The relationship between participation in sport and academic achievement in grade 10 and 11 learners in the Dr Kenneth Kaunda District

FM DIPALE

The relationship between participation in sport and academic achievement in grade 10 and 11 learners in the Dr Kenneth Kaunda District

FM DIPALE
Student number : 10692967

Dissertation (article format) submitted in partial fulfilment of the requirements for the degree of Magister Artium (Research Psychology) at the Potchefstroom Campus of the North-West University

Supervisor: **Prof. C.A. Venter**

Co-Supervisor: **Prof. Q.M. Temane**

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- All participants in this study.

SUMMARY

The relationship between participation in sport and academic achievement in grade 10 and 11 learners in the Dr Kenneth Kaunda District

Key words: Secondary education, physical activity, academic performance, sport participation, adolescence.

The purpose of this research was to determine whether adolescents who participate in sport perform better academically in comparison to their non-participating counterparts. An availability sample of 210 learners between 14 and 24 years from a secondary school in the Dr Kenneth Kaunda District took part in this research. The participants were assessed by a Biographical Questionnaire adapted from Mpshe (1996); an adapted version of The Physical Activity Index of Sharkey (1979); the General Scholastic and Aptitude Test (GSAT)(Claassen, De Beer, Hugo & Meyer,1998); The revised two-factor Study Process Questionnaire: R-SPQ-2F of Biggs (1987a, 1987b); The Rosenberg Self-Esteem Scale (RSES), Rosenberg (1965); an adapted version of The Self-concept and Motivation Questionnaire of Bester (2003), and The Psychological Well-being (PWB) Scales of Ryff (1989).

To obtain an overview of the participants' academic performance, averages obtained in the June 2010 examinations in the four compulsory learning areas, i.e. Setswana First Language, English First Additional Language, Life Orientation and either Mathematics or Mathematical Literacy, were calculated. A significant relationship between sport participation and academic performance was yielded by a cross-tabulation with a practical significance of 0.09. Univariate regression models with academic performance as dependent variable and the following variables as independent variables were calculated as separate models, namely: IQ, Deep approach and Surface Approach as dimensions of the R-SPQ-2F, Motivation, Self-esteem and Psychological well-being. Only self-esteem was found to significantly predict academic performance. A further analysis using an interaction between sport participation and self-esteem did not yield a significant finding. It was concluded that it is important that Educational planners should take cognisance of the literature and research findings of this study. In future studies bigger samples can be used and the interaction between cognitive, non-cognitive and socio-demographic variables in the prediction of academic performance can be studied.

OPSOMMING

Die verhouding tussen sportdeelname en akademiese prestasie by graad 10 en 11 leerlinge in die Dr Kenneth Kaunda Distrik

Sleutelwoorde: Sekondêre opvoeding, fisiese aktiwiteit, akademiese prestasie, sportdeelname, adolessensie.

Die doel van hierdie studie was om te bepaal of adolessente wat aan sport deelneem akademies beter presteer as adolessente wat nie aan sport deelneem nie. ‘n Beskikbaarheidsteekproef van 210 leerlinge tussen 14 en 24 jaar oud by ‘n sekondêre skool in die Dr Kenneth Kaunda Distrik is by die navorsing betrek. Die deelnemers is getoets met ‘n aangepaste weergawe van die Biografiese Vraelys van Mphse (1996); ‘n aangepaste weergawe van die “Physical Activity Index” van Sharkey (1979); die Algemene Skolastiese Aanleg Toets (ASAT) van Claassen, De Beer, Hugo & Meyer (1998); die “Revised two-factor Study Process Questionnaire: R-SPQ-2F” van Biggs (1987a, 1987b); die “Rosenberg Self-esteem Scale (RSES)”, Rosenberg (1965); ‘n aangepaste weergawe van die “Self-concept and Motivation Questionnaire” van Bester (2003) en die “Psychological Well-being (PWB) Scales” van Ryff (1989).

Deelnemers se gemiddelde punte wat in die Junie- 2010 eksamen behaal is in die vier verpligte skoolvakke, naamlik Setswana Eerste Taal, Engels Addisionele Eerste Taal, Lewensoriëntering en Wiskunde of Wiskunde Geletterdheid, is gebruik om as aanduiding te dien van hulle akademiese prestasie. ‘n Tweerigtingfrekwensietabel met ‘n effekgrootte van 0.09 het op ‘n prakties betekenisvolle verwantskap tussen sportdeelname en akademiese prestasie gedui. Eenveranderlike regressiemodelle is as aparte modelle gepas met akademiese prestasie as afhanklike veranderlike en die volgende veranderlikes as voorspellers, naamlik IK, “Deep approach” en “Surface Approach” as dimensies van die R-SPQ-2F, Motivering, Self-esteem and Psigologiese gesondheid. Slegs selfesteem kon akademiese prestasie betekenisvol voorspel. ‘n Verdere analise waarin die interaksie tussen sportdeelname en selfesteem gebruik is het nie betekenisvolle resultate gelewer nie. Dit is belangrik dat Onderwysbeplanners kennis neem van die literatuur- en navorsingsbevindinge van hierdie studie. Toekomstige studies kan van groter steekproewe gebruik maak om die interaksie tussen kognitiewe, nie-kognitiewe en sosio-demografiese veranderlikes in die voorspelling van akademiese prestasie te bestudeer.

LETTER OF CONSENT

We, the co-authors, hereby give consent that Floyd Modikwe Dipale may submit this article for examination purposes in partial fulfilment of the requirements for the degree Magister Artium in Research Psychology and that it may be submitted to the *Journal for Psychology in Africa* for publication.

_____

Prof. C.A. Venter

Supervisor

_____

Prof. Q.M. Temane

Co-Supervisor

INTENDED JOURNAL FOR PUBLICATION AND GUIDELINES FOR AUTHORS

This dissertation will be submitted to the *Journal for Psychology in Africa* for consideration for publication. The manuscript, as well as the reference list has been styled according to the above journal's specifications.

N.B. For the purpose of the dissertation the Tables were inserted in the text and not as Annexures.

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MANUSCRIPT TITLE, AUTHORS AND ADDRESSES

TITLE

The relationship between participation in sport and academic achievement in grade 10 and 11 learners in the Dr Kenneth Kaunda District

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ABSTRACT

The purpose of this research was to determine whether learners who participate in sport perform better academically in comparison to their non-participating counterparts. A random sample of 210 learners between 14 and 24 years from a secondary school in the Dr Kenneth Kaunda District completed seven scales, namely a Biographical Questionnaire; an adapted version of The Physical Activity Index of Sharkey; the General Scholastic and Aptitude Test ; The revised two-factor Study Process Questionnaire of Biggs; The Rosenberg Self-Esteem Scale ; an adapted version of The Self-concept and Motivation Questionnaire of Bester, and The Psychological Well-being Scales of Ryff. A significant relationship between sport participation and academic performance was yielded by a cross-tabulation with a practical significance of 0.09. Univariate regression models with academic performance as dependant variable and the following variables as independent variables were calculated as separate models, namely: IQ, Deep approach and Surface Approach as dimensions of the RSPQ-2F, Motivation, Self-esteem and Psychological well-being. Only self-esteem was found to significantly predict academic performance. A further analysis using an interaction between sport participation and self-esteem did not yield a significant finding. In future, studies with bigger samples can be used to study the interaction between cognitive, non-cognitive and socio-economic variables in the prediction of academic performance.

Key words: Secondary education, physical activity, academic performance, sport participation, adolescence

Literature indicates that there is conflicting evidence about the nature of the relationship between academic performance and participation in sporting activities. There are previous research findings that indicate that involvement in sport has negative consequences for academic performance (Davis & Berger, 1973). Lueptow and Kayser (1974) and Houser and Lueptow (1978), discovered from their comparative study that athletes did not show as much improvement in grades during their high school years as non-athletes. Edwards (1986) found that participation in sports diverts energy away from efforts to excel in academic work. Later research by Marsh (1992) and Melnick and his associates (Melnick, Sabo & VanFossen, 1992a; 1992b; Melnick, VanFossen & Sabo, 1988; Sabo, VanFossen & Melnick, 1993) also indicated that participation in sports is generally unrelated to educational achievement.

A contrary view is reported by Paterson (1997) who postulated that participation in sport can have educational benefits which are compatible with many other benefits associated with physical education. Significant positive correlations have been found between sport participation and aspects of cognitive wellness such as academic achievement (Braddock, 2002; Fredericks, Kokot, & Krog, 2006; Hannaford,1995; Jensen,1998; Sanders, Field, Diego & Kaplan, 2000), motivation (Coalter, 2002; Etnier etal., 1997), creative problem-solving, decreased negative thinking (Schafer, 2000), developing new skills (Coalter, 2002) and the ability to make informed decisions based on an understanding of strategies (Paterson,1997). Young people receiving additional physical activity tend to show improved attributes such as higher energy/concentration levels, changes in body build affecting self-esteem, increased self-esteem and better behaviour which may all support cognitive learning (Braddock, 2002; Scheuer & Mitchell, 2003). Stephens and Schaben (2002) found that participation in sport can help students build discipline, set goals, organise time, develop self-confidence, and could also introduce them to skills such as teamwork, sportsmanship, leadership, and socialisation. Hannaford (1995) and Jensen (1998) found that sport participation leads to a more positive attitude towards school.

Intense exercise (along with appropriate nutrition) has been found to increase brain function and nourishment, and promotes the growth of the body's neuronal infrastructure as well as improve behaviour (Blakemore, 2003; Putnam, 2001; Ratey, 2001). Therefore, such exercise may have long-term positive consequences that affect future academic achievement as well as current behaviour (Dwyer, Sallis, Blizzard, Lazarus & Dean (2001). Cocke (2002) also found that regular exercise can improve cognitive functioning and increase levels of neurotransmitters in the brain for example acetylcholine (Ach) and biogenic amines which are responsible for maintaining the health of neurons. Brain functioning may also indirectly benefit from physical activity due to increased energy generation and through spending some time outside of the classroom and away from studying. The increased energy levels and time outside of the classroom may give relief from boredom resulting in higher attention levels during classroom instruction (Lindner, 1999).

A theoretical understanding of adolescence is also crucial for this study. Adolescence is a life stage spanning approximately between the ages 14-18 years (Louw, Van Ede & Louw, 1998). The developmental tasks of adolescents have a great impact in their daily functioning as learners, for example acceptance of a changed physical appearance, development of a masculine or feminine gender-role identity, development of cognitive skills and the acquisition of knowledge, and development of an own identity among others (Louw et al., 1998). The developmental tasks already mentioned are essential for this study in understanding the scenario of the adolescent in urban areas.

Apart from participation in sport there are certain variables that could also play a meaningful role in academic achievement, namely intelligence (Claassen, De Beer, Hugo & Meyer, 1998), learners' learning approaches (Biggs, 1987a, 1987b), self-esteem, (Rosenberg, 1965), motivation (Bester, 2003), psychological well-being (Ryff, 1989), and socio-economic status (Mpshe, 1996). Academic achievement at school is the result of a learning process which consists of thinking, learning and problem solving (Bester, 1998). Intelligence is a leading predictor of scholastic achievement (Bester, 1998; Myburgh, Grobler & Niehaus, 1999). Intelligence refers to those cognitive abilities, for example verbal reasoning and the knowledge of the meanings of words, which are called upon in a person's general intellectual functioning across different areas of achievement (Berk, 2000). In addition to intelligence, aptitude also plays a role (Cohen & Swerdlik, 2002). Aptitude refers to specific abilities which are utilised in certain areas of achievement (Berk, 2000) for example three dimensional spatial reasoning is used in architectural drawing. Cohen and Swerdlik (2002) explain that aptitudes are formed through the interaction between psychological factors (such as motivation) and the experiences the person encounters in everyday life. Aptitudes, therefore, represent a fund of information and skills acquired over time (Marais, 2007) and are closely related to intelligence (De Bruin, 1997). In order to achieve good academic performance learners' approaches to learning should be well developed (Biggs, 1987a, 1987b), therefore the Study Process Questionnaire (SPQ) will be used for that purpose.

Self-esteem refers to how worthy individuals believe they are. This self-esteem is stable and it affects such growth parameters as behavioural adjustment, emotional well-being and school achievement (Orr & Dinur, 1995). Piaget and Inhelder (2000), maintain that social interaction and transmission (e.g. school education) are important factors in cognitive development. According to Malebo, Van Eeden and Wissing (2007) a positive association between participation in sport (including vigorous recreational/physical activity) and psychological well-being is well researched and documented.

Motivation is the inner state that arouses, directs and maintains behaviour (Woolfolk, 2007). It may be seen as a temporary state of having energy to move towards a specific goal, or it may be seen as an enduring trait which is necessary for the individual's continuing psychological development. Gouws and Kruger (1996) refer to motivation in the child as involvement which is

characterised by an inherent, inner drive to attain maturity which involves perseverance and commitment. The learner with high levels of intrinsic motivation, rather than the learner who is motivated by external rewards, is more likely to achieve well at school. Fortier, Vallerand and Guay (1995) and Ramseier (2001) found positive relationships between intrinsic motivation and scholastic achievement.

A study by Van der Berg, Wood and Le Roux (2002) found that improvements of the socio-economic backgrounds of urban schools in the Western Cape had very minimal influence on the educational achievement as measured by matriculation results. In sum, differences in Socio-Economic Status (SES) appear to make learners different from one another in their educational achievement, and the relationship between SES and educational attainment may be less strong when the average SES is higher. In her study, however, Mpshe (1996) found a significant relationship between SES and academic achievement in both English and Science subjects. In the same study, a one-way analysis of variance revealed a statistically significant difference in academic achievement in English between younger and older learners in the same grade. The younger learners achieved higher marks in English than the older ones. Lastly, learners whose parents had grade 10 and higher qualifications performed significantly better in English than those whose parents had grade 10 and lower qualifications, and that in Science learners whose parents had post-matric qualifications performed significantly better than those whose parents had grade 8 or lower qualifications.

Despite evidence linking physical activity during childhood to later health outcomes, physical education programmes in elementary and secondary schools have slowly been eroded during the past twenty years in the USA (Tremblay, Inman & Willms, 2000). The same trend was also experienced during the same period in South Africa (Van Deventer, 2003). Many educators and parents believe that spending time during school hours on physical activity inhibits children's chances of success in academic pursuits (Tremblay et al., 2000). Departments of Education also maintain that the time and money spent on school sport might be better spent on academic pursuits (Hanson & McKenzie, 1989). A review by Sheppard *(*1997*)* concluded that academic learning per unit of class time is actually enhanced in students who engage in school sport. Indeed most private schools subscribe to the belief that a sound body begets a sound mind (Sheppard, 1997). Similarly, Scruggs, Beveridge and Watson (2003) suggest that both primary and secondary schools should allocate time for a structured physical activity period within the school programme. Furthermore, Hardman (1999) studied the effect of the exclusion of Physical Education (PE) programmes all over the world and found that PE teachers are primarily responsible for the motor development of the child. As a result, therefore, the dilemma facing South Africa is that exclusion of PE from the curriculum has not only led to the learners' negative attitude towards physical activity as Van Deventer (2003) puts it, but it has also resulted in the deficiency in the child's physical and motor development (Stickling, 2000).

Over the years, research done to determine the relationship between sport participation and academic achievement was conducted predominantly amongst white learners in South Africa (Du Plooy, 1989; Nel, 1985). Du Plooy (1989) found that there was no statistically significant relationship between academic achievement in the four subjects identified (i.e. Mathematics, English, Afrikaans and Biology) and participation in sporting activities. The results suggested that a positive relationship exists between overall academic achievement and participation in sport, provided that the number of sporting activities did not exceed a maximum, as yet unknown, number.

This study will seek to explore the relationship between sports participation and academic performance among grade 10 and 11 learners in the Dr Kenneth Kaunda District. The findings of the study could be used to inform the Department of Education and could also provide the officials with the direction for further action that needs to be taken concerning ways to improve learners' academic achievement. Learners on the other hand, could derive benefits such as gaining an understanding of the advantages that may arise from participating in sporting activities whilst they are at the same time focusing on their studies.

The following hypothesis was set: There is a relationship between sport participation and academic performance to be confirmed by studying a group of 10 and 11 learners in the Dr Kenneth Kaunda District.

Method

Research design

A quasi-experimental design with post-test features was used. This design can best be used to make a comparison between two groups in experiments that do not meet all the requirements of an experiment such as random selection and allocation of participants (Creswell, 2005).

Participants

A sample of 210 grade 10 and 11 learners in the Dr Kenneth Kaunda District, in the North West Province participated in this research. Learners of both gender were randomly selected and sampled proportionally within their grades. They were between 14 and 24 years old, with a mean age of 17.8 and a standard deviation of 1.65, 82 were males, 125 were females and 3 participants did not provide the grade and gender on their returned questionnaires (see Table 1). The home language of participants was largely Setswana (n=113) and other (n=93) with 4 not having stated their home language. Sixty-five learners participated in sport whereas 69 learners did not participate in sport and 76 were undecided. Both homogeneous as well as heterogeneous characteristics were determined within the two groups (Creswell, 2005).

Table 1

D*escription of participants*

	Variable	Frequency	%
Grade	Grade 10	96	45.7
	Grade 11	111	52.9
	Missing	3	1.4
	Total	210	100
Gender	Male	82	39
	Female	125	59.5
	Missing	3	1.5
	Total	210	100

Other important socio-demographic characteristics of the sample were the following: 72 (34.8%) of the participants' parents had a grade 8 or lower education whilst 71 (34.3%) had a grade 11 or 12 education. Only 20 participants' (9.7%) parents had a post matric qualification. The mother was the primary caregiver of 101 (48.8%) participants, both parents were the caregivers in 53 cases (25.6%) and relatives acted as caregivers in 41(19.8%) of the participants. One hundred and forty two of the primary caregivers were employed (68.6%) and 179 participants lived in a formal settlement (86.5%). One hundred and ten of the participants (53.1%) lived in households with 4 or less family members and 84 (40.6%) lived in households with 5-8 family members. In 143 cases (69.1%) there were no separate sleeping and cooking quarters and only in 65 (31.4%) cases did the family have their own transport. In 176 cases (85%) there were newspapers, magazines or books available for leisure reading in the home.

Measuring instruments

Seven measuring instruments were used in this research. These instruments were chosen on the grounds of the different variables that might influence academic performance (see introduction of this article) and the relatively restricted time that was available for the assessment in the participants' school schedule.

A shortened version of the *Biographical Questionnaire* of Mpshe (1996) was used to determine the learners' socio-economic background (see Annexure 1).

An adapted version of *The Physical Activity Index (PAI) Scale* (Sharkey, 1979) was used in the present study (see Annexure 2). The PAI was developed to assess the nature and level of physical activity in individuals. The PAI Scale has been widely used in the United States and the scale measures five categories of activity, namely: intensity, duration, frequency, summer participation and winter participation. Respondents are required to indicate their level of physical activity for summer and winter by using a scale from five (high) to one (low). Higher scores indicate higher levels of sustained physical activity. The level of activity is calculated by

multiplying the score for each category: Score = Intensity x Duration x Frequency (Sharkey, 1979). The PAI has been successfully used in studies by Boshoff (1998), Fourie (1999), Rabie (1999), Sharkey (1997), Wilders (2002) and Malebo (2004). Although reliability and validity indices were not specified in these studies it can be inferred that the PAI had acceptable reliability and validity for use in the specific groups. Malebo et al. (2007) adapted it for South African conditions and in his study with 293 participants, Malebo et al. (2007) found a Cronbach reliability coefficient of 0.85. The authors have adapted the PAI to measure the three categories of activity, namely intensity (i.e. level of participation, namely for leisure or representing the school or a club), frequency (i.e. how many times during the week they participated) and duration of participation (i.e. time spend on sporting activities during the week). Higher scores indicate higher levels of sustained physical activity.

The General Scholastic and Aptitude Test (GSAT) (Claassen, De Beer, Hugo & Meyer,1998) yields a measure of academic intelligence or scholastic aptitude. This test measures developed general scholastic aptitude and it consists of items from the following subtests: Word Analogies, Number Series, Verbal Reasoning, Pattern Completion, Word Pairs, and Figure Analogies. It consists of six subtests – three verbal and three nonverbal - and measures both verbal and non-verbal intelligence. A measure of Total IQ is given by the weighted sum of all six subtests. The test has been standardised for use within the South African context. A test-retest reliability coefficient for all groups, i.e. the previously disadvantaged and the non-disadvantaged learners ranged from 0.90 to 0.95. For the Non-disadvantaged a test-retest reliability coefficient for the group ranged from 0.88 to 0.94. A test-retest reliability ranging from 0.84 to 0.93 was obtained from a group of previously disadvantaged learners. Correlations for all the subscales combined are high and for the proportional test batteries they yielded validity coefficients ranging from 0.68 to 0.83 (Claassen et al., 1998). In the present study the shortened version of the GSAT was used and a Cronbach alpha of 0.87 was yielded by the results.

The revised two-factor Study Process Questionnaire: R-SPQ-2F of Biggs (1987a, 1987b) was used to evaluate the learning approaches of participants in the impending study (see Annexure 3). This scale is a shortened version of its school-level companion, the Learning Process Questionnaire (LPQ) (Biggs, 1987c). The SPQ consists of two factors each with 10 items to which the learner responds to the questions on a five-point Likert scale ranging from “always true of me” to “only rarely true of me”. The final version of the questionnaire has two main scales, namely Deep Approach (DA) and Surface Approach (SA), with four subscales, Deep Motive (DM), Deep Strategy (DS), Surface Motive (SM), and Surface Strategy (SS) (Biggs, Kember & Leung, 2001). Reliability measures of the scales and sub-scales of the SPQ demonstrate Cronbach’s alpha scores ranging from low 0.5s to high 0.7s (Snelgrove & Slater, 2003). The Cronbach alpha values for the Biggs et al. (2001) study are 0.73 for DA and 0.64 for SA, which are considered as acceptable. For the purpose of this research the results of the two

main scales were used, and the Cronbach alpha's of the two sub-scales were: Deep approach, 0.73 and Surface Approach, 0.63.

The Rosenberg Self-Esteem Scale (RSES) (Rosenberg, 1965) is a 10-item scale that was developed to assess global self-esteem, with the aim to predict overall feelings of self-worth or self-acceptance and gives an estimate of the testee's positive or negative feelings about the self (Robinson, Shaver & Wrightsman, 1991) (see Annexure 4). The scale is answered on a 5-point Likert-type scale, where the individual has to indicate to what extent he/she agrees with each item. Possible responses are: Strongly disagree (1); Disagree (2); Neutral (3); Agree (4) and Strongly agree (5). The reliability indices found by various researchers varied from 0.74 to 0.93, which indicate that the test is a highly reliable measure of self-esteem (Fleming & Courtney, 1984; Rosenberg, 1989; Visser, 1985). According to Sassoon (2005) the Rosenberg Self-Esteem Scale's face validity appears to be good and its convergence with other measures of self-esteem is acceptably high, ranging from 0.67 to 0.83. The scale has been standardised for use in the South African context (Visser, 1985; Sassoon, 2005). In the present study a Cronbach alpha of 0.70 was obtained on this scale.

Learners' motivation was measured by means of an adapted version of the *Self-concept and Motivation Questionnaire* (Bester, 2003) (see Annexure 5). The original questionnaire contains 40 items, 20 items measuring motivation and 20 measuring self-concept. The items are answered on a six-point scale so that a greater range of scores can be obtained, thus increasing the reliability of the questionnaire. A high score on the questionnaire indicates high motivation while a low score indicates low motivation. Reliability of the self-concept and motivation questionnaire was established by calculating the alpha reliability coefficient for the items dealing with each construct. The reliability coefficient for motivation was 0.86 and self-concept was 0.89 (Bester, 2003). There was evidence of predictive validity since motivation and self-concept had significant positive correlations with performance. Since the researcher made use of the Rosenberg Self-esteem Scale (RSES) above, only the motivation items was selected from Bester's (2003) questionnaire. A Cronbach alpha of 0.69 was obtained on this scale during the present research.

The Psychological Well-being (PWB) Scale (Ryff, 1989) was used to assess the participants on the six dimensions of well-being, namely self-acceptance, positive relations, autonomy, environmental mastery, purpose in life and personal growth. The scale comprises of 18 short standardised items (see Annexure 6). This scale has been standardised through comparisons with subjective measures of psychological well-being (life satisfaction, positive and negative affect), is significantly linked to personality factors (Schmutte & Ryff, 1997) and has been cross-culturally validated (Staudinger, Baltes & Fleeson, 1999). Healy (2005) obtained coefficients for the six subscales (each of 3 items) of the PWB scale with Chronbach's alphas ranging from 0.36 to 0.59. In the latter study the reliability coefficients calculated on the total scores of the scale was 0.80. The combined scores on the six dimensions can also be used for an overall well-

being percentage (Ryff, 1989). Since it was proposed by Ryff (personal correspondence) that it is not feasible to use the short version (18 item- scale) of the PWB as it might not measure the six dimensions of well-being sufficiently, a factor analysis was done with the results of the present study. It appeared that two factors, namely Factor 1 (Environmental mastery and self-acceptance) and Factor 2 (Personal relationships and Purpose in Life) were assessed during this research. The Cronbach alpha of these two Factors were 0.68 and 0.72 respectively.

To obtain a reflection of academic performance, it was decided to use averages obtained in the June 2010 examinations. The averages was used as the criterion, namely a learner's achievement in the four compulsory learning areas, i.e. Setswana First Language, English First Additional Language, Life Orientation and either Mathematics or Mathematical Literacy. The National Curriculum Statement policy suggests that learners should have a minimum of seven learning areas in order for them to comply with the requirements for this new system of education (Department of Education, 2005).

Data gathering methods

The aptitude test was administered to the learners during two assessment sessions which took place in two successive weeks (two groups of 100 and 110 learners respectively). These sessions were conducted during the first 2 hours of the school day to avoid fatigue playing a role in the results.

The researcher was assisted by two Masters Graduates and two Research Masters Interns who were trained to facilitate the assessment. The Physical Activity Index, the Revised Study Process Questionnaire, the Self-esteem scale, the Motivation Questionnaire, and the Psychological Wellbeing Scale were completed a week after the learners had completed the IQ tests. This was done during the normal class periods and was facilitated by the researcher. The school results were obtained after the June reports of 2010 had been compiled at the respective school. All information was entered on coded sheets and the information was processed using the SPSS software programme (SPSS Inc., 2007).

Data analysis

Statistical analysis was conducted with version 16 of the SPSS programme (SPSS Inc., 2007). Descriptive statistics such as the mean and standard deviations were used to explore the the central tendency of the data. Cross-tabulations were calculated to test the association between sport participation and academic performance. The significance of the association was reported as the difference between the observed and expected frequencies in the levels of sport participation and academic performance in the form of Chi-square. Practical significance (Cohen,1988) is reported as eta squared to demonstrate effect size. Univariate regression models with academic performance as dependant variable and the following variables as

independent variables were calculated; IQ, Deep approach and Surface Approach (as dimensions of the RSPQ), Motivation, Self-esteem and Psychological well-being. On the basis of significant univariate regressions, hierarchical regressions were implemented to test for moderation. The interaction effect between the significant variables above and sport participation were tested with academic performance as a dependent variable. Changes in the coefficient of determination and change in F were reported as significance of a model.

Ethical Considerations

Based on the American Psychological Association (APA, 2002), permission to undertake the study was sought from the ethics committee of the North-West University (Potchefstroom Campus) (00021-09-S1). In addition informed consent was requested and obtained from the participants and their parents/guardians or significant others by means of the guidelines set by the Health Professions Council of South Africa in studies dealing with human beings. Informed Consent was given by parents or guardians for the children under the age of 18 years. The participants were informed about the following significant aspects: (1) the purpose of the research, expected duration, and procedures; (2) their right to decline to participate and to withdraw from the research once participation has begun; (3) any prospective research benefits; (4) limits of confidentiality; (5) whom to contact for questions about the research and their rights as research participants. The researcher also provided an opportunity for the prospective participants to ask questions and receive answers or request feedback about the study.

Results

Sport participation index was determined as a multiplication of the following 3 aspects, namely frequency, intensity and level as indicated in the literature. Table 2 shows how students who electively participate in sport responded to these 3 aspects.

Table 2

Categories of sport participation

Participation in sport			
		Frequency	Percentage
Frequency of participation	Week	26	12
	Weekend	6	3
	Both	34	16
	Total	66	31

		Frequency	Percentage
Intensity	Less than 30min	4	2
	30-60min	25	12
	More than 60min	37	18
	Total	66	31

		Frequency	Percentage
Level	School/Club	59	28
	Leisure	7	3
	Total	66	31

The table above indicates that 26 participants took part in sport during the week, 6 during the weekend and the total for both midweek and weekend participation was 34 which is equivalent to 16% of the frequency of participation. In order to determine the intensity of participation in sport 4 participants participated less than 30 minutes, 25 between 30-60 minutes, and 37 more than 60 minutes which resulted in 18%. Fifty-nine participants represented school/club which is high level competition, and only 7 participated in sport for leisure. Thus only 31% of the participants participated in sport. The PAI index has almost a 50% split for the 2 categories, namely high level activity was 49.2% and low level activity was 50.8% of participants.

As indicated in the measuring instruments section, the participants IQ was measured with a standardized instrument, namely the GSAT. The frequencies of scores on the various levels of the GSAT are presented in the table below.

Table 3

Categories of IQ

Category	Frequency	Percent
Less than 70	41	20
70 - 79	77	37
80 - 89	61	29
90 - 99	23	11
100 - 109	3	1
Total	205	98

The table above shows that 41 participants obtained a IQ score less than 70 (depicting mild mental retardation according to the scale); 77 obtained an IQ between 70-79 (depicting borderline mental retardation); 61 had an IQ of 80-89 (depicting a low average IQ); 26 obtained

an IQ score between 90-109 (indicating an average IQ) (Cf. Louw & Edwards, 1997:337). In essence 98% was obtained from the categories explained. It is surprising that 118 (57%) of the participants had an IQ of below 80, which depicts persons in the borderline mental retardation and lower, category. The question arises how these participants managed to progress to Grade 10 and 11 with such low IQ's. A possibility might be that the academic standard of the School is considered below par. Another hypothesis might be that some of the children did not understand the questions as the tests were done in English. It should be noted however, that a analysis of the June 2010 results indicated, that 29 participants (14.2%) obtained an average in the 4 subjects of less than 33% with the lowest being 7%, a further 54 (26.5%) had an average of between 33% and 33.9% and the highest average was only 59.25%.

The descriptive statistics of all study measures were calculated and are presented in table 4.

Table 4

Descriptive statistics of all study measures

Variables	N	Min	Max	Mean	SD	Skewness
Deep Approach	194	22	60	48.35	7.83	-0.55
Surface Approach	200	10	55	32.83	9.05	-0.04
Self-efficacy	189	6	24	15.47	2.72	0.14
Motivation	199	30	120	99.14	12.50	-1.88
F1_PWB	204	13	42	36.71	5.23	-1.16
F2_PWB	204	6	36	22.95	6.69	-0.27

NB: F1_PWB = Factor 1 of the Psychological well-being scale (Environmental mastery and self-acceptance)

F2_PWB = Factor 2 of the Psychological well-being scale (Personal relationships and Purpose in Life)

The table above shows that this is a positively skewed distribution because most scores are below the mean and only the self-esteem score is slightly above it. Jaccard and Becker (2002) explain further that the mean will always be greater than the median in a positively skewed distribution.

The association between sport participation and academic performance was assessed with a cross-tabulation. The cross-tabulation was based on 2 levels of sport participation, namely high physical activity and low physical activity with academic performance on 3 levels, namely lower than 32.9%, between 33 and 39.9% and above 40%. The relationship between sport

participation and academic performance was 0.364. The practical significance of this association was 0.09.

Means of academic performance were compared along the 2 levels of sport participation using the analysis of variance. The analysis of variance was however not significant (F =1.375 df = 10/53, p>.217). This is consistent with the cross-tabulation above although using the continuous distribution of scores for this calculation.

A decision was made to explore whether the following variables could act as moderators in the relationship between academic performance and sport participation: IQ, study process, self esteem, motivation and psychological well-being. As previously indicated in the introduction of this study, the literature shows that these variables independently influence academic performance without any definite evidence on their influence on sport participation. Prior to implementing the test of moderation, several univariate regression models were calculated. The regression models showed that: IQ did not significantly predict academic performance (F=.01 df=1/197,p>.941); the deep approach did not significantly predict academic performance (F= .01 df= 1/187, p>0.93); the surface approach did not significantly predict academic performance (F=.02 df= 1/192, p>0.884); self-esteem significantly predicted academic performance (F=3.617 df=1/182, p>.05); motivation did not significantly predict academic performance (F=1.022, df=1/192, p>.313); Factor 1 of psychological well-being (Environmental mastery and self-acceptance) did not significantly predict academic performance [F=.01 df =1/196, p>.924]. Factor 2 of psychological well-being (Personal relationships and Purpose in Life) did not significantly predict academic performance (F=.239 df=1/196, p>.625).

As self-esteem was the only variable that significantly predicted academic performance, it was used in further analyses to test its role as a moderator in the relationship between sport participation and academic performance. A hierarchical regression analysis was implemented. In the first step sport participation and self-esteem were entered into the model to establish their influence on academic performance. In the second step the interaction between sport participation and self-esteem was entered into the model to establish their influence on academic performance. Although the model was not significant, the regression coefficient [beta] increased from -.10 to -.14. This would suggest that when improved self-esteem interacts with sport participation, then academic performance will improve.

Discussion

The aim of the study was to investigate the relationship between sport participation and academic performance among grade 10 and 11 learners in the Dr Kaunda District.

The results of the study show that based on both the cross-tabulations and univariate regressions as indicated in the results section above, a significant relationship between sport participation and academic performance could not be found. These findings are consistent with

some previous research findings that also indicated no significant relationship between the two variables, namely Marsh (1992) and Melnick and his associates (Melnick, Sabo & VanFossen, 1992a; 1992b; Melnick, VanFossen & Sabo, 1988; Sabo, VanFossen & Melnick, 1993). The present findings do however differ from previous research findings by Davis and Berger (1973), Edwards (1986), Marsh (1992) and Melnick et al. (1992a; 1992b; 1988) that indicated that participation in sport has negative consequences on academic performance. The present finding is also not consistent with many other research findings that indicated a positive correlation between sport participation and academic performance (Braddock, 2002; Fredericks et al., 2006; Hannaford,1995; Jensen,1998; Sanders et al., 2000).

As already indicated in the introduction of this study self-esteem may influence school achievement, meaning that if a learner displays a high sense of self-esteem then there is a high probability that the learner's academic achievement will improve. A statistical and practical (small effect) significantly higher sense of generalised self-efficacy was found in the study of Butler (1996). Factors that are pertinent to high self-esteem, but that also support cognitive learning may be achieved as a result of sport participation (Braddock, 2002; Scheuer & Mitchell, 2003). It is worth noting that despite the fact that sport participation could not positively influence academic performance, the finding that self-esteem as a moderating variable could significantly influence academic performance is crucial.

Since most of the studies conducted previously indicated that IQ can positively influence academic performance, it is surprising that the same results could not be duplicated in the current study. The insignificant relationship between IQ and academic performance found in the current study is inconsistent with the findings of several researchers who have found a significant relationship between intelligence and various measures of academic achievement in a number of populations (Jensen,1980; Midkiff, Burke & Helmstadter,1989; Zigarelli,1996). In the same breath, Maqsud (1983) also found a relationship between intelligence test scores and mathematics achievement for (black) Nigerian boys.

These findings are significant because even though positive correlations could not be found in the variables used to influence academic performance in this study, the fact of the matter is that several researchers managed to obtain significant relationships between the variables in their studies. In the study of Grobler, Grobler and Esterhuyse (2001), for instance, Mathematics achievement was deemed too complex to be predicted by a single variable, and as a result a combination of variables was used. The results obtained from the same study suggest that scholastic aptitude, as well as certain levels of self-concept and certain socio-economic status variables, play a role in the prediction of mathematics achievement.

The literature survey of Maree's (1995) study suggested that impoverished socio-economic background, inadequate academic preparation/stimulation, lack of parental motivation, poor tuition, inadequate financial aid and lack of properly trained teachers' were the reasons for the poor mathematics achievement of black grade 9 learners. An analysis of the present research

sample's socio-demographic factors also give some indication of possible impoverished circumstances under which the present participants has to study. As previously indicated only 20 participants (9.7%) parents' had a post matric qualification; only 142 of the primary caregivers were employed (68.6%); 84 (40.6%) lived in households with 5-8 family members, and in 143 cases (69.1%) there were no separate sleeping and cooking quarters, and only in 65 (31.4%) cases did the family have their own transport. It might be surmised that all these mentioned factors could negatively impact on the participants academic functioning. In 176 cases (85%) however, there were newspapers, magazines or books available for leisure reading in the home. To some extent outcomes-based education requires certain resources in the home of the learner to be present for a meaningful realization of outcomes. It might be that some of these resources were not available to some participants and consequently hampered their academic performance.

Findings from this study can promote the understanding of the stakeholders in the Department of Education, namely educators, parents, learners, and senior departmental officials of the beneficial role that sport participation, physical activity and exercise can play in the enhancement of academic performance in our children.

Conclusions

In this study the difference in academic performance obtained by learners who participate in sport and those who do not, was investigated. Self-esteem is the only variable that predicted academic performance. Although causality cannot be deducted in the current study, it can be assumed from previous studies that sport participation has valuable attributing factors that can enhance achievement.

A limitation of this study may be the fact that only self-report measures were implemented. Participants in the study might have struggled to follow what the self-report measures sought to achieve. Another factor that might have impeded on the results were that only a small group of participants participated in sport, which in turn led to a small research sample. The narrow range in the academic performance of the participants (one result of 7% and the rest between 17.25% and 59.25%) could also have influenced the results.

The findings of this study suggest the value that sport participation may have for self-esteem and academic performance of learners. This might indicate the necessity for the Department of Education to urgently reintroduce the physical education programme within the school curriculum, to employ support staff e.g. counselling psychologist/s whose task it would be to offer career guidance, to mentor the learners, and to ensure there are proper sport facilities that are necessary for learners could carry out the physical education activities in our schools.

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ANNEXURE 1

Biographical Questionnaire.

1. Indicate which grade you are in this year (2010).

Grade 10	1
Grade 11	2

2. Date of Birth

Day Month Year

3. Gender

M	1
F	2

4. Home language

Setswana	1
Other	2

5. Who is your primary caregiver?

Mother	1
Father	2
Relatives	3
Friends	4
Alone	5

6. Indicate your primary caregiver's (e.g. mother or father or guardian) highest level of education

Grade 8 or lower	1
Grade 9 - 10	2
Grade 11 - 12	3
Post matric qualification(s)	4

7. Is your primary caregiver employed?

Yes	1
No	2

8. How many people (including yourself) live in your home?

1-4	1
5-8	2
More than 8	3

9. How would you describe your house?

9.1. Do you live in a formal (F) or informal (I) settlement?

F	1
I	2

9.2. Does your home have electricity?

Yes	1
No	2

9.3. Do you have separate cooking and sleeping quarters?

Yes	1
No	2

10. Does your family have their own transport?

Yes	1
No	2

11. Do you have newspapers, magazines or books for leisure reading in your home?

Yes	1
No	2

ANNEXURE 2

Participation in Sport

1. Do you participate in sporting activities?

Yes	1
No	2

2. When do you participate in sporting activities?

During the week	1
During the weekend	2
Both	3

3. In how many sporting activities do you participate?

One	1
Two	2
More than 2	3

4. Indicate the total amount of time spend on your sporting activities per week:

Less than 30 minutes	1
Between 30 – 60 minutes	2
More than 60 minutes	3

5. Do you participate in sporting activities for:

5.1 Leisure

Yes	1
No	2

5.2 Representing your school/club

Yes	1
No	2

ANNEXURE 3 **Study Process Questionnaire**

	Circle the number that best describes your present agreement or disagreement with each statement.	**Strongly Disagree**	**Dis-agree Some-what**	**Dis-agree Slightly**	**Agree Slightly**	**Agree Some-what**	**Strongly Agree**
1	I find that my study periods gives me a feeling of deep personal satisfaction.	1	2	3	4	5	6
2	I find that I have to do enough work on a topic in order to draw my own conclusions before I am satisfied.	1	2	3	4	5	6
3	My aim is to pass the course while doing as little work as possible.	1	2	3	4	5	6
4	I only study seriously what's given out in class or in the course outlines.	1	2	3	4	5	6
5	I feel that virtually any topic can be highly interesting once I get into it.	1	2	3	4	5	6
6	I find most new topics interesting and often spend extra time trying to obtain more information about them.	1	2	3	4	5	6
7	I do not find my course very interesting so I keep my work to the minimum.	1	2	3	4	5	6
8	I learn some things by going over and over them until I know them by heart even if I do not understand them.	1	2	3	4	5	6
9	I find that studying academic topics can at times be as exciting as a good movie.	1	2	3	4	5	6
10	I test myself on important topics until I understand them completely.	1	2	3	4	5	6
11	I find I can pass most assessments by memorising key sections rather than trying to understand them.	1	2	3	4	5	6
12	I generally restrict my study to what is specifically set as I think it is unnecessary to do anything extra.	1	2	3	4	5	6
13	I work hard at my studies because I find the material interesting.	1	2	3	4	5	6
14	I spend a lot of my free time finding out more about the interesting topics which have been discussed in different classes.	1	2	3	4	5	6

15	I find it is not helpful to study topics in depth. It confuses and wastes time, when all you need is a passing knowledge of topics.	1	2	3	4	5	6
16	I believe that teachers shouldn't expect students to spend significant amounts of time studying material everyone knows won't be examined.	1	2	3	4	5	6
17	I come to most classes with questions in mind that I want answered.	1	2	3	4	5	6
18	I make a point of looking at most of the suggested readings that go with lessons.	1	2	3	4	5	6
19	I see no point in learning material which is not likely to be in the examination.	1	2	3	4	5	6
20	I find the best way to pass examinations is to try to remember answers of possible questions.	1	2	3	4	5	6

ANNEXURE 4

Self-Esteem Scale

Instructions: Below is a list of statements dealing with your general feelings about yourself. If you strongly agree, circle **SA**. If you agree with the statement, circle **A**. If you disagree, circle **D**. If you strongly disagree, circle **SD**.

1.	On the whole, I am satisfied with myself.	SA	A	D	SD
2.	At times, I think I am no good at all.	SA	A	D	SD
3.	I feel that I have a number of good qualities.	SA	A	D	SD
4.	I am able to do things as well as most other people.	SA	A	D	SD
5.	I feel I do not have much to be proud of.	SA	A	D	SD
6.	I certainly feel useless at times.	SA	A	D	SD
7.	I feel that I'm a person of worth, at least on the same level with others.	SA	A	D	SD
8.	I wish I could have more respect for myself.	SA	A	D	SD
9.	All in all, I am inclined to feel that I am a failure.	SA	A	D	SD
10.	I take a positive attitude toward myself.	SA	A	D	SD

ANNEXURE 5

Motivation Questionnaire

NB. Task = homework; study materials; assignments

Circle the number that best describes your present agreement or disagreement with each statement.	**Strongly Disagree**	**Disagree Some-what**	**Disagree Slightly**	**Agree Slightly**	**Agree Some-what**	**Strongly Agree**
1. I am always motivated to go to class.	1	2	3	4	5	6
2. If a task is difficult to learn I give up easily.	1	2	3	4	5	6
3. I hate it to study.	1	2	3	4	5	6
4. If I do not meet my study obligations, it bothers me.	1	2	3	4	5	6
5. When it comes to studying I put my schoolwork before pleasure.	1	2	3	4	5	6
6. I always look for excuses not to do my schoolwork.	1	2	3	4	5	6
7. I study when I feel like it.	1	2	3	4	5	6
8. I set goals for my studies and try to reach them.	1	2	3	4	5	6
9. If a task is too difficult I do not even try to learn it.	1	2	3	4	5	6
10. I am usually enthusiastic when I begin to study but later on I become less enthusiastic.	1	2	3	4	5	6
11. It bothers me if my work for the day is not finished.	1	2	3	4	5	6
12. Where my schoolwork is concerned I use my time well.	1	2	3	4	5	6
13. I like to learn new work and improve my skills.	1	2	3	4	5	6

14. Where my schoolwork is concerned, I see myself as a hard worker.	1	2	3	4	5	6
15. I am determined to do my schoolwork at a high standard.	1	2	3	4	5	6
16. I do not have to be told to do my schoolwork.	1	2	3	4	5	6
17. I catch up work that I have missed.	1	2	3	4	5	6
18. I am motivated to learn difficult, challenging work.	1	2	3	4	5	6
19. I usually set aside time for my studies.	1	2	3	4	5	6
20.Where my schoolwork is concerned I do what I am meant to do but nothing extra.	1	2	3	4	5	6

ANNEXURE 6

Psychological Well-Being Scale

The following set of questions deal with how you feel about yourself and your life. Please remember that there are no right or wrong answers.

Circle the number that best describes your present agreement or disagreement with each statement.	**Strongly Disagree**	**Disagree Some-what**	**Disagree Slightly**	**Agree Slightly**	**Agree Somewhat**	**Strongly Agree**
1. In general, I feel I am in charge of the situation in which I live.	1	2	3	4	5	6
2. Maintaining close relationships has been difficult and frustrating for me.	1	2	3	4	5	6
3. The demands of everyday life often get me down.	1	2	3	4	5	6
4. I live life one day at a time and don't really think about the future.	1	2	3	4	5	6
5. I am quite good at managing the many responsibilities of my daily life.	1	2	3	4	5	6
6. People would describe me as a giving person, willing to share my time with others.	1	2	3	4	5	6
7. I have not experienced many warm and trusting relationships with others.	1	2	3	4	5	6
8. Some people wander aimlessly through life, but I am not one of them.	1	2	3	4	5	6
9. I sometimes feel as if I've done all there is to do in life.	1	2	3	4	5	6
10. When I look at the story of my life, I am pleased with how things have turned out.	1	2	3	4	5	6
11. I think it is important to have new experiences that challenge how you think about yourself and the world.	1	2	3	4	5	6
12. I like most aspects of my personality.	1	2	3	4	5	6
13. I tend to be influenced by people with strong opinions.	1	2	3	4	5	6

14. In many ways, I feel disappointed about my achievements in life.	1	2	3	4	5	6
15. I have confidence in my opinions, even if they are contrary to the general consensus.	1	2	3	4	5	6
16. For me, life has been a continuous process of learning, changing, and growth.	1	2	3	4	5	6
17. I gave up trying to make big improvements or changes in my life a long time ago.	1	2	3	4	5	6
18. I judge myself by what I think is important, not by the values of what others think is important.	1	2	3	4	5	6