacy, importance and exercise behaviour and found that although adherence efficacy predicted intensity of exercise, it was not related to the frequency of participation.

Gender-related socialization could also explain why adherence efficacy predicted adherence for men and not women. Men who scored high on adherence efficacy could have seen adhering to an intended exercise programme as a demonstration of their masculinity.

Although only physical self-efficacy (for the total group and for females) and adherence efficacy (for males) were significant individual predictors of exercise adherence, the overall regression models, with physical self-efficacy, adherence efficacy and outcome expectancy included as predictors, were all significant and explained between 10% and 20% of the variance in exercise adherence. Research is needed to develop a standardized instrument for assessing outcome expectations based on the self-efficacy theory. Conflicting results regarding the role of outcome extectations in exercise adherence could be attributed to the lack of such an instrument.

The results of this study could have implications for the exercise and fitness industry. If self-efficacy beliefs are consistently shown as positive contributors towards exercise adherence, then exercise programmes must incorporate elements that will enhance efficacy beliefs, for instance, by altering participants' expectations and self-efficacy at the start of an exercise programme.

It is important to keep in mind that the results of this study cannot be generalized beyond a student population. More research is needed for different populations, especially regarding previously disadvantaged communities where adherence to exercise regimes could promote the general quality of life and possibly contribute to a drop in crime rates in these communities.

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AN ANALYSIS OF SKILLS REQUIRED FOR SELECTED SECTORS OF THE TOURISM INDUSTRY

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ABSTRACT

Tourism is a relative newcomer to the academic repertoire and literature on the subject revealed a plethora of issues which need to be addressed when offering training programmes in tourism and hospitality studies. One of the most significant problems is the fact that tourism educators, guided by their individual biases, design tourism curricula with little or no input from the industry. The aim of the research is to determine what skills are required by industry for travel agents, tour operators and tourist guides. A two-pronged approach was followed: A literature study as well as a survey. For the survey a questionnaire, covering a wide range of variables divided into eight categories, was used to obtain the opinions of travel agents, tour operators and tourist guides. The surveys were conducted as structured telephonic interviews with representatives of cities and towns in Gauteng Province, Republic of South Africa. The results indicate which aspects are rated as important by the industry that should be included in tourism curricula. The results were divided into three categories namely tourism specific, general and business knowledge.

Key words: Tourism education; Skills tourist guides; Tour operators; Travel agents.

INTRODUCTION

The tourism industry has developed rapidly since World War II. By 1991 worldwide tourism expenditure exceeded the GNP of all but three countries (Hall, 1991:3) and it is growing at a pace more rapid than most economies (2.8% in 1998) while a report of the World Tourism Organisation (WTO) indicates that tourist arrivals grew by 2.4% in 1998 (WTO, 1998). This tremendous growth of the industry has not been achieved without effort, as tourism has had to meet the challenges of economic uncertainties, political upheavals, deregulation and shifts in the levels of consumer confidence with a remarkable degree of ingenuity, management flexibility, marketing skills, commitment to service quality, and a responsibility towards the travelling public. In spite of these challenges tourism will continue to be a growing industry because the factors that have been responsible for its growth during the past decade are still continuing (Harrison & Husbands, 1996:2; World Bank, 1998; WTO, 1998).

South Africa has a phenomenal tourism resource base and this tremendous growth should also have been prevalent in this country. This has however not been the case. Although the first democratic election of the country in 1994 dramatically changed the country's tourism prospects (Msimang, 1995:20) and the more favourable political climate has led to an increase of international tourist arrivals (Saayman, 1996; Hicks, 1997:7), the tourism industry has not been able to reach its full potential (South Africa, 1996:4). One of the reasons for this

stipulated in the White Paper on Tourism is inadequate tourism education and training (South Africa, 1996:4; Saayman & Van der Merwe, 1996; Business and Marketing Intelligence (BMI), 1997:1). Various international studies, such as the one conducted by Sheldon and Gee in Hawaii, concluded that the success of the travel industry in any destination is dependent on the quality of its staff (Sheldon & Gee, 1997:173).

Wood (1995:29) and Croukamp (1996:14) point out that South Africa, like many other countries, relies heavily on tourism for its economic prosperity. In order to maximise the benefits of tourism, South Africa should however, not rely solely on foreign expertise to meet its skilled labour requirements as this would result in tourism-generated revenue leaking out of the country. This will happen through management fees and allowances for multinational enterprises and their expatriate personnel, while South African citizens would be left with the low-skilled jobs, as has been the case in so many third world countries. To prevent this the South African government will have to ensure that training is more accessible and affordable (South Africa, 1996:29).

PROBLEM STATEMENT

Although tourism is a relative newcomer to the academic repertoire, the literature on tourism education has increased substantially over the last two decades. The literature reveals a plethora of issues which arise when offering tourism and hospitality education and training programmes, ranging from the positive and negative aspects of a multi-disciplinary approach to tourism (Leiper, 1981), to the academic credibility of the study of tourism (Evans, 1988). One of the most significant problems identified is that tourism curricula are designed by tourist educators, who, guided by their individual biases, do so with little or no input from industry (Keyter, 1982; Knutson, 1989; Wolfire, 1990; Golden, 1992).

The literature study revealed a number of studies undertaken to develop tourism curricula in conjunction with industry. One such study was undertaken by Koh (1994:853) to develop a 4-year tourism curriculum where the views from the US industry were solicited specifically to likely tourism developments in the 1990's, the types of human resources that would be most needed by the industry and the scope of knowledge/skills 4-year tourism graduates would be expected to have. The panel suggested that the curriculum should comprise 40% general education, 30% business education, 23% tourism-specific education and 5% experiential education. A similar study, conducted in Hawaii by Sheldon and Gee (1997:173-178), which covered the entire travel industry and canvassed the opinions of both employers and employees, confirmed Koh's findings. Cooper (1996), working under the auspices of the World Tourism Organisation (WTO), consulted industry, government and educational representatives world wide to determine the key skills required by all parties, and came to the same conclusions as Koh, and Sheldon and Gee.

Apart from the above mentioned skills, the vocational skills that successful travel agents should have, as suggested by various authors such as Reiff (1990), Stevens (1990), Howell (1993), Davidson (1994), Van Harssel (1994), Syratt (1995) and Horner (1996) were also included. The same was done for the tour operator and tourist guide sector for which authors such as Reilly (1991), Howell (1993), Pond (1993), Sarbey De Souto (1993), Yale (1995), Mancini (1996) and Laws (1997) have identified vocational skills.

In order to address the quality of personnel in the tourism industry, educators and trainers have to bear other relevant aspects in mind. International trends in lifelong learning, multi-skilling needs and global competitiveness indicate the need for rethinking education and training systems in South Africa. The development of the NQF (National Qualifications Framework) has placed the country at the cutting edge of these world developments. However the following problems face tourism education:

- Tourism is often used as case study material to add interest to, and to enrich, other disciplines such as economics and geography (Geldenhuys, 2001).
- Tourism education is multi-disciplinary in its approach, and contains elements which are attractive to other disciplines (Howell & Uysal, 1987:62).
- Tourism is a relatively young subject area and therefore lacks the history and evolution of some of the more mature fields of study (Goeldner, 1988). Howell and Uysal (1987:62) argue that tourism is an emerging discipline with a rapidly changing empirical research base.
- The approach to tourism education is currently a fragmented one (Howell & Uysal, 1987:62; Stephen & Moutinho, 1989:119) and there is a lack of clear direction for sustained development.
- Howell (1993:34) maintains that the tourism industry is dominated by small businesses, which are led by entrepreneurs and self-made people who do not have any formal tourism training. These men/women do not necessarily recognise the need to support tourism courses which will increase the overall professionalism of the industry (Pearce *et al*.; 1998:368).
- Another problem identified by Pearce *et al*. (1998:368) is that higher education institutions offering tourism courses experience a lack of respect within their own institutions and the community.
- The shortage of tourism staff with appropriate industry experience in industry and relevant qualifications is a serious problem (Geldenhuys, 2001; BMI, 1997:122).
- Globalisation requires a change in the training and education in the tourism industry (Keller, 1996).
- The boom in information technology will also affect the tourism industry (Frangialli, 1999; Zoreda, 1999).
- The vast body of knowledge and research issues creates its own set of problems for tourism educators (Saayman, 2000).
- There is a lack of co-operation and interaction among the different stakeholder groups, the training suppliers, the private sector, the government and industry associations (Stephen & Moutinho, 1989:121; Go, 1994:345; Van der Merwe, 2000:42).
- There seems to be a lack of trainer understanding pertaining to private sector training needs (BMI, 1997:132; Van der Merwe, 2000:42).
- Too few and inadequate standard control and accreditation systems are in place.
- Students from previously disadvantaged communities have little or no travel experience. Their limited frame of reference created difficulties when lecturers have to explain certain concepts (Sime & Potgieter, 2000).
- Despite the White Paper on Tourism of 1996, which emphasises the cruciality of training and education for the tourism industry's success, there is a lack of understanding from Government in this regard, which does not give training the priority it deserves (Van der Merwe, 2000:41).

While tourism educators in South Africa face the same problems as their international counterparts, they have to deal not only with the unique South African situation in education and training, where large sections of the population have had little or no formal education, but also with the challenges that a changing society and tourism industry present. The successful political transformation in South Africa has opened the country's tourism potential to the rest of the world, and indeed to the previously disadvantaged groups in society. With this in mind Saayman (1998) is concerned that training should be focussed on the preparation of employees to cater for a new type of tourist, in order for South Africa to stay competitive in a

global tourism market. Ferrario (1986:332-348) maintains that it is imperative to understand the evolving patterns of leisure activities of the various population groups in South Africa, and to appreciate the extent of change in a complex society in order to address domestic tourism.

To aggravate matters the report brought out by BMI (1997:119) states that respondents from the travel sector have accused traditional training institutions of offering non-practical, non-directed courses in general tourism, with course content that has very little practical application in the travel service sector. Because of the entry-level skills of travel graduates from the traditional tertiary training institutions and private colleges, a large proportion of private employers in the travel sector prefer to employ school leavers, who are given the necessary in-house and on-the-job training. The inappropriateness of the training received by students at tourism institutions, is cited as the key influence driving this industry trend. This has been confirmed by research done by Van der Merwe (2000). The BMI report (BMI, 1997:120) also states that only 20% of graduates with the 3-year National Diploma from Technikons in South Africa find permanent employment in the tourism sector.

Based on the above this study attempted to address the following problem: What are the skills required by industry for travel agents, tour operators and tourist guides?

METHODOLOGY

A two-pronged approach was followed: A literature study as well as a survey. The aim of the literature survey was to determine which skills should be included in the questionnaire. The results of the literature study were used to draw up the questionnaire.

Literature study

The literature study was based on a qualitative study, which included monographs, journal articles, conference papers, theses and dissertations, other tourism-related literature as well as sources on education and training. Information searches were conducted mainly on library catalogues and indices, as well as the Internet. Information was also gained from communication on a personal level with individuals from the tourism industry and training institutions, as well as from previous South African Tourism Board (SATOUR) research. Themes of conversation included: Travel Agents, Tour Operators, Tourist Guides, Education, Training, Tourism Industry and Tourism. From the literature study a list of skills were identified (Tables 1, 2 and 3) that was then rated by the various sectors of the tourism industry to determine their importance and relevance.

A questionnaire was compiled covering a wide range of variables that were divided into eight categories (based on the results of the literature reviews):

1) A general section.
2) Personality traits.
3) Vocational skills.
4) General education.
5) Business education.
6) Languages.
7) Tourism-specific education.
8) Experimental training.

Survey

The same questionnaire was used for retail travel agents, tour operators and tourist guides. The respondents were asked to rate (on a five-point Likert scale) the required skills, where 5=very important and 1=unimportant.

The three sets of the survey were conducted as telephonic interviews, using structured questions with employees at all levels within the designated sectors. The interviews were conducted with representatives of establishments in cities as well as towns throughout Gauteng Province in South Africa during the months of April and May 2000. A proportional random sample was drawn from the membership of registered ASATA (Association of South African Travel Agents) travel agencies, SATOS (ASATA Outgoing Members) tour operators and tourist guides accredited by SATOUR in Gauteng Province to accurately reflect the constituency of the mentioned sector. 46 Retail travel agencies, 11 outbound tour operating businesses and 54 tourist guides, representing 25%, 57% and 10% of the respective sector were interviewed.

The Statistical Consultation Service of Technikon Pretoria processed the data. The information was then analysed to determine the skills required for travel agents, tour operators and tourist guides.

RESULTS

The following results were obtained from the research.

The first table indicates the view of the respondents regarding the required level of general education. Tables 2 and 3 deals with business education and tourism specific education respectively.

TABLE 1. **GENERAL EDUCATION FOR TRAVEL AGENTS, TOUR OPERATORS AND TOURIST GUIDES**

GENERAL EDUCATION		**5**	**4**	**3**	**2**	**1**
Computer skills	Travel Agent	76.9	7.7	7.7	7.7	
	Tour Operator	100				
	Tourist Guide		8.8	20.6	14.8	55.8
Artihmetical skills	Travel Agent	7.7	15.4	30.8	7.7	38.5
	Tour Operator	33.3	16.7			
	Tourist Guide	5.8	35.2	44.4	5.8	8.8
COMMUNICATION SKILLS						
Telephone skills	Travel Agent	100				
	Tour Operator	100				
	Tourist Guide	14.7	44.2	20.5	5.8	14.7
Business writing	Travel Agent	61.5	23.1	7.7	7.7	
	Tour Operator	33.3	33.3	16.7		
	Tourist Guide	26.5	26.5	35.3	11.7	

Listening skills	Travel Agent	100				
	Tour Operator	66.7	33.3			
	Tourist Guide	47	50	3		
Language skills	Travel Agent	100				
	Tour Operator	66.7	16.7	16.7		
	Tourist Guide	44.1	52.9	3		
Negotiation skills	Travel Agent	100				
	Tour Operator	66.7	33.3			
	Tourist Guide	29.4	55.8	11.8		2.9
Presentation skills	Travel Agent	69.2	15.4	15.4		
	Tour Operator	66.7	16.7	16.7		
	Tourist Guide	26.4	73.5			
Interpersonal skills	Travel Agent	61.2	38.8			
	Tour Operator	83.3	16.7			
	Tourist Guide	17.6	76.5	5.8		
Leadership/social skills	Travel Agent	76.9	15.4		7.7	
	Tour Operator	83.3	16.7			
	Tourist Guide	32.4	64.7	2.9		

GENERAL EDUCATION		**5**	**4**	**3**	**2**	**1**
Organisational skills	Travel Agent	84.6	15.4			
	Tour Operator	83.3	16.7			
	Tourist Guide	26.5	70.6	2.9		
Research skills	Travel Agent	61.5	38.5			
	Tour Operator	66.7	16.7	16.7		
	Tourist Guide	8.8	64.7	26.5		
Ethical/social responsibilities	Travel Agent	38.5	46.2	15.4		
	Tour Operator	50	33.3	16.7		
	Tourist Guide	32.4	55.9	8.8	2.9	
Societies & cultures of the world	Travel Agent	23.1	46.2	23.1	7.7	
	Tour Operator	66.7	33.3			
	Tourist Guide	23.6	64.7	8.8	2.9	
Cultural sensitivity	Travel Agent	61.5	23.1		7.7	7.7
	Tour Operator	16.7	50	16.7	16.7	
	Tourist Guide	58.9	41.1			
Use of natural resources	Travel Agent	53.8	30.8	7.7	7.7	
	Tour Operator	83.3	16.7			
	Tourist Guide	32.3	58.9	8.8		

Leisure appreciation	Travel Agent	69.2	23.1	7.7		
	Tour Operator	83.3	16.7			
	Tourist Guide	14.6	50	23.6	5.9	5.9

From Table 1, the following can be concluded:

- Computer skills were rated by both travel agents and tour operators as extremely important. Only 7.7% of the travel agents did not think computer skills were important. However, the majority of tourist guides, almost 70%, thought it was not important.
- Travel agents regard communication skills as extremely important. In all of the identified categories of communication skills except business writing, 100% of the respondents rated these skills as extremely important. 16.7% of tour operators rated business writing as not important at all, although all the respondents in the tour operation sector rated all the other categories of communication at least as important. The reason may be that most of the documents they require are prepared and their function is only to send these out to customers. Tourist guides did not rate telephone skills and business writing as highly as their counterparts in the retail travel and tour operations sector, but this was expected as this is not an integral part of their daily activities. One would, however, have thought that more of the respondents in this sector would have rated listening and language skills as extremely important.

TABLE 2. **BUSINESS EDUCATION FOR TRAVEL AGENTS, TOUR OPERATORS AND TOURIST GUIDES**

BUSINESS EDUCATION		**5**	**4**	**3**	**2**	**1**
Management theories	Travel Agent	61.5	30.8	7.7		
	Tour Operator	83.3	16.7			
	Tourist Guide	8.8	61.7	17.6	2.9	8.8
Human resources	Travel Agent	69.2	15.4	7.7		7.7
	Tour Operator	66.7	33.3			
	Tourist Guide	8.8	41.2	29.4		
Resort management	Travel Agent	38.5	23.1	23.1		15.4
	Tour Operator	66.7	33.3			
	Tourist Guide	2.9	2.9	20.6	47.1	26.5
Marketing theories	Travel Agent	38.5	23.1	30.8		7.7
	Tour Operator	66.7	16.7	16.7		
	Tourist Guide	5.9	52.9	23.5	5.9	11.8
Selling skills	Travel Agent	76.9	7.7	7.7	7.7	
	Tour Operator	66.7	33.3			
	Tourist Guide	5.9	58.9	20.6	5.9	8.8
Principles of service management	Travel Agent	61.5	23.1	7.7		7.7
	Tour Operator	16.7	50	16.7		16.7

	Tourist Guide	5.9	61.8	26.6	2.9	2.9
Entrepreneurship and innovation	Travel Agent	61.5	23.1	15.4		
	Tour Operator	83.3		16.7		
	Tourist Guide	11.8	41.2	35.3	8.8	2.9
Accounting principles	Travel Agent	53.8	23.1	15.4		7.7
	Tour Operator	83.3	16.7			
	Tourist Guide		14.7	64.7	14.7	5.9
Principles of finance	Travel Agent	53.8	23.1	15.4		7.7
	Tour Operator	66.7	33.3			
	Tourist Guide		20.6	64.7	8.8	5.9
Principles of economics	Travel Agent	38.5	30.8	15.4		15.4
	Tour Operator	83.7				16.7
	Tourist Guide	2.9	29.4	50	14.7	2.9

From Table 2 the following can be concluded:

- Nearly 11% of the tourist guides did not think it was important to include management theories in an education tourism curriculum and only 8.8% rated it as extremely important. As most of the respondents interviewed were self-employed this is an unexpected result. 100% travel agents and tour operators rated this education skill at least as important.
- Only 7.7% of the travel agents and nearly 20% of the tourist guides thought that human resources as an educational theme was not important. This could be explained by the fact that most of the tourist guides are self-employed one-man shows and some of the travel agents work for small businesses where this function probably does not receive much attention. All the tour operators rated it as very important.
- An extremely high percentage of the travel agents (84%) and tour operators (100%) rated resort management as important whereas of their colleagues in the tour guiding sector approximately 73% did not think this was important. The fact that such a high percentage of the travel agents and tour operators rated this as important was not expected at all, for the mere fact that they do not have to apply these skills in their day to day work.

TABLE 3. **TOURISM SPECIFIC EDUCATION FOR TRAVEL AGENTS, TOUR OPERATORS AND TOURIST GUIDES**

TOURISM-SPECIFIC EDUCATION		**5**	**4**	**3**	**2**	**1**
Tourism geography	Travel Agent	61.5	30.8	7.7		
	Tour Operator	83.3				16.7
	Tourist Guide	52.9	44.1	2.9		
Product knowledge	Travel Agent	61.5	38.5			7.7
	Tour Operator	66.7	33.3			
	Tourist Guide	61.8	38.2			

Principles of facility planning	Travel Agent	15.4	46.2	38.5		
	Tour Operator	66.7	33.3			
	Tourist Guide	17.6	64.7	8.8	8.8	
Special events	Travel Agent	23.1	46.2	23.1	7.7	
	Tour Operator	83.3	16.7			
	Tourist Guide	2.9	58.8	32.4		5.9
Tourism law	Travel Agent	61.5		30.8	7.7	
	Tour Operator	33.3	33.3	16.7		16.7
	Tourist Guide	2.9	35.3	47.1	14.7	
Tourism research methods	Travel Agent	76.9	7.7	7.7	7.7	
	Tour Operator	66.7			16.7	16.7
	Tourist Guide	8.8	61.8	17.6	11.8	

TOURISM-SPECIFIC EDUCATION		**5**	**4**	**3**	**2**	**1**
Tourism development policies	Travel Agent	61.5	15.4	23.1		
	Tour Operator	50	50			
	Tourist Guide	11.8	61.6	8.8	11.8	5.9
Hospitality operations	Travel Agent	30.8	53.8	15.4		
	Tour Operator	66.7	16.7			
	Tourist Guide	5.9	20.6	11.8	38.2	23.5
South African cultures	Travel Agent	46.2	38.5	7.7		7.7
	Tour Operator	66.7	33.3			
	Tourist Guide	55.9	38.2	5.9		

From Table 3, the following can be seen:

- It is surprising that 16.7% of the tour operators rated tourism geography as not important. However 100% of the travel agents and tourist guides thought this was important. An overwhelming 83.3% of the tour operators rated this skill as extremely important as opposed to 61.5% of the travel agents. One would have expected more respondents from the latter category to rate tourism geography as extremely important, as this section of the tourism industry uses this skill daily when planning itineraries. A lack of knowledge of tourism geography could have dire consequence, especially for the corporate travel agent. The reason why travel agents rated this skill lower than was expected could be a direct result of the ease with which information can be found nowadays. Most travel agencies are linked to the Internet and are able to access information effortlessly. 16.7% of the tour operators rated this skill as not at all important. The only explanation for this could be that the tour operators who were interviewed are out-bound operators who act as reservation clerks selling pre-packaged tours. With larger tour operators in South Africa there is a certain amount of specialisation and consultants are briefed on destinations or work under supervision for a certain period of time. These consultants would therefore be

able to answer questions pertaining to the product. Should they encounter questions they are unable to answer, they could find out and phone back. There is considerable less pressure on the tour operator than on the travel agent who could have a corporate customer in front of him demanding an immediate answer. Tourist guides have to have a thorough knowledge of the region in which they are guiding and this knowledge is tested in the accreditation examination. This could be an explanation for the lower percentage of this group rating this skill as not extremely important.

CONCLUSIONS

The aim of this paper was to identify what skills are required by industry. The latter also had to rate the importance of the skills. This could then be used by academics to develop tourism curricula. A literature study identified the various skills which were then rated by the industry. From this the following conclusions can be drawn.

General education is seen by all three categories as being important. It is therefore reasonable to conclude that these aspects should be included as core modules in all training programmes targeting prospective employees for these sectors (travel agents, tour operators and tourist guides) of the tourism industry.

The majority of the respondents from the three different sectors were in agreement that business education should be included in a curriculum with the exception of resort management that were rated low by the tourist guides. The latter was to be expected.

With regard to the tourism specific education all three groups rated all aspects (except hospitality operations) of this educational cluster as important. Tourist guides did not see the value of hospitality operators, which is an aspect that they don't really deal with.

It was surprising that only the tourist guiding sector was in favour of a generic course. The majority of travel agents (92.3%) and tour operators (100%) preferred specific training and education. As a result the survey indicate a considerable overlap between the training requirements indicated by the three sectors, it would make sense to offer a generic course to train and educate travel agents, tour operators and tourist guides. The general, business and tourism-specific as well as language requirements seem to be the same and should be included in all tourism curricula for students preparing to enter these sectors of the tourism industry. Certain electives could be offered to address the specific needs of the retail travel, tour operator and tourist guiding sectors. If these skills are compared with what technikons are offering in their B Tech: Tourism Management Programmes, it appears that this qualification compares well with what industry requires as well as what is offered at other international universities. It should however be noted that the depth of these offerings has not been measured. More research on solutions to the problems as was identified in the literature study needs to be done.

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THOUGHT SAMPLING OF CRICKETERS DURING BATTING

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ABSTRACT

Researchers and practitioners have expressed the need for the use of qualitative methodological techniques in sports psychology research. In response to this challenge, the authors applied a multiple-case study research strategy and in-depth interviews to identify the experiences of three potentially elite, top-order cricket batsmen during batting. The content analysis of the thought-sampling data obtained from nine interviews (i.e., a baseline interview followed by interviews subsequent to one good and one poor batting innings for each participant) revealed three major dimensions, namely, cognitions, affect and related behaviours. Within the cognitive dimension, four categories were identified, namely, task-focused thoughts, where strategy thoughts were predominant, positive/motivational thoughts such as self-praise, negative/inappropriate thoughts such as premeditation of shots and worries and doubts, and lastly, assorted thoughts. The affect dimension comprised categories of positive/normal affective states and negative affective states. The categories of related behaviours were batting strategy, behavioural routines, inter-personal issues, observation, physical practice, reaction to unfavourable situations, visual focus and warm-up. Based on the findings of the study, implications for practice are outlined.

Key words: Attention; Cognitions; Cricket batting; Self-talk.

INTRODUCTION

Few areas in sports psychology are considered as important to overall performance as the area of concentration or attention (Cox, 1985). The ability of athletes to control their attention and direct it to task-relevant cues is critical for the enhancement of their performance (Nideffer, 1979; Singer *et al*., 1991). Cricket specialists have supported this view (Gordon, 1990; Winter, 1992).

The game of cricket, and specifically the activity of batting, is peculiar in a number of ways. It shares characteristics of both team and individual sports. Although, like baseball and softball,

cricket is classed as a team game, each individual's batting score is recorded separately. Specialized roles within the cricket team of eleven players include bowler, wicket-keeper, all-rounder (usually batting and bowling) and batter. The number of runs scored by an individual is inevitably used as a criterion for selection purposes, specifically for specialist batters and all-rounders. The cricket batter has one or two chances to bat during a game, depending on whether it is a single-innings or double-innings match. One fleeting lapse in concentration can lead to the batter's dismissal, and unlike players in most other sports, he/she generally has no chance to

recover from mistakes. Cricket also shares some characteristics with the game of golf in that the batter, like the golfer, may have to concentrate for many hours (up to eight hours per day). He/she therefore has to learn to "switch on" and "switch off" the intensity of concentration throughout his/her batting innings. The period of a cricket batter's innings on any one day may be as short as the time that it takes to face one delivery from the opposing bowler, and as long as a full day's play (eight hours), and his/her attentional processes play a vital role in ensuring a successful batting innings.

The important role of cognitions, which may influence the attentional focus of the athlete, is also widely acknowledged. Kirschenbaum and Bale (1984) maintain that the successful execution of motor actions is often affected by cognitive or thought processes, and therefore certain cognitive abilities or skills have a distinct effect on sports performance. Singer (1984) supports the view that appropriate cognitions are essential for skilled behaviour. He states that cognitive processes are continually active in training and orientation for the sports contest, directing activities during the contest and interpreting and adjusting to the outcome of competition. Athletes need to learn to control their thoughts and feelings in order to optimise arousal levels during meaningful events with uncertain outcomes (Singer *et al*., 1991). In their research with skilled female collegiate tennis players, Landin and Herbert (1999) found that the players experienced increased confidence, and improved movement patterns and outcome scores following the implementation of a simple two-word self-talk strategy designed to improve their volleying skill.

Despite the important role of self-talk in sports performance, limited systematic research has been done in this area. Hardy and Jones (1994) conducted a survey using 37 British and international sports psychologists on what they considered priorities for sports performance-related research over the following 5-10 years. They concluded that, in the area of psychological skills-training, there is a definite need for the development of techniques for collecting and analysing self-statements, the use of self-statements to cue psychological skills such as anxiety and attention control, and the development of techniques for training athletes to use self-statements appropriately.

The cricket batter has a reasonable length of time to deliberate in the control processing mode, and the aim of this study is to identify the thoughts which take place at strategic times before, during and after an innings in a match situation. It is reasoned that these cognitions should provide an indication of the batter's attentional focus in the batting situation.

METHOD

Participants

Purposive sampling was utilized to select the three study participants who were members of the Eastern Province Cricket Academy and from whom informed consent was obtained. All

participants were considered by the Director of the Academy to be top/middle order batters (positions 1 to 5), and played in one of the two University of Port Elizabeth (UPE) premier league teams. All three were first year university students, with ages ranging from 18 to 20 years. The participants were considered to be representative of potentially elite specialist batsmen, and an exploration and description of the three cases were considered sufficient to saturate the themes identified.

Procedures

In order to ensure that the data obtained in this investigation are valid, the guidelines proposed by Eklund *et al*. (1993) with regard to gaining entry into the cricket setting were heeded as closely as possible. Considerations recommended include the researcher as a person, connections to the setting, account of the proposed research, knowledge of the field setting, and courtesy.

A concerted effort was made to develop trust and rapport with the participants before the main investigation began, and it remained a priority throughout the study. Research, as well as psychological consulting, had been undertaken with the UPE cricketers prior to this investigation, and therefore the primary researcher (first author) had close connections with the potential study participants. Prior to the start of the investigation a brief, straightforward and appropriate account of the proposed research was given to the Director of the UPE Cricket Academy, who made valuable contributions to the investigation protocol. Potential participants were identified, immediate interest in the study was shown by each participant, and permission to be part of the study was granted by the individuals. During their first interview, each participant was given an explanation and outline of the proposed study.

The primary researcher's knowledge of the cricket setting is adequate as a result of previous research in the field and much reading about the sport. It was therefore easy to understand individual predicaments and empathise with the participants. Experience as a national and provincial sportsperson and coach, added to the easy establishment of rapport with the cricketers.

Participants were always treated with courtesy and respect, and the primary researcher refrained from enforcing any participation upon them. The completion of match detail sheets and interviews was voluntary and done at times convenient to the participants. The performance of the cricketers was seen as a priority, and the utmost was done to ensure that the investigation in no way interfered with the individual's performance. The primary researcher remained sensitive to the dynamic, often pressure-filled sports environment.

Data collection

In order to gain a thorough overview of the experiences of cricket batsmen relating to batting, an extensive list of possible batting-related scenarios was drawn up by the first author. After a pilot study had been undertaken, a revision was made of the interview questions. This revised version of the set of open-ended questions was presented to a national cricket coach, a national player (specialist batsman and captain) and a sports science academic (who has also been a specialist provincial batsman) for their input regarding important scenarios relating to cricket batting. Their expertise was used in drawing up the final draft for the interviews.

In-depth retrospective interviews were used to gather data on the cognitions of the batsmen. This entailed semi-structured, direct, personal interviews in which a single respondent was asked a set of open-ended questions regarding thoughts or self-talk relating to batting in cricket. Videos of the respective batting innings were used to aid recall.

At least three interviews were conducted with each participant. Gould *et al*. (1992a, 1992b) suggest that multiple interviews be held with athletes over time in order to determine mental processes, and it was deemed sufficient to make use of baseline data, together with data relating to

one successful and one unsuccessful performance, to explore and describe experiences relating to cricket batting in this investigation.

Prior to the start of the league cricket season, an initial interview was undertaken to brief each participant as to the objectives of the study and the role that he would play, to ensure the participant of the confidentiality of the data, and to confirm his willingness to act as an honest and reliable participant in the study. After the initial briefing, and a few rapport-developing questions (e.g., When did you start playing cricket?), the participant responded to the semi-structured open-ended set of questions as he generally experienced the situations during batting.

Apart from a baseline interview (Appendix A), at least a further two interviews were conducted with each participant during the course of the first half of the cricket season. One interview followed a good innings and one a poor innings (as rated by coach and participant). Applicable questions from the baseline interview protocol were used during these subsequent interviews.

The advice of Gould and his colleagues (1992a, 1992b) was heeded in that a video recording was made of each participant during Eastern Province premier league and South African Universities (SAU) matches in order to aid recall of thoughts during batting. Matches comprised 60 batting overs per team, played on one day.

With the aid of a video recording of the particular batting innings, the participant was required to recall and then reconstruct from memory his thought content while batting in that particular cricket match which took place a day or two prior to the interview. In the case of the interviews at the SAU tournament, the video recordings were not used. All interviews were tape-recorded on audiocassettes with permission from the participants, and transcribed verbatim and content-analysed at the end of the data collection process.

The video recordings proved invaluable when preparing for and undertaking the post-match interviews, especially when the relevant batting innings stretched over a relatively long period. Subsequent to the match, the primary researcher viewed the video recording, taking note of relevant occurrences, and, using this material together with the match analysis sheet, structured the interview.

Data analysis

The data were in the form of words, and therefore content analysis was the appropriate method for the analysis of the data. Berelson (1952:18) defines content analysis as "a research technique for the objective, systematic, and quantitative description of the manifest content of communication".

Guidelines for the organization and interpretation of unstructured data as proposed by Côté and his colleagues (Côté & Salmela, 1994, 1996; Côté *et al*., 1993; Côté *et al*., 1995) were followed in the content analysis of the interview data. A brief outline of the steps undertaken follows:

1. Each completed interview was transcribed verbatim.
2. The text of each interview was then divided into significant pieces of information or meaning

units.

3. Through the process of induction, the meaning units were compared and regrouped into common themes, referred to as properties, which were named according to the common features shared by all their meaning units.
4. Properties were likewise compared and regrouped into sub-categories and subsequently into larger and more embracing categories.
5. The final step in the inductive process involved the grouping of categories into themes at the highest level of analysis referred to as dimensions.
6. Deductive re-examination of transcripts and themes of greater generality (dimensions and categories) was conducted to ensure that the meaning associated with the raw data meaning units had not been misconstrued in the analytic process or in the generation of labels for the themes of greater generality.

Frequency counts were used as a means of verifying that all the coding units were included in the content analysis of the data, and to promote meaningful interpretation. The results, however, are not reported in terms of frequencies or percentages because of the small sample size.

In order to assure the trustworthiness of the data collection and the data analyses procedures, the following measures were taken: The prevention of response bias during interviewing as best as possible; the use of audiotapes and videotapes for data collection; the collection of data over a three-month period; the presentation of explicit protocols for the planning, execution and reporting of the study; the employment of an independent coder to validate the results; and the reviewing of the drafts by the participants concerned.

RESULTS AND DISCUSSION

A summary of the results from the thought sampling content analysis from the nine interviews follows. Tables 1 to 3 present a summary of the properties (raw data themes), sub-categories and categories induced from the interview data, within the dimensions Cognitions, Affect, and Related Behaviours. The three participants contributed equally to the data collection process, and data from the nine interviews were combined in the data analyses procedure.

When considering the overall or combined experiences of the three participants who formed the sample group in relation to cricket batting, a number of observations can be made. These are discussed according to the induced dimensions.

Cognitions

Table 1 provides a summary of the categories, sub-categories and properties (raw data themes) of the Cognitions dimension. An example of a quote that fits within the Cognitions dimension, the Negative/Inappropriate thoughts category, the Inappropriate strategy choice sub-category and the Shot premeditation property is: “You start basically nominating balls as well. You think to yourself, okay, where is this ball going to go”.

TABLE 1. **SUMMARY OF COGNITIONS DIMENSION: CATEGORIES, SUB-CATEGORIES AND PROPERTIES**

Categories	**Sub-categories**	***Properties*** **(Raw data themes)**
		Ball flight
		Batting conditions
		Field placings
	Environmental feedback	
	Evaluation	

Match situation/state Opposition's strategy Scoring possibilities
Dismissal
Important other's evaluation Performance
Performance comparison with a model

General match focus	*General match focus*
	Performance goals
Goals	
Partner communication	

	Short-term outcome goals *Vague outcome goals Batting order* *Opposition bowler's strategy* *Positive reinforcement / encouragement Strategy*	
Task-focused thoughts	Pre-delivery routine	*Pre-delivery routine* *Equipment preparation*
	Pre-match organization	
	Strategy	

Physical warm-up
Pre-match preparation

Acceptable run rate Attacking strategy Backing up Circumspection Defensive strategy Dictating to the bowler Dominating the strike Increasing effort to score Irritating the bowler
Negatively phrased instruction Opposition strategy Opposition and personal strategy
Personal strategy
Positively-phrased instruction Positively- and negatively-

Categories	**Sub-categories**	***Properties*** **(Raw data themes)**
		phrased instruction *Taking the strike* *Team strategy*
	Technique	*Technique*
	Visualization	*Bowler's strategy* *Outcomes of success and failure* *Performance comparison with a model* *Performance in general situations* *Personal strategy* *Positive performance* *Positive situations*
Positive/Motivational thoughts	Arousal control	*Calming down thoughts*
	Positive approach	*Acceptance of unfavourable situations* *Positive attitude* *Success expectations*
	Positive self-statements	*Self-belief* *Self-motivation* *Self-praise*
	Inappropriate strategy choice	*Anticipation of a certain delivery* *Shot premeditation* *Too attacking/defensive*
	Negative approach	*Negative attitude* *Negative expectations* *Self-reprimand* *Visualization of negative outcomes*
	Past failures	*Missed opportunities* *Previous dismissals* *Previous mistakes*

	Pressure-related thoughts	*Anxiety-provoking thoughts* *Pressure to perform successfully*

Categories	**Sub-categories**	***Properties*** **(Raw data themes)**
Negative/Inappropriate thoughts		*Fault over-correction*
Assorted thoughts		

Task-irrelevant thoughts

Thoughts interfering with automatic skill execution

Worry and doubt

Limited thoughts
No conscious thoughts
Non-batting-related thoughts No thought of being dismissed Partner's strategy
Superstitions/Rituals
Team success
Unaware of personal score Wishful thinking

Too much thought Unfocused
Verbal response to sledging Batting strategies
Previous delivery
Superstitions/Rituals

Batting conditions Batting technique Strategy choice Insignificant issues Insufficient preparation Lack of form
Losing one's wicket Negative evaluation Negative outcomes Performance Personal success Personal appearance Personal problems Practice input
Psychophysiological state Run rate
Stealing the strike Teammates' reactions Team strategy

Limited thoughts
No conscious thoughts
Non-batting-related thoughts No thought of being dismissed Partner's strategy
Superstitions/Rituals
Team success
Unaware of personal score Wishful thinking

None of the irrational self-talk or cognitive distortions identified by Ellis (in Heyman, 1984) and Gauron (1984), and adapted by Winter (1992), were evident from the interview transcripts. This indicates that the participants in the present study were chiefly rational thinkers, and without drawing any conclusions, it would be expected that other potentially elite batters would display similar cognitive trends. The expectation of being perfect or expecting others to do everything correctly, as reported by Participant B, can perhaps be classed as irrational thinking, and this perfectionism may need to be disputed. It is important that the batter learns to control that which is potentially under his control, namely, his own thoughts, feelings and behaviours, and accept and cope with that which is not controllable.

The occurrence of negative thoughts, although not seen to be irrational, was evident, especially with regard to negative scenarios during batting. More important than the experiencing of negative thoughts is how the batter deals with them. In some cases negative thinking was associated with the ineffective performance of the participants (e.g., thoughts of past failures led to tentative play), but in other cases there was no observable or specifically reported negative effect. It is therefore important for the practitioner to determine whether the negative thoughts have a debilitating effect on the batter's performance.

Inappropriate strategy choice in the form of premeditation or nomination of shots appears to be a relevant issue to be addressed by the cricket coach and/or sports psychology consultant. This premeditation implies that the batter pre-programmes himself to react, often inappropriately, in a certain way, which is a form of control processing. The batter is continually required to analyse the game situation and may need to improvise when the circumstances demand an attacking strategy. However, in general the "big shots" should be played when the delivery warrants the stroke or the batter has a natural capacity to hit over the top. It seems pertinent that the batter applies the appropriate strategy in all situations in order to be successful, and therefore young cricketers should be coached specifically regarding strategy choice in various match situations. The playing of every bowler and every delivery on merit should form the basis of all strategies (Gordon, 1990; Winter, 1992).

The majority of thoughts experienced with regard to batting were task-focused, with strategy thoughts prominent. All three participants also made use of positive/motivational thoughts. These results lend partial support to the proposal of Rushall (1989) that task-related thoughts occupy the major portion of the cognitive thinking of athletes during sports performance, and that positive self-talk, together with mood words, make up the remainder of their thought content. No use of mood words was evident in the thought content of the participants in this study.

When comparing the categories of cognitions identified in previous research with those of the present investigation, there is some but not extensive overlap. One of the theme categories within Schömer's (1990) mental classification system used by marathon runners, namely, environmental feedback, shows a similarity with the task-focused sub-category of environmental feedback. There is also evidence of self-instruction in the strategy sub-category in this study.

Commonalities with the cognitions and affect categorization of wrestlers by Gould *et al.* (1992b) and Eklund (1994) include Gould and colleagues' higher order themes of positive and negative feeling states, strategy focus, and negative thoughts; and Eklund's superordinate themes of task-focused awareness, assorted thoughts, and negative and positive affective states.

From the above discussion relating to thought sampling, it appears that thought content is very sport- or situation-specific. Similar types of sports would be expected to reveal and/or require similar thought content. Team games like hockey, soccer, rugby and basketball would have aspects in common, while long-distance events like cycling, running and cross-country skiing would show similarities in cognitive content.

The goals, which were reported by the participants, are mainly outcome-oriented (e.g., to score 50 runs). Orlick (1990) suggests that the athlete focus energy on specific aspects of performance that are potentially within control, and avoids outcome goals not under immediate control.

Although propagated as having a positive effect on performance (Boutcher & Crews, 1987; Crews & Boutcher, 1986, 1987; Eklund *et al*., 1993; Orlick & Partington, 1988), only one participant made use of a set pre-shot routine, which comprises cognitive and behavioural aspects. Winter (1992) believes that a routine or ritual, which the batter should go through before facing each ball, is vital to concentration.

Affect

Table 2 outlines the categories, sub-categories and properties (raw data themes) of the Affect dimension. An example of a quote that fits within the Affect dimension, the Positive/normal affective states category, the Confidence-related states sub-category, and the Confident property is, "I was feeling very confident".

TABLE 2. **SUMMARY OF AFFECT DIMENSION: CATEGORIES, SUB-CATEGORIES AND PROPERTIES**

Categories	**Sub-categories**	***Properties*** **(Raw data themes)**
		Assertive
		Confident
	Confidence-related states	

Motivation-related states

Confident and good Confident and relaxed In control
Secure and confident Aggressive
Eager
Keen Motivated

Physical feeling states

Comfortable
Lazy

Calm, relaxed and confident
Not nervous
Not pressurised

Positive/Normal affective states

Pressure-related states

Relaxed
Relaxed and calm Relaxed and good Relieved
Relieved of pressure Slight nervousness / Butterflies Unconcerned
Fine Good

Categories	**Sub-categories**	***Properties*** **(Raw data themes)**
	Satisfaction-related states	*Good and comfortable*
	Anger-related states	

Good and happy
Good, happy and confident Happy
Happy and confident Not bothered
On top of the world Unintimidated

Cross Frustrated Furious Irritated
Irritated and cross Upset/angry

Negative affective states

Confidence-related states Dissatisfaction-related states

Physical feeling states

Pressure-related states

Confidence decline Lack of confidence
Bad Depressed Disappointed Sorry for self
Cramped / uncomfortable Lazy / Non-energetic Uncomfortable
Flustered Nervous
Nervous and jittery Pressured to perform Rushed
Tense
Too relaxed Worried

The interview data show a mixture of emotions experienced in relation to cricket batting. Positive scenarios invariably resulted in positive feelings, which were generally linked to positive cognitions. Many of the negative affective states were experienced after dismissals, which is understandable and therefore not a significant concern for the batter, cricket coach or sports psychology consultant.

The majority of emotions or feelings reported, both positive and negative, concerned confidence issues (e.g., good, confident, happy, lack of confidence, confidence decline) or were pressure-related (e.g., relaxed, not pressurized, nervous, too relaxed). This emphasises the two issues of confidence and pressure that appear to be of concern to the cricket batter.

These trends regarding affective states support the premise that cognitions, emotions and behaviours are closely related. However, the direction of the relationship varied. For example, in some instances negative cognitions and/or emotions followed negative behaviours (e.g., running a partner out), while in others negative consequences followed after negative/inappropriate thoughts and/or emotions (e.g., frustration led to inappropriate strategy choice and subsequent dismissal).

Related behaviours

Table 3 presents a summary of the categories, sub-categories and properties (raw data themes) within the Related Behaviours dimension. An example of a quote that fits within the Related Behaviours dimension, the Behavioural routine category, and the Behavioural routine after leaving the crease sub-category and property is, "Or I don't even have to score a run. I always scratch twice".

TABLE 3. **SUMMARY OF RELATED BEHAVIOURS DIMENSION: CATEGORIES, SUB-CATEGORIES AND PROPERTIES**

Categories	**Sub-categories**	***Properties* (Raw data themes)**
Batting strategy	Employs an attacking strategy	*Employs an attacking strategy*
	Inappropriate strategy choice	*Inappropriate strategy choice*
	Plays tentatively	*Plays tentatively*
Behavioural routines	Behavioural routine while walking out and taking guard	*Behavioural routine while walking out and taking guard*
	Behavioural routine to relax	*Behavioural routine to relax*
	Behavioural routine after leaving the crease	*Behavioural routine after leaving the crease*
	Behavioural routine when a wicket falls	*Behavioural routine when a wicket falls*

	Behavioural routine after a bad stroke Padded up quickly Takes guard Walks away from the wicket between deliveries	*Behavioural routine after a bad stroke* *Padded up quickly* *Takes guard* *Walks away from the wicket between deliveries*
Inter-personal issues	Seeks isolation after a poor dismissal Seeks positive feedback from others	*Seeks isolation after a poor dismissal* *Seeks positive feedback from others*
Observation	Observation of opposition	*Observation of opposition*
Physical practice	Physical rehearsal of batting strokes Practises proposed strategy Practises to overcome faults Practises weak aspects	*Physical rehearsal of batting strokes* *Practises proposed strategy* *Practises to overcome faults* *Practises weak aspects*

Categories	**Sub-categories**	***Properties* (Raw data themes)**
Reaction to unfavourable situations	Headed for the changing room Ignores sledging Rubs the injured body part	*Headed for the changing room* *Ignores sledging* *Rubs the injured body part*
Visual focus	Focus on the ball intensifies Focused on the bowler's arm action Inappropriate visual focus	*Focus on the ball intensifies* *Focused on the bowler's arm action* *Inappropriate visual focus*
Warm-up	Physical warm-up before batting	*Physical warm-up before batting*

Many of the behaviours reported involved routines or rituals which batters are known to follow prior to and during an innings (Winter, 1992). Other behaviours included the physical practice of specific batting aspects expected in upcoming matches (e.g., facing a particular type of spin bowler), and the physical practice of weak batting aspects subsequent to poor performances (e.g., footwork).

After playing a less than perfect shot one of the participants physically rehearses the correct batting technique, a practice propagated by Singer *et al*. (1991) as an appropriate attentional focus.

CONCLUSION

Implications For Practice

The results of this investigation suggest some practical guidelines for sports psychology consultants, cricket coaches and cricket players.

1. The use of post-match in-depth interviews in order to gain pertinent information about

the experiences of cricket batters and their attentional focus during batting is highly recommended. However, this method is extremely time-consuming and probably not practically possible for the sports psychology consultant or cricket coach to employ. Baseline interviews in this investigation did not reveal significantly different responses to the interview questions compared with the specific post-match interviews. It should therefore be possible to gain valuable information regarding the experiences of cricket batters by making use of a general in-depth interview, and using questions like the ones in Appendix A. Possible interview questions which were found to be of less significance in this investigation and which could possibly be omitted if a shorter interview is warranted, include: Question (Q) 1 which concerns cognitions prior to an innings; Q14, which is similar to Q13; Q18 which is similar to Q19; Q22; Q29, which is similar to Q30; Q32; and questions 34 to 39, which concern cognitions experienced after dismissals. Question 20, which concerns thoughts relating to bowling changes, could be shortened to include three categories of bowlers, namely genuine pace, medium pace and spin bowling.

2. There appears to be a need to help batters combat negative and task-irrelevant thoughts that may interfere with attentional focus.

3. The determination of thought content may be a good way of identifying potential attention distracters.

4 The premeditation of shots was common among the participants, and a major cause of dismissals, often when the batter was required to push up the run rate. This may therefore be an area of focus for counselling and/or coaching. Because certain situations, specifically in limited overs matches, require the batter to score at a predetermined run rate per over, premeditation of shots may be a necessity. However, in most cases the appropriate selection of shots or strategy choice requires the batter to play each delivery on merit. This means attacking the loose deliveries and maintaining the run rate by scoring ones and twos whenever possible.

5. With regard to self-instruction used by the batsmen in the present investigation, there was evidence of negatively phrased instruction. It would seem necessary to assist batters in rephrasing self-talk or self-instruction into positives. For example, rather than to say "do not hit any loose shots" or "don't go out now", rephrase as "play tight" and "bat through the innings".

6. The use of more process-oriented, specific and positive goals is suggested. For example, together with aiming for a 50 or a 100, the batter should set performance goals like "play each delivery on its merit". Rather than setting a vague goal like "keep scoring runs", the batter can aim to "dispatch the loose deliveries and look for singles", and "bat sensibly through to tea" rather than "not lose my wicket before tea".

7. Apart from ongoing mental preparation for all cricketers, batters struggling with form may require special attention. Batters should also be guided in preparing mentally to face form loss in order to avoid debilitating consequences.

8. Although reporting similarities with regard to certain attentional factors, each individual participant's batting experiences are unique, and he/she should therefore be counselled on an individual basis. The situations which lead to negative/inappropriate thinking and subsequently also less effective performance, differ amongst the individual participants. It would therefore be important for the cricket coach and/or sports psychology consultant to identify individual scenarios which lead to ineffective attention and less than optimal performance. Although a few trends are evident regarding experiences relating to cricket

batting, and sports psychology consultants and cricket coaches can consider certain consistencies when working with groups of cricketers, the need to individualize is paramount.

Although the present investigation is of an exploratory nature, important contributions have been made to the knowledge regarding cognitions, feelings and behaviours during cricket batting. It is hoped that this study will stimulate further research in the field, and will impact on the practice of sports psychology consultants and cricket coaches as they assist cricketers to prepare mentally for the pressure-filled environment of the cricket arena.

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APPENDIX A

Baseline interview questions

Please describe your thought content/self-talk at the following times before/during/after your innings: i.e., What do you think about or say to yourself? Please be specific, and use direct speech as far as possible.

1. Leading up to a match:
   a) During the week prior to a match:
   b) During the day/night before a match:
   c) During the morning of a match, up until approximately 30 minutes before the start:
2. Within the half-hour prior to your innings:
3. While padding up:
4. At the moment when a wicket falls immediately prior to your innings:
5. While walking out to bat:
6. When coming to the crease after a series of batting failures:
7. When coming to the crease when in good form:
8. Immediately prior to facing your first delivery:
9. When stuck on 0 for a long period of time:
10. Typical thoughts/self-talk between 1 and 10 runs:
11. While at the non-strikers end:
12. After a bad stroke:

13. After a good stroke:
14. After hitting a boundary:
    a) After a 4:
    b) After a 6:
15. Typical thoughts/self-talk between 10 and 45 runs:
16. When close to 50 runs:
17. Typical thoughts/self-talk between 50 and 90 runs:
18. When in the nineties:
19. When close to 100 runs:
20. At a bowling change:

    a) When a bowler you enjoy facing comes on to bowl:
    b) When a bowler you "fear" or respect comes on to bowl:
    c) When an unknown bowler comes on to bowl:
    d) When a medium pace bowler comes on to bowl:
    e) When a spin bowler comes on to bowl:
    f) When a fast bowler returns to the attack:
21. Shortly before breaks in the game:
22. During breaks in the game:
23. Immediately after breaks in the game:
24. After an intimidating delivery, e.g., bouncer:
25. When you lose a batting partner during a good partnership:
26. When you lose batting partners in quick succession:
27. When you are subjected to "sledging" from opposition players:
28. When you play and miss a number of deliveries:
29. After you have been dropped:
30. After surviving a close dismissal (e.g., run-out, LBW):
31. After running your batting partner out:
32. When your batting partner continuously steals the strike:
33. After being struck painfully on the body by a delivery:
34. After being dismissed for a duck:
35. After being dismissed for only a few runs:
36. After being dismissed after scoring a number of runs:
37. When you are dismissed by a good delivery:
38. When you are dismissed by a bad delivery or bad shot:
39. Immediately after your dismissal:
    a) After a well played innings:
    b) After a poor innings:
40. Immediately prior to your dismissal.
41. With regard to your experiencing of negative thoughts or talking negatively to yourself during your innings, please elaborate on the following: Situations, negative thoughts, and consequences.
42. Are there times during your innings when your internal thoughts interfere with the automatic execution of your batting strokes? YES/NO. If yes, please elaborate further regarding situations, interfering thoughts and consequences.
43. Do you follow a set pre-shot routine before every delivery? If so, please explain your routine in detail.

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DIE METING VAN ASSERTIWITEIT BY NETBALSPELERS

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ABSTRACT

The purpose of this study was to develop a questionnaire that measures the assertiveness of netball players. The identification of typical characteristics and assessment by experts regarding the correctness and technical presentation of the items resulted in a preliminary questionnaire. The item analysis for the reduction of items took place by applying the homogeneity approach and the correlation of the score of each item with the total score. Ninety-two senior netball players participated in the major phase of this study. The players completed the preliminary questionnaire on assertiveness as well as the South African Personality Questionnaire that served as criterion measure for establishing the validity of the final form of 22-items. Internal consistency reliability was determined by means of the split-half-method. Both the reliability (r=0.834) and validity (r=0.297; p<0.01) of the instrument proved to be satisfactory. It was concluded that this questionnaire is suitable for use in a netball setting.

Key words: Assertiveness; Dominance; Netball; Psychometrics; Questionnaire.

INLEIDING

Vir dekades al word die persoonlikheid van sportmense vanuit verskillende hoeke bestudeer. Nieteenstaande teenstrydige navorsingsbevindinge wat soms gerapporteer word, word daar in die literatuur dikwels verwys na assertiwiteit as 'n positiewe eienskap van sportmense. Ondersoeke dui daarop dat sportlui op alle vlakke van deelname meer assertief as nie-deelnemers is (Dayries & Grimm, 1970; Mushier, 1972; Thakur & Thakur, 1980; Dowd & Innes, 1981; Pestonjee *et al*., 1981; Eysenck *et al*., 1982; Kirkcaldy, 1982; Salokun & Toriola, 1985).

Die begrip *assertiwiteit* word dikwels omskryf as *selfgelding* en *selfhandhawing*. Van der Westhuizen en Pieters (1988) beveel egter die begrip "assertiwiteit" aan, aangesien daar dikwels aggressiewe konnotasies aan die terme "selfgelding" en "selfhandhawing" geheg word. Uit die verskeidenheid definisies en omskrywings van assertiwiteit wat bestaan, blyk dit dat daar eenstemmigheid is oor 'n aantal aspekte van assertiewe gedrag. Van die aspekte wat in die literatuur die meeste beskryf word, word kortliks genoem.

Die aspek wat die sterkste ondersteun word, is die vermoë om positiewe gevoelens uit te druk (Herzberger *et al*., 1984; Kolotkin & Wielkiewicz, 1984; Haase *et al*., 1985). Hierna volg die vermoë om versoeke te kan weier en nee te kan sê (Phelps & Austin, 1975; Schwartz & Gottman, 1976) en dan die vermoë om negatiewe gevoelens uit te druk (Hersen *et al*., 1973; Alberti & Emmons, 1978).

Verdere kenmerke van assertiewe gedrag is die vermoë om vir eie billike regte op te kom, die inisiëring en voortsetting van gesprekke en sosiale kontak (Wilk & Coplan, 1977) en die vermoë om versoeke te rig en gunste te vra (Gay *et al*., 1975). Ander aspekte wat aangedui word, is die vermoë om kritiek te hanteer, die aanvaarding van komplimente, die uitdruk van 'n persoonlike mening, al verskil dit van ander, en die uitdeel van komplimente (Eisler *et al*., 1975; Gambrill & Richey, 1975; Smith, 1975; Weeks & Lefebvre, 1982). Shaw (1979) en McBride (1998) beklemtoon ook sterk dat die assertiewe persoon baie doelgerig is. Townend (1993) dui aan dat die assertiewe persoon gemotiveer is “to do a good job” en volgens Nel (1993) voel die persoon dat hy 'n verskil kan maak.

Fensterheim en Baer (1976) bied 'n samevattende omskrywing van die assertiewe individu. So 'n persoon voel vry om homself aan ander te openbaar. Sy woorde en aksies sê wie en wat hy is, hoe hy voel, dink en wat hy wil hê. Sy kommunikasie met ander mense is openlik, eerlik, direk, sonder angs en skuldgevoelens, en skaad nie die regte en waardigheid van ander nie. Die assertiewe individu lei 'n aksie-georiënteerde lewe. Hy is bewus daarvan dat hy nie altyd kan wen nie en hy aanvaar sy eie beperkings en tekortkomings. Hy streef egter altyd daarna om sy beste te gee en behou sy selfrespek ongeag of hy wen of verloor. Rees en Graham (1991) ondersteun hierdie beskrywing van assertiewe gedrag.

Assertiewe gedrag vind binne bepaalde verhoudings plaas. Smith (1975) tref 'n onderskeid tussen besigheids- of formele verhoudings, gesagsverhoudings en verhoudings met gelykes. Bates en Zimmerman (1971) identifiseer drie verhoudingsveranderlikes, naamlik die aantal persone betrokke in die situasie (groep of individu), die mate van familiariteit (vreemd tot baie bekend) en die status van die persone (hoër, gelyk of laer). In hul ondersoek na assertiewe gedrag in 'n verskeidenheid interpersoonlike situasies, onderskei Gay *et al.* (1975) tussen interaksie met ouers, die publiek, gesagsfigure, vriende en intieme verhoudings, terwyl Haase *et al.* (1985) onderskei tussen assertiewe gedrag teenoor ouers, onderwysers, vriende en vreemdelinge. Ouderdom (ouer, jonger, portuur), geslag, en die aard van die assertiewe respons (positief of negatief) word ook bygevoeg en vind Dourans (1997) byvoorbeeld dat meisies meer assertief as seuns is. Hierdie verhoudingsveranderlikes behoort in aanmerking geneem te word wanneer assertiewe gedrag by sportlui bestudeer word.

PROBLEEMSTELLING

Hoewel assertiewe gedrag wye aandag op navorsingsgebied geniet, is daar 'n gebrek aan sportspesifieke navorsing in hierdie verband. Een van die probleme in die bestudering van assertiwiteit binne sportverband, is die gebrek aan sportspesifieke meetinstrumente om gedrag in sportsituasies te bepaal. Aangesien die spel netbal vandag een van die belangrikste spansportsoorte is wat deur dames in Suid-Afrika beoefen word, is die gebrek aan 'n meetinstrument vir assertiwiteit wat op netbalspelers toegespits is, met hierdie studie aangespreek.

Die hoofdoel van die ondersoek was om 'n betroubare en geldige meetinstrument vir die

bepaling van assertiwiteit by senior netbalspelers te ontwikkel.

METODOLOGIE

Steekproef

Die Boland Netbalstreek is deur die jare een van die vier topresteerders op nasionale vlak en is dit as gepas beskou om die ondersoek in dié streek te doen waar topprestasies aan die orde van die dag is. Die studie is veral beperk tot klubs wat in die superliga en die eerste liga meeding. Twee-en-negentig (N=92) senior netbalspelers van die Boland Netbalstreek is by die hoofondersoek betrek. Die gemiddelde ouderdom van die steekproef was 21 jaar. Drie-en-veertig (43) spelers het in die superliga meegeding en 49 spelers in die eersteliga. Twee van die spelers was onder die top tien spelers in Suid-Afrika en een speler het internasionaal meegeding. Drie spelers het vir die SA onder 21-span gespeel. Vyf-en-dertig spelers het provinsiale kleure verwerf. Die spelers was almal Afrikaanssprekend.

Ontwikkeling van die vraelys

Ontwikkeling van die vraelys het geskied aan die hand van bepaalde riglyne soos dit deur Rich en Schroeder (1976), Huysamen (1986) en Smit (g.d.) weergegee is, maar ook na bestudering van 'n verskeidenheid bestaande sielkundige toetse, asook vraelyste wat vir die meting van assertiwiteit ontwikkel is. Die vorm, styl en inhoud van die vraelys is op die volgende *kriteria* gegrond: die vraelys moet assertiwiteit binne die spesifieke netbalsituasie bepaal; selfbeskrywende items moet die basis van die vraelys vorm; die vraelys moet binne 'n kort periode voltooi kan word; tellingbepaling moet op 'n relatief maklike manier gedoen kan word.

Die ontwerp van die vraelys het uit twee fases bestaan, naamlik, die samestelling van die vraelys en die standaardisering daarvan. Die *samestelling van die vraelys* het itemidentifisering, -formulering, -assessering en –redusering van vrae ingesluit, terwyl die standaardisering op die bepaling van die betroubaarheid en geldigheid van die vraelys toegespits was. Die prosedures wat met die samestelling van die vraelys gepaard gegaan het, was 'n intuïtief-rasionele benadering (identifiseer, formuleer, assesseer) en 'n homogeniteitsbenadering (redusering). Laasgenoemde, het met die verband tussen elke item (vraag) en die totale telling vir die vraelys te make deur die toepassing van die Pearson produkmomentkorrelasie. Smit (g.d.) beveel aan dat die toetsopsteller bloot op 'n bepaalde standaard of korrelasie besluit, en indien 'n item nie hieraan voldoen nie, word dit nie in die toets opgeneem nie. Hierdie besluit is onder andere deur die aantal items wat verlang word en die hoeveelheid tyd wat vir beantwoording beskikbaar is, beïnvloed. Crocker en Algina (1986) bied riglyne in hierdie verband. Die kriterium vir itemseleksie was 'n korrelasiekoëffisiënt van minstens 0.30, waar die Pearson produkmomentkorrelasies betekenisvol op die 0.01-peil was.

Met die oog op *standaardisering*, is die betroubaarheid bepaal deur van die interne konsekwensie prosedure gebruik te maak. Volgens Safrit en Wood (1989) word die berekening van interne konsekwensie as maatstaf van betroubaarheid vir selfbeskrywende persoonlikheidsvraelyste aanbeveel, omdat dit nie hertoetsing op later stadium vereis nie. Die Spearman-Brown halfverdelingsmetode, die metode van Guttman en die Alpha-metode van Cronbach (aangepaste Kuder-Richardson metode) het hier betrekking.

Inhoudelike voorkomsgeldigheid is verkry deur die logiese bestudering van die items in die vraelys deur die ondersoeker op grond van intuïtiewe interpretasie en afleidings. Dit is

duidelik dat hierdie metode op subjektiewe beoordeling staatmaak en word die metode dikwels gekritiseer. Om hierdie gebrek te oorkom, is die aanvanklike meetinstrument aan 'n paneel kundiges vir assessering voorgelê (Cronbach, 1984), naamlik 'n sportsielkundige, 'n nasionale netbalafrigster en 'n kundige op die gebied van psigometrie by die Raad vir Geesteswetenskaplike Navorsing (RGN).

Kriterium- of samegestelde geldigheid is toegepas deur die tellings vir die *Vraelys vir Netbalspelers* met 'n vooraf geldigverklaarde en aanvaarde meetinstrument as eksterne kriterium te korreleer en sodoende 'n geldigheidskoëffisiënt te bepaal (Mischel, 1968; Safrit & Wood, 1989). Vir hierdie doel is die *Suid-Afrikaanse Persoonlikheidsvraelys (SAPV)* gebruik waar slegs die dominansietellings benut is. Die verwagting is dat situasie-spesifieke meetinstrument 'n lae tot matige positiewe korrelasie met 'n nie-spesifieke meetinstrumente sal hê. Indien 'n hoë korrelasie tussen die tellings vir die *Vraelys vir Netbalspelers* en die dominansietellings van die *SAPV* verkry sou word, kan dit beteken dat die *Vraelys vir Netbalspelers* dieselfde tipe assertiwiteit as ‘n algemene meetinstrument meet, en dus geen unieke doel dien nie.

Die statistiese ontledings is met behulp van die *SYSTAT*-rekenaarprogram van Wilkinson (1988) gedoen.

Vorm van die vraelys

Wat die vorm van die vraelys betref, is daar op 'n vierpuntskaal volgens die Likert-metode besluit. Hierdie vierpuntskaal is gekies om die probleem van sentrale geneigdheid uit te skakel, omdat toetslinge soms neig om die middelwaarde of neutrale waarde as respons te kies. So 'n vierpuntskaal met 'n aantal skaalpunte of ankers laat groter itemvariansie toe en meer ruimte vir itemkorrelasies. Elke item bestaan uit 'n stelling wat beskrywend is van ’n situasie soos dit in netbal kan voorkom. Die speler moet telkens aandui hoe sy in 'n bepaalde situasie sou optree en reageer sy by elke stelling op skaal, wat uit die volgende kategorieë bestaan: *nooit, soms, dikwels, altyd*. Die vraelys bestaan uit negatief en positief bewoorde stellings. Omdat die items in die voorlopige vraelys reeds willekeurig versprei was, is die geselekteerde items vir die finale vraelys in volgorde van die itemnommers gerangskik. Sekere persoonlike inligting is verkry naamlik, die speler se naam, van en ouderdom, haar speelposisie en die hoogste prestasie wat sy in netbal behaal het.

Administrasie van die vraelyste

Volledige instruksies omtrent die voltooiing van die vraelys is by elke vraelys aangeheg. Geen tydsbeperking is toegepas nie, maar spelers is aangemoedig om so vinnig as moontlik, maar tog akkuraat, te werk. In die vraelys is nie aangedui dat assertiwiteit ondersoek word nie en is daar bloot na die vraelys as *Vraelys vir Netbalspelers* verwys. Die spelers het as 'n groep die twee vraelyste, *Vraelys vir Netbalspelers* en die *Suid-Afrikaanse Persoonlikheidsvraelys* (*SAPV*), in 'n lesinglokaal onder toesig van die ondersoeker voltooi. Die toetssessie het 'n uur geduur. Die vraelyste is aan die einde van die netbalseisoen afgeneem.

Tellingbepaling

Elke speler se respons is direk met 'n regmerkie in die ooreenstemmende blokkies op die vraelys aangebring. Op hierdie wyse is 'n poging aangewend om foute by die neerskryf van die respons en by tellingbepaling tot die minimum te beperk. Die vrae wat negatief met

betrekking tot assertiwiteit gestel is, is in omgekeerde orde bereken, en is die response gesomeer om 'n speler se telling te bepaal.

BEVINDINGE

Samestelling van die vraelys

Na bestudering van die literatuur is ’n raamwerk vir die formulering van items saamgestel om te verseker dat die items wel die verskillende aspekte van assertiwiteit in die verskillende situasies insluit binne die raamwerk van die sportsoort, netbal. Die aspek “druk positiewe gevoelens uit”, is byvoorbeeld geneem, en is items wat met hierdie aspek verband hou, in bepaalde verhoudingskategorie geformuleer. Die verhoudings waarbinne assertiewe gedrag geopenbaar word, behels die volgende: mate van familiariteit tussen die betrokke persone, vlak van outoriteit, aantal persone betrokke, en die status van die persone. *Familiariteit* verwys na assertiewe optrede teenoor opponente en vreemdelinge of teenoor spanmaats, terwyl *outoriteit* na gesagsfigure verwys en word hier aan die afrigter, skeidsregter, bestuurslede of spankapteine gedink. *Aantal* verwys na assertiewe optrede teenoor individue of 'n groep spelers, terwyl *status* na spelers in laer of hoër spanne verwys. Die vrae is by die opstel van die items so geformuleer dat elke aspek in die meeste situasies of verhoudings teenwoordig is en dat die verhoudings geakkrediteer is met 'n naby gelyke verteenwoordiging.

Aanvanklik is 84 items geselekteer met 'n gelyke verteenwoordiging van die verhoudingsituasies. Nadat die items geformuleer is, is die vraelys vir evaluering aan die volgende persone voorgelê: ’n sportsielkundige, ’n nasionale netbalafrigter, ’n kundige (van die Raad vir Geesteswetenskaplike Navorsing) op die gebied vanvraelysontwikkeling. Hierdie items is geassesseer met die oog op inhoudelike korrektheid van keuse en styl van formulering van 'n vraag, die relevansie van die items met betreking tot assertiwiteit in die netbalsituasie en die formaat van die vraelys. 'n Taalkundige, twee nagraadse studente en vier nie-netbalspelers het terugvoer verskaf oor die tegniese versorging, bewoording en begrip van die vrae en die duidelikheid van die instruksies vir die voltooiing van die vraelys. Dit het gelei tot die hersiening van die vrae.

Die eerste redusering van die aantal vrae is onderneem waar die vraelys van 84 items deur 20 netbalspelers voltooi is. Die telling behaal op elke item (vraag) is met die totale toetstelling gekorreleer. Slegs 37 items met 'n korrelasiekoëffisiënt van 0.3 en meer is behou. In 'n poging om die verteenwoordiging van die verhoudingskategorieë gelyk te maak is 12 items bygevoeg. By die tweede redusering van items is die vraelys met 49 vrae deur 92 netbalspelers beantwoord. Weereens is die telling behaal op elke item (vraag) met die totale toetstelling gekorreleer. Met inagneming van die afsnypunt van 0.3 vir die korrelasiekoëffisiënt, is die aantal vrae uiteindelik na 22 items gereduseer (r=0.3 tot 0.60). Die gemiddelde korrelasiekoëffisiënt vir die 22 geselekteerde items was 0.4.

Standaardisering van die vraelys

In die geval van *betroubaarheid* is van die Spearman-Brown halfverdelingsmetode gebruik gemaak en is 'n korrelasiekoëffisiënt van 0.809 bevind. Die interne konsekwensie volgens die Guttman-koëffisiënt is 0.806 en die koëffisiënt Alpha van Cronbach is 0.834. Volgens Smit (g.d.) is 'n aanvaarbare betroubaarheidskoëffisiënt vir persoonlikheidsvraelyste 'n koëffisiënt

van tussen 0.80 en 0.85. In 'n studie deur Dailey (1978) waarin 'n assertiwiteitsvraelys vir sportlui ontwikkel is, is betroubaarheidskoëffisiënte van 0.407 en 0.9 aanvaar.

Analitiese tegnieke met betrekking tot die *geldigheid* van die meetinstrument was daarop gemik om te bepaal of die *Vraelys vir Netbalspelers* meet wat dit voorgee en veronderstel is om te meet. By die uitvoering van hierdie studie is die vraelys aan kundiges voorgelê, onder andere aan 'n kundige op die gebied van psigometrie by die Raad vir Geesteswetenskaplike Navorsing (RGN). Die kundiges het die vrae as korrek en relevant verklaar.

Kriteriumgeldigheid is bereken deur die tellings vir die *Vraelys vir Netbalspelers* met 'n eksterne kriterium te korreleer. Vir hierdie doel is slegs die dominansietelling van die *Suid-Afrikaanse Persoonlikheidsvraelys* gebruik. Met hierdie ondersoek is 'n lae, maar beduidende korrelasie ($r=0.297$; $p<0.01$) verkry.

BESPREKING

Items in die vraelys

Met die ontwikkeling van die vraelys is bepaalde komponente van assertiwiteite aan die hand van 'n uitgebreide literatuurstudie gedoen en is 'n poging aangewend om netbalspesifieke items te formuleer. Aspekte soos *gee beste te alle tye, of span wen of verloor*, wat assertiewe gedrag in die sportsituasie aandui, is in items geformuleer. Na die itemontleding het sommige van hierdie aspekte nie vir die finale vraelys gekwalifiseer nie.

Die aspek wat deur die meeste items in die vraelys verteenwoordig word, hou verband met *staan vir billike regte*. Hierna volg die aspek *druk eie persoonlike mening uit* en dan *inisieer en hou gesprekke en sosiale kontak vol*. Uit die literatuur blyk dit dat die assertiewe persoon na leierskapsrolle soek en is dit insiggewend dat een van die items (*ek wil graag kapteine van my span wees*) met hierdie aspek verband hou.

Word die verhoudings waarbinne assertiewe gedrag plaasvind, van nader beskou, blyk dit dat 10 van die items met kommunikasie met die afrigter verband hou. Oor die algemeen hou die items in die vraelys verband met kommunikasie van die spelers met die afrigter en spanmaats.

Betroubaarheid en geldigheid van die vraelys

Na die toepassing van die statistiese prosedures het dit geblyk dat die *Vraelys vir Netbalspelers* wel 'n betroubare meetinstrument is. Van die kritiek wat dikwels teen die geldigheidsbepaling van vraelyste geopper word, is die feit dat die ontwikkelde vraelys nie effektief met eksterne kriteria, soos reeds aanvaarde vraelyste, korreleer nie. In hierdie ondersoek is die assertiwiteitstellings op die *Vraelys vir Netbalspelers* met die dominansietelling van die *Suid-Afrikaanse Persoonlikheidsvraelys* vergelyk. 'n Lae, maar betekenisvolle korrelasiekoëffisiënt is verkry.
Dit blyk dat die *Vraelys vir Netbalspelers* wel toepassingsmoontlikhede het binne die netbalsituasie.

SUMMARY

THE MEASUREMENT OF ASSERTIVENESS OF NETBALL PLAYERS

The purpose of the study was to develop and standardise a self-report questionnaire that measures assertiveness in netball players. The questionnaire needed to comply with the following criteria: assertiveness must be measured as experienced in netball; the questions should be worded within a self-report style; the questionnaire must be able to be completed in

a relatively short period of time; and the scoring should be fairly simple.

Formulating and compiling questions for the questionnaire was followed by standardisation that entailed establishing the reliability and validity of the questionnaire. An intuitive rational approach was adopted to compile and assess the questionnaire while attending to item identification, question formulation and item assessment. The study of the relevant literature and existing measurement tools that measure assertiveness resulted in the identification of typical characteristics and the selection of items while assessment by experts attended to the correctness, relevance and technical presentation of the items. The Likert-scale (*never, sometimes, often, always*) was used for the responses. An item analysis by means of the homogeneity approach was applied to reduce the number of questions. The cut-off point for maintaining an item was a correlation coefficient of at least 0.03 between an item score and the total score.

For the purpose of standardisation involving the validity and reliability of the questionnaire, 92 senior netball players from the Boland Netball Union voluntarily participated in the major part of the study. These players were mainly super league and first league players, with among them 35 provincial and nine national players. Initially content and face validity involved assessment by a panel of experts (a sport psychologist, a psychometrics expert, a nation netball coach) resulting in the revision of the content. As a further part of the validation procedure, the players completed the preliminary *Questionnaire for Netball Players* (49 items) and the *South African Personality Questionnaire* (*SAPQ*) (previously validated tool) to establish criterion validity. Only the "domination score" of the *SAPQ* was correlated with the final score for the *Questionnaire for Netball Players*. Internal consistency reliability was established using the Spearman-Brown split-half method, the method of Guttman and the Alpha-method of Cronbach.

The aspect considered when compiling and selecting the questions was an equal representation of the four relationship variables, namely familiarity, authority figures, number and status of the persons involved. After the initial questionnaire was assessed by the panel of experts, the items were revised resulting in the preliminary questionnaire of 84 items. The first reduction of questions involved an analysis of the responses of another group of 20 netball players which resulted in a reduction to 37 items meeting the minimum criterion of 0.03 as correlation coefficient. To comply with the near equal representation of the relationship variables, 12 items were added resulting in the preliminary questionnaire of 49 items. After the 92 senior netball players completed this preliminary questionnaire, the questions were further reduced to the 22 items for the final questionnaire. A highly satisfactory reliability coefficient of 0.834 was established. The relationship between the dominance score of the SAPQ and the final score of the Assertiveness Questionnaire for Netball Players produced a significant correlation coefficient of 0.297 ($p<0.01$) which is acceptable for criterion validity. This questionnaire is a

reliable and valid measuring tool that satisfactorily measures the assertiveness of netball players and is, therefore, considered suitable for use in a netball setting.

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