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The relationships between perceived benefits, barriers of participating in physical activity and physical activity levels of farm school children

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Declaration

The co-authors of the two articles, Dr M.A. Monyeki (supervisor) and Prof. A.E. Pienaar (co-supervisor) hereby give Mrs K.S. Shirinde permission to include the two articles as part of the master degree dissertation. We declare that the candidate did major role in the write-up and finalization of the articles and qualify to be the primary author of the articles.

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Opsomming

Daar is gevind dat deelname aan fisieke aktiwiteit aan gesondheidsvoordele gekoppel kon word. 'n Gebrek aan fisieke aktiwiteit is 'n risikofaktore wat kan aanleiding gee tot mortaliteit. Die doel van hierdie studie was om die persepsies van hindernisse tot en die voordele verbonde aan die deelname aan fisieke aktiwiteit en die vlakke van fisieke aktiwiteit, asook die verwantskap tussen waargenome hindernisse tot en voordele verbonde aan die deelname aan fisieke aktiwiteit en die vlakke van fisieke aktiwiteit van seuns en dogters wat aan plaasskole bywoon in die Alma-Vaalwater gebied, te ondersoek. 'n Totaal van 344 kinders (185 seuns en 159 dogters) tussen die ouderdomme 15 en 16, het 'n vraelys aangaande persepsies van hindernisse en die voordele aan deelname aan fisieke aktiwiteit voltooi, en die *Previous Day Physical Activity Recall* (PDPAR) met betrekking tot die vlakke van fisieke aktiwiteit voltooi het. Die data is met behulp van beskrywende statistieke, onafhanklike *t*-toetsing en korrelasie deur middel van SPSS (Weergawe 15.0), geanaliseer. Die resultate het getoon dat hindernisse (met hoë gemiddelde waardes) soos deur seuns ondervind ten einde fisieke aktief te wees, 'n gebrek aan tyd, werk en skoolwerk en dat fisieke aktiwiteit mens laat sweet, ingesluit het. By dogters is hindernisse soos 'n gebrek aan tyd, werk\skoolwerk en 'n gebrek aan toerusting, ondervind. Met betrekking tot die waargenome voordele verbonde aan deelname aan fisieke aktiwiteit, het beide seuns en dogters hoë gemiddelde waardes getoon daarin om in goeie gesondheid te verkeer, om goed te voel en om energie te hê. Die resultate het verder getoon dat 'n gebrek aan toerusting negatief gekoppel was aan deelname aan fisieke aktiwiteit van seuns en dogters onderskeidelik gedurende die week en oor naweke. Verder het dogters 'n merkbare verwantskap getoon tussen om stres te verlig en fisieke aktiwiteit. Merkbare geslagsverskille betreffende die vlakke van fisieke aktiwiteit is gevind met dogters wat meer aan ligte fisieke aktiwiteit deelneem as seuns.

Hierdie studie het die aanbeveel noodsaaklikheid van die bekendstelling van bewusmakingsprogramme aangaande fisieke aktiwiteit, sowel as goedgestruktureerde programme van fisieke aktiwiteit aan gekwalifiseerde personeel, gemik op die verbetering van die algemene welstand van kinders, voorgestel. Verdere studies, met 'n groter steekproefgrootte, is egter nodig om huidige bevindinge te verifieer.

Sleutelwoorde: Fisieke aktiwiteit, persepsie, struikelblokke, voordele, plaasskool kinders, Alma-Vaalwater

Summary

Participation in physical activity was found to be associated with health benefits. Lack of physical activity is a risk factor that may lead to mortality. The purpose of this study was to investigate the perceptions of barriers and benefits of participating in physical activity and the levels of physical activity and to investigate the relationships between perceived barriers and benefits of participating in physical activity and levels of physical activity in boys and girls attending farm schools in Alma-Vaalwater area. A total of 344 children (185 boys and 159 girls) aged 15 to 16 years completed a questionnaire on perceptions of barriers and benefits of participation in physical activity, and a Previous Day Physical Activity Recall (PDPAR) questionnaire on the levels of physical activity. The data was analysed using descriptive statistics, independent *t*-testing and correlations by means of SPSS (Version 15.0). The results show that barriers (with high mean values) experienced by boys to be physically active included lack of time, to do work/school work, and physical activity makes one sweat. In girls barriers experienced to be physically active included lack of time, to do work/school work and lack of equipments. With regard to the perceived benefits of participating in physical activity both boys and girls showed high mean values in to stay in good health, to feel well and to have energy. The results further showed that lack of equipments was negatively associated with participation in physical activity in boys and girls during the week and weekend days respectively. In addition girls showed a significant relationship between to relieve stress and physical activity. Significant gender differences regarding the levels of physical activity with girls participating more in light physical activity than boys were found.

This study recommended the need for the introduction of awareness programmes on physical activity as well as well-structured programmes of physical activity by qualified personnel geared towards the improvement of general well-being of children. More studies with a larger sample size are required to verify the present findings.

Key words: Physical activity, perception, barriers, benefits, farm school children, Alma-Vaalwater

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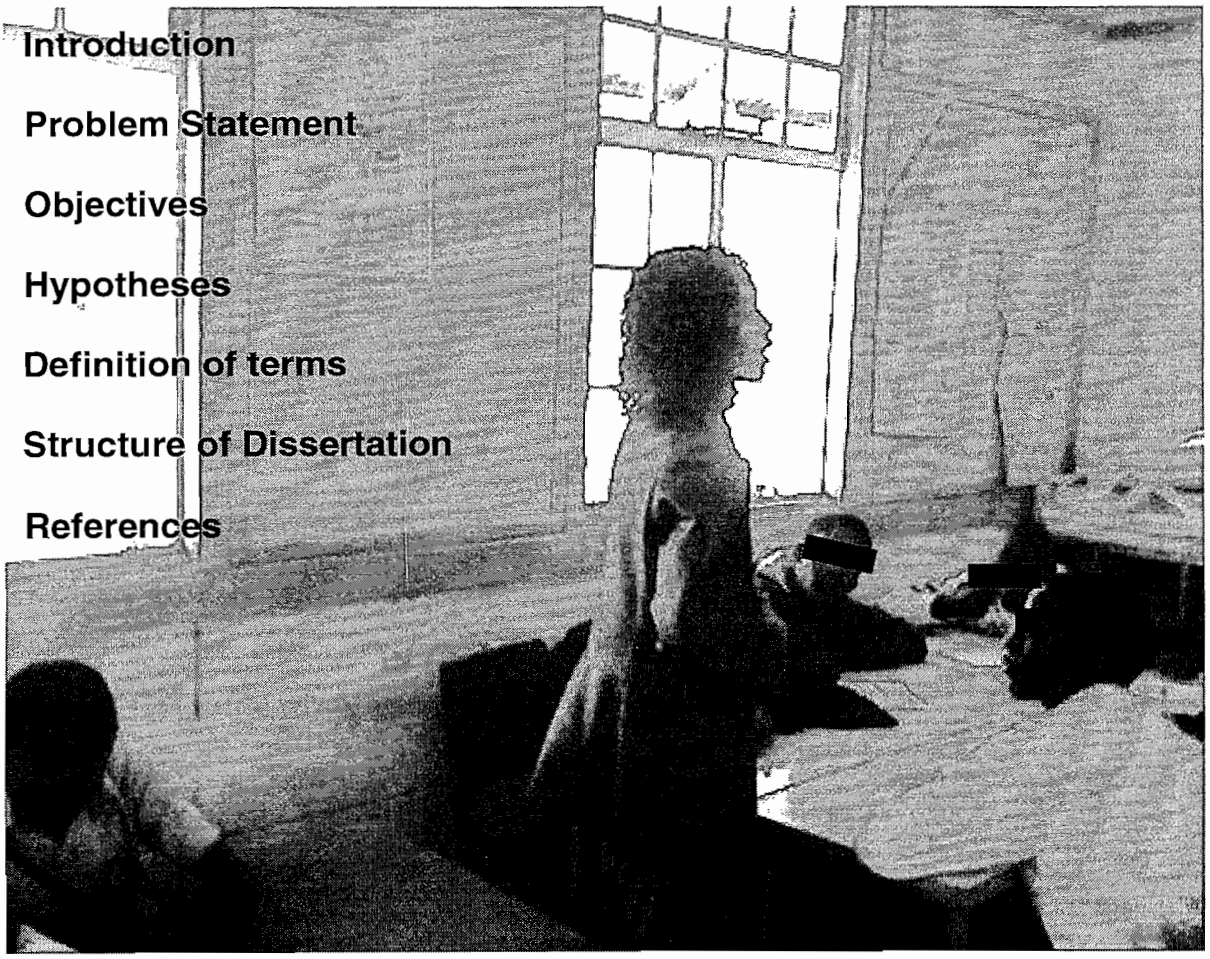
LIST OF ABBREVIATIONS AND ACRONYMS

AJPHERD	African Journal for Physical, Health Education, Recreation and Dance
WHO	World Health Organization
EU	European Union
TV	Television
ACSM	American College of Sports Medicine
PE	Physical Education
NCCDPHP	National Center for Chronic Disease Prevention and Health Promotion
PA	Physical Activity
YRBS	Youth Risk Behaviour Surveilance
US	United States
CVD	Cardiovascular Disease
NASPE	National Association for Sport and Physical Activity
PDPAR	Previous Day Physical Activity Recall
METs	Metabolic Equivalents
SPSS	Statistical Package of Social Sciences
SD	Standard Deviation

CHAPTER 1
PROBLEM STATEMENT AND PURPOSE OF THE STUDY



1.1 Introduction

Participation in regular physical activity has been found to have multiple health benefits across all age groups (Bouchard *et al.*, 1994; U.S. Department of Health and Human Services, 1996; van der Bij *et al.*, 2002:133; Bauman & Miller, 2004:147; Deflandre *et al.,* 2004:36). For example, physical activity improves attributes such as brain function and high energy concentration, increases self-esteem, which leads to better behaviour, and in turn, may support educational performance and cardiovascular health (Dwyer *et al.*, 1983; Centers for Disease Control and Prevention, 1993:672; Shephard, 1997; Trernblay *et al.*, 2000; Cocke, 2002). Conversely, lack of physical activity was found to be associated with independent risk factors of functional dependency and mortality (Centers for Disease Control and Prevention, 1993:672; Mouton *et al.*, 2000:897).

1.2 Problem Statement

Despite the proven health benefits of physical activity, a sedentary life style among adolescents, adults and older persons is prevalent (Steptoe *et al.*, 1997:854; Jones *et al.,* 1998:289; Brownson *et al.,* 2000:270; Vaz De Almeida, 2004:273; De Bourdeaudhuij *et al.*, 2004:366). Sallis (2000:32) stated that children are becoming more inactive during their teen age years and when they reach high school, only a minority of them meet health-related activity guidelines. Tracking studies on physical activity revealed that low levels of physical activity remain stable from adolescence into adulthood (Malina, 1996:57; Lefevre *et al.*, 2000:497), especially among females (De Bourdeaudhuij & Sallis, 2002:288). According to De Bourdeaudhuij *et al.* (2004:366) adolescents seem to be an important group to promote the maintenance of adequate physical activity levels or to encourage inactive adolescents to become more active. Phillips and Hill (1998:293) revealed that the likelihood of people achieving the

recommended preventative health requirements is influenced by both perceived barriers and benefits of participating in physical activity.

According to Brawley *et al.* (1998) and Deflandre *et al.* (2004:36) barriers to physical activity can be studied at different levels: individual (e.g. lack of motivation, lack of interest or pleasure and lack of time), structural or environmental (e.g. financial costs, lack of public transport to facilities and lack of infrastructure), and social (e.g. lack of support and encouragement of significant others). Research findings by Janz and Becker (1984:47), Sallis and Hovell (1990:322), and Fisher and Fisher (2000:55), revealed that perceived individual barriers are the strongest predictors of health behaviours. From the generic theories or models (Ajzen & Madden, 1986:474; Bandura, 1986), physical activity in adolescence was best predicted by self-efficacy, attitudes or beliefs, families' or friends' support, and perceived benefits and barriers (Sallis & Hovell, 1990:330; De Boudeaudhuij, 1998:98; Sallis, 2000:1600; Deflandre, *et al.*, 2002:83; Deflandre *et al.*, 2004:36). It was indicated that exercise behaviour is negatively affected by environmental and social barriers (Rejeski, 1992:157; King *et al.,* 2002:25). These barriers were found to constrain adolescents (Fergusson *et al.,* 1989:115; Tappe *et al.,* 1990:192; Zakarian *et al.,* 1994:321; Saunders *et al.,* 1997:247), and adults (Slenker *et al.,* 1984: 378; Biddle & Ashford, 1988: 140; Desmond *et al.,* 1990:226). Furthermore, barriers are also linked to gender differences (Tergerson & King 2002:381; Deflandre *et al.,* 2004:36), where it was found that girls perceived more barriers of physical activity than boys (Sallis *et al.,* 1996:134; Deflandre *et al.,* 2004:36). Research has shown that the role of attitudes, social influence, self-efficacy, and perceived benefits and barriers in changing behaviour differs, depending upon the particular stage of development (Prochaska *et al.*, 1994:46; De Vries & Mudde, 1998:385; Marshall & Biddle, 2001:246; Ronda *et al.*, 2001:314).

Deflandre *et al.* (2004:36) recommended that strategic measures of encouraging participation in physical activity should be made available so as to maximise the levels of participation in physical activity. It has been stated that the Transtheoretical Model contributes to the determinants of the generic psychosocial models with readiness of the individual to change behaviour. It also provides guidelines for designing interventions (De Boudeaudhuij *et al.*, 2004:366).

Stephens *et al.* (1986:290) mentioned that the improvement of "well-being" seems to be the major underlying reason for participating in physical activity. Research findings indicated that individual children perceived physical activity as beneficial to health (Zakaria *et al.,* 1994:321; Harrison & Narayan, 2003:121). Telama *et al.* (1997:323) and Dollman *et al.* (1999:121) stated that participation in physical activity during childhood and adolescence increases the likelihood that the activity is continued in adulthood. Based on the above information, Deflandre *et al.* (2004:36) revealed that there is a need to increase people's perception with regard to the benefits of participating in physical activity for health promotion. Berkey *et al.* (2003:843), in their longitudinal study, showed that an increase or decrease in physical inactivity predicts decreases in relative states of being overweight among children. Furthermore, a study by Fulto *et al.* (2001:165) stated that increasing physical activity and or decreasing sedentary behaviour are important components of treatment and prevention of childhood obesity.

Although there is an abundance of information on the relationships between perceived benefits and barriers of participating in physical activity, and physical activity status in developed countries, such information is scarce in developing countries, like South Africa, particularly among farm school children. Of the few available studies conducted on farm schools, is one by Vorster *et al.* (2000:514), which identified farm workers in the North

West province as a vulnerable social group with regard to income, nutrition security, health status and education. A more recent study which was carried out by Monyeki *et al.* (2004:385) revealed that farm school children in the North West province performed poorly with regard to motor performance and physical fitness.

Another study by Cameron (1991:250) revealed that farm schools children in the Vaalwater area have a lower growth status, compared to American children. However, none of the preceding studies investigated the perceived barriers and benefits of participating in physical activity and levels of physical activity, and also their relationships. Such relationships have a bearing on the health and well-being of the people. It is against this background that the perceived barriers and benefits of participating in physical activity and levels of physical activity, and also their relationships in farm school children in Alma-Vaalwater area, need to be investigated. The present study seeks to answer the following research questions:

- What is the perception of children attending farm schools with regard to the perceived barriers and benefits of participation in physical activity and what are their physical activity levels?
- What is the relationship between perceived benefits and barriers of participating in physical activity and physical activity levels of children attending farm schools in Alma-Vaalwater area?

The answers to these research questions could be of great value to kinderkineticists, physical education teachers and biokineticists. Such information will provide scientific knowledge which can help professionals to come up with strategic programmes for promoting physical activity at farm schools. Furthermore, this study may also help to explore the possibility of including some physical activity programmes in the school curriculum, so as to raise children's awareness on the importance of physical activity for good health among children.

1.3 Objectives

The objectives of this study are:

1. 3.1 to determine the perceptions of the barriers and benefits of participation in physical activity and levels of physical activity in children attending farm schools,

1.3.2 to determine the relationships between perceived barriers and benefits of participating in physical activity and the levels of physical activity in children attending farm schools.

1.4 Hypothesis

This study was based on the following hypotheses:

1.4.1 children attending farm schools have gender and age difference in the perceptions regarding the barriers and benefits of participation in physical activity and have different levels of physical activity,

1.4.2 positive associations exist between perceived benefits of participation in physical activity, and negative associations exist between perceived barriers and the levels of physical activity among children attending farm schools.

1.5 DEFINITION OF TERMS

1.5. 1. **Health** is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity (WHO, 2001:20).

1.5.2 **Health Promotion** is the process of enabling people to increase control over, and to improve, their health; to reach a state of complete physical, mental and social well-being (Coulson *et al.*, 2002).

1.5.3 **Physical Activity** is any bodily movement produced by skeletal muscles that results in energy expenditure and is positively correlated with physical fitness (Centre for Disease Control and Prevention, 2002:10). Walking, gardening, pushing wheelbarrow, briskly pushing a baby stroller, climbing the stairs, playing soccer, or dancing the night away are all good examples of being active. For health benefits, physical activity should be **moderate** or **vigorous** and add up to at least 30 minutes a day.

1.5.4 **Sedentary** means sitting habitually or inactive habits (Saunders, 2001:605) that is the work or activities in which an individual spends a lot of time sitting down and not moving (Hornby, 2000).

1.5.5 **Perceived Benefits** is one's opinion of the efficacy of the advised or recommended action (Glanz, 1998:77).

1.5.6 **Perceived Barriers** is one's opinion of the tangible and psychological costs of the advised or recommended action (Glanz, 1998:78).

1.6 PROPOSED OUTLINE OF CHAPTERS

This dissertation is written in an article format and comprises of five chapters which can be read independently.

- Chapter 1: Presents the problem statement, hypothesis and objectives of the study.
- In Chapter 2: The literature review on barriers and benefits of participation in physical activity and the levels of physical activity are discussed.
- Chapter 3, presents article 1 titled: Perceived barriers and benefits of participating in physical activity and the levels of physical activity of children attending farm schools (to be submitted for publication in the *African Journal for Physical, Health Education, Recreation and Dance (AJPHERD)*.
- In Chapter 4, article 2 titled: The relationship between perceived barriers and benefits of participating in physical activity and the levels of physical activity in boys and girls attending farm schools (to be submitted for publication in the *African Journal for Physical, Health Education, Recreation and Dance (AJPHERD)*. Each chapter has its own reference list.
- In Chapter 5 the summary, conclusion and implications for further research are presented.
- The references for Chapters 1 & 2 are written according to the guidelines stipulated by the North-West University, while the references for Chapters 3 and 4 are written according to journal guidelines.
- Appendices follow at the end of the dissertation which includes the following:

APPENDIX A: Letters to the schools, parents, circuit manager, and consent and assent forms

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CHAPTER 2

A LITERATURE REVIEW ON PERCEPTIONS OF BENEFITS AND BARRIERS FOR PARTICIPATING IN PHYSICAL ACTIVITY AND THE LEVELS PHYSICAL ACTIVITY OF CHILDREN

2.1 INTRODUCTION

This chapter presents literature on the perceived barriers and benefits of participating in physical activity, and also the relationships between the perception of benefits and barriers of participating in physical activity and the levels of physical activity. In addition, recommendations of play activities for children and adolescents and techniques for assessing physical activity among children and adolescents were also discussed. Surveys from individual countries show that the prevalence of adequate physical activity is relatively high among children and adolescents. However, it is substantially lower among adults, suggesting that late adolescence and early adult life may be a critical period of transition (Haase *et al.,* 2004:183).

It is important therefore to monitor trends in physical activity in children and to understand factors such as attitudes, and knowledge of health benefits that may be associated with activity levels (Haase *et al.,* 2004:184). Deflandre *et al.* (2004:25) further indicated that participating in physical activity has an effect on a person's decision to preventative action on health. Perceived barriers and benefits influence the likelihood that a person will adopt a recommended preventative health action (Fishbein, 1995:248).

2.2 Perceptions of the benefits and barriers for participating in physical activity and the levels of physical activity.

2.2.1 Perceptions of benefits for participating in physical activity

Individual perceptions for participating in physical activity include its role of preventing chronic disease (Haase *et al.,* 2004:183). Furthermore, Haase *et al.* (2004:184) demonstrated that physiological variables are relevant in health education planning, and may be associated with frequency of leisure time physical activity.

Benefits to physical activity are associated with improved brain function and high energy. It also play a role in concentration, cardio-vascular health and increased self-esteem, which have a positive effect on a child's behaviour and educational/academic performance (Dwyer *et al.,* 1983:310; Centre for Disease Control and Prevention, 1993:670; Shephard, 1997:116; Tremblay *et al.,* 2000:313; Cocke, 2002). However, Stutts (2002:500) indicated that knowledge of the benefits of physical activity and participation in physical activity was reported to be weak in adults. Pate *et al.* (1997:242) found perceived benefits not being associated with physical activity.

The health belief model by Janz and Becker (1984:39), stated that an individual engage in health promoting behaviour, such as physical activity, due to perceived severity of a potential illness and perception of susceptibility to a disease and the perception of a benefit from participating in physical activity. A study by Tergerson and King (2002:376) found some perceived benefits indicated by high school students relating to staying in shape, losing weight and increasing the energy levels for females. From the European Union (EU), a national representative sample revealed that males perceived the benefits of physical activity as, to have fun (Zunft *et al.,* 1999:155). Participation in physical activity at childhood and adolescence has a positive effect in the continuation of such an activity at adulthood (Telama *et al.,* 1997:319). In contrast, Dollman *et al.* (1999:110) found that perceived benefits (pleasure, tiredness, keeping or getting in shape) are not associated with physical activity. Brown and Lawton (1986:129) stated that adolescent girls engaging in regular physical activity experience less illness provoking the effects of stress than less active girls. Physical activity protects an individual's emotional well-being from the effects of stress (Kobasa *et al.,* 1982:397; Ferron *et al.,* 1999:226).

The social learning theory by Bandura (1986) indicated that parental attitudes and behaviours influence children's attitudes and behaviours. Given this theory background, parents who participate in physical activity will be positively influential towards their children's attitudes and behaviours regarding physical activity. The Eccles Expectancy Value Model (Eccles *et*

al., 1982:318) focused attention on the significant others, as parents play an important role shaping children's attitude, beliefs and self-perception and on the instruction between significant others attitudes and the children's attitudes. According to this theory, parents as role models, exhibit behaviour which children imitate and adopt as part of their own behavioural repertoire. Although, the perceived benefits of physical activity are interesting and well documented in most European and American regions, there is little information on how youth and young adults perceive benefits in most parts of the world, especially in South Africa, and particularly in farm areas. An only available study which could be found was the one by Lennox *et al.* (2007:289) which investigated a health promotional physical activity programme for adolescents in semi-urban community, which reported encouragement from parents and friends to exercise with as their motivator to participate in physical activity.

The Social Cognitive Theory (Bandura, 1997; 2001) suggests that behaviour is determined by two beliefs (i.e. self-efficacy and outcome expectations). Self-efficacy is regarded as the person's confidence to participate in a particular activity, while outcome expectations refer to a person's belief on how an individual would benefit when participating in an activity. Self-efficacy beliefs and outcomes expectation could be affected by both social and personal factors, such as past experiences on the success and failures when participating in an activity, secondary experience, such as modelling by others, verbal persuasion by others and the physiological status like emotions and physical sensations relating to performance in an activity (Godin *et al.*, 1986:525; Marcus *et al.,* 1992; Calfas *et al.,* 1996:229; Long *et al.,* 1997:77; Mouton *et al.,* 2000:890).

The Theory of Reasoned Action states that people's participation in physical activity is primarily due to their intension to perform the behaviour and that this intension is determined by: one's attitude toward the behaviour; and subjective norms. Essentially, the attitudes focused on in this theory include the person's beliefs about the outcome of participating in physical activity and the value that is placed on that outcome. In terms of social

norms, the theory focuses on a person's view about what other people think an individual should do and the value that one places on the opinions of others (Hausenblas *et al.,* 1997:40).

The Theory of Restorative Environment identified environmental factors which serve to encourage physical activity (Kaplan, 1995:170). Restorative environments are natural features such as waters, open space, leafage and other factors which are different from the work environment. Restorative environments encourage individuals to participate in recreational physical activity as it is associated with a reduction in physiological stress (Kaplan & Kaplan, 1990).

Whereas perceived benefits are concepts used in the Health Benefit Model to change and promote a specific behaviour of individuals, perceived motivational factors are considered as helpful and motivational to action adherence (Glanz, 1998). It is important to determine an individual's perceived cues for engaging in physical activity, in order to increase the level of physical activity (Tergerson & King, 2002:379). Physical activity is described in two forms; physical and sports activity defined as planned, structured and repetitive physical activity, exercise in the sport club, whatever the type of sport activities and moderate to vigorous physical activity, defined as organized or spontaneous physical activities of intensity to 4.8 METs. The latter represents the type of activity that can permit health benefits. Tergerson and King (2002:379) recommended that social benefits are important in promoting physical activity participation. This also relates to what Henderson and Ainsworth (2003:316) indicated in that social networks were meant for physical activity among the African American and American Indian women.

The Transtheoretical model by Prochaska and DiClemente (1984), states that an individual goes through five stages in adopting and maintaining a healthy behaviour. These are pre-contemplation, contemplation, preparation, action and maintenance stages. A study conducted in Belgium by De Bourdeaudhuij *et al.* (2004:364) showed that adolescents, at pre-

contemplation showed the lowest physical activity levels, followed by those in the contemplation stage. The physical activity levels of adolescents in the preparation and action stages were not different. In the maintenance stage, adolescents had the highest activity levels. There is a significant increase in time spent from pre-contemplation (less than 2 hours) to the maintenance stage (more than 6,5 hours). For participation in leisure time physical activities, 3 hours / week was used for those in the pre-contemplation stage and increased to 8.5 hours / week for those in maintenance stage. As there is a 2 hours involuntary PE class per week, on average every stage had an increase of 2 hours when PE was added to leisure time activities. Most learners were found to be walking or cycling in the preparation stage, than in the maintenance stage, and for transport was higher in the maintenance and pre-contemplation stage. Children living a sedentary lifestyle showed no difference in the five stages of change. De Bourdeauhuij *et al.* (2004:364) found that 59% of the respondents give a self-report of them being able to do sufficient physical activity and 71% of adolescents reports related to their stage classification and self-reported physical activity level.

High energy concentration and improvement of the brain function, increased self–esteem that leads to better behaviour that supports educational performance and cardiovascular health are improved through participation in physical activity (Dwyer *et al.,* 1983:315; Centre for Disease Control and Prevention, 1993:1608; Shephard, 1997:116; Tremblay *et al.,* 2000:319; Cocke, 2002), while lack of physical activity is regarded as an independent risk factor in functional dependency and mortality (Centres for Disease Control and Prevention, 1993:1609; Mouton *et al.,* 2000:896). Stephens *et al.* (1986:289) noted that an important reason for participation in physical activity is the improvement of well-being. It has been proved that children perceive physical activity to be beneficial to health (Zakarian *et al.,* 1994:319; Harrison & Narayan, 2003:118). Participation in physical activity during childhood and adolescence has a positive effect on the continuation of such an activity during adulthood (Telama *et al.,* 1997:321; Dollman *et al.,* 1999:110).

2.2.2 Perceptions of barriers for participating in physical activity

There is a need to study aspects which hinder people from being more physically active, so that strategic measures can be put in place to help remedy the situation. According to Booth *et al.* (2002:8) these aspects among others may be referred to as barriers to participation in physical activity. It is believed that barriers may either prevent the initiation of a new activity or decrease commitment and adherence to an existing pattern of activity (Grubbs & Carter, 2002:80). Barriers to participate in physical activity may be studied to different levels. The levels included are individual, e.g. lack of motivation, lack of interest or pleasure and lack of time; structural or environmental e.g. lack of financial costs, lack of public transport to facilities and lack of infrastructure; social, such as lack of support and encouragement of significant others, as alluded by Brawley *et al.* (1998) and Deflandre *et al.* (2004:29).

Furthermore, the WHO (2002) pointed out potential barriers to equitable population participation in physical activity as lack of awareness about benefits, lack of national health and related policies. In addition, the WHO (2002) mentioned lack of perception of the value of sports in society, prevailing local culture, economic and other competing pressures, time constraints, personal motivation and the lack of access to sport facilities and past experience, and the lack of availability of local physical programmes were also listed as potential barriers to the population.

The perceived benefits and barriers have an effect on participation in physical activity, and appear as the strongest predictors of health behaviour (Janz & Becker, 1984:44; Sallis & Hovell, 1990:325; Fisher & Fisher, 2000). Studies indicate that perceived barriers are related to time constraints. The study by Booth *et al.* (2002:9) on perceived barriers among older Australians, reported that having insufficient time to be physically active is one of the most frequently cited barriers. The same argument was reported

by Grubbs and Carter (2002:80) that time constraints were the most reported barriers among college undergraduates.

Environmental social theory emphasis is on the importance of the environment in determining interactive relationship between individuals and their environment in determining health behaviour. Environmental social barriers have a negative effect on physical activity (Rejeski, 1992; King *et al.,* 2002:22). The Theory of Environmental stress, which relates to exposure to environmental stressors (seasonal factors), has a negative impact on participation in physical activity. Vaz de Almeida (2004:280) stated that physical activity levels in winter is lower than in summer. Community violence and high traffic leads to reduction in use of sidewalks and social interaction (Appleyard, 1981; Evans, 1999) and walking to grocery shops (Corti *et al.,* 1997:19). These lead people to stay home. According to Vaz de Almeida (2004:280), categories of physical activity are sedentary, irregular activity and vigorous activity. Participating in physical activity is important, though there seems to be a decrease in the enrolment of such classes. Though physical activity offers positive health benefits, most people still live a sedentary life style even at an old age (Mouton *et al.,* 2000:896). Barriers are also linked to gender differences (Tergerson & King, 2002:377; Deflandre, 2004:29) where girls perceived more barriers than boys (Sallis *et al.,* 1996:129). Perception of personal efficacy and motivation is positively associated with physical activity (Dishman, 1985:166). Shephard (1997:120) and Ferron *et al.* (1999:229) states that a change in adolescent perception on benefits of physical activity may be the strongest predictor of dropping out of sport.

Brassington and King (2004:323) stated that due to the increased utilization of digital and mobile communication technologies, there is a possibility of a decrease in physical activities and interpersonal social interactions. There is also a possibility of a positive impact of the internet in providing benefits and support information. Environmental factors have a strong potential to influence people's behaviour. Urban planning perspective which does not cater for pedestrian walking sites has a negative effect on physical activity.

In a recent study by Lennox *et al.* (2007:293), children listed the following as barriers: too much homework, home and family duties, lack of sport activities and coaches, lack of funds and lack of time. Boys seemed to experience different barriers, as compared to girls, namely lack of funds, sport facilities and coaches, followed by homework and watching too much TV.

Gordon-Larsen *et al.* (2000:88) found that the factors associated with physical activity for boys and girls aged 15 and 18 years were, participating in physical education classes, use of recreation centres, higher maternal education and higher family income. Theories of Neighbourhood disorder determine the attitudes towards physical activity. These relate to the finding that living in high crime areas has a negative impact on physical activity (Gordon-Larsen *et al.,* 2000:88).

The theory of behavioural setting relates to physical environment that encourages recurring patterns of social activities (Schoggen, 1989). In areas with recreational centres, more residents tend to engage in physical activities than in those with limited resources (Corti *et al.,* 1997:19). Urban Planning Perspective is related to car orientated designs and with little emphasis to the pedestrian orientated environment which ensure the safe and pleasurable movement of people. Due to financial constrains car orientated designs are focused on, while the pedestrian orientated environment is not well managed. This therefore leads to a reduction in physical activity among pedestrians. The environment therefore increases participation in physical activity within the society (Brassington & King, 2004:324). The theory of Urban Imageability like the urban planning perspective refers to the accessibility of residents to explore their surrounding areas using paths, landmarks and edges.

2.2.3 Levels of Physical Activity in Children and Adolescents

There is a decrease in the frequency of sport activity with age in Switzerland (Ferron *et al.,* 1999:228). A study on Irish children stated that

boys were found to exercise more than girls, and participation in physical activity decreases with age in both sexes (The National Health and Lifestyle Survey, 1999). In the United States it was indicated that 67% of children aged 8-16 years spent 2 hours a day watching TV (Andersen *et al.,* 1998:940). Fewer Irish girls were found to be participating in hard exercise. The study found that 45% of the girls, as compared to 62% of the boys, reported to be participating in physical activity four or more times a week (The National Health and Lifestyle Survey, 1999). The amount of vigorous physical activity differs with sex where boys exercise more than girls of the same age (Amstrong & Bray, 1991:245; Riddoch & Boreham, 1995:90).

Hussey *et al.* (2001:270) found boys in Dublin to be participating in more vigorous activities for longer periods and more frequently than girls. A study on British children reported that 57% of the children, both boys and girls, participated in light exercise i.e. 20 minutes at least three times a week (Armstrong & Bray, 1991:246). Falgairette *et al.* (1996) found French school children to be participating more in moderate physical activity. This differs with the study by Watson and Drummy (1993) where 77% of the children were driven to school though it was not clear whether any of the children were from rural areas that were far from school for walking. Deflandre *et al.* (2004:33) showed that children of average socio-economic status regarded themselves as being overloaded with school work and have other things to do with their time, which prevents them from being physically active.

The National Australia physical activity surveys (Armstrong & Bray, 1991:246; Merom & Bauman, 2003) found that people who lived a sedentary lifestyle were between 14,6% and 15,8%, with 31,3% - 45% being physically active.

In France it was reported that there is a low percentage of people who engage in recommended physical activity (ACSM, 1991). In Greenland, WHO (2000) found the lowest participation levels for 11 year old boys and girls of 58% and 46% respectively, with a lower duration activity.

In Germany, 85% of the boys and 70% of the girls were found to be involved in physical activity of two or more hours per week (WHO, 2000).

In Senegal physical activity levels were studied among girls in rural areas, though the studies conducted were longitudinal and not cross-sectional (Benefice & Cames, 1999:640; Bènèfice *et al.,* 2001:321; Garnier & Bènèfice, 2001:88). Though the sample sizes were small, Garnier and Bènèfice (2001:81) found high levels of physical activity.

In Nigeria, Emiola *et al.* (2002:210) found a lack of organized physical education in schools. However, the most common PA in rural schools among children was walking. The sample sizes of studies conducted were small and are not representative of the Nigerian country.

In Rwanda, Tumisiime (2005:179) conducted a cross-sectional study for assessing physical activity patterns of urban adolescents at 6 urban schools using a 24 hour Total Activity Record. The results showed that adolescents lived mostly a sedentary lifestyle. The results also revealed that boys were more active than girls, as they spent less time in sedentary activities. It further revealed that sedentary lifestyles increased as age increased, irrespective of gender.

In South Africa, Engelbrecht (2001) conducted a study done in the North West Province. In the study, on the relationship between physical activity and physical fitness among girls aged 13–15 years, it was found that 74,5% of the participants were inactive. Phillips (2001) conducted a cross-sectional study using a one-year Physical Activity Recall Questionnaire for learners in urban high schools in the Western Cape. The study found that 64,8% of the participants were insufficiently active. In contrast, a study by Lennox *et al.* (2007:294) indicated learners from a low socio-economic status to be active as they walk daily between 4–16 kilometres to and from school.

Most learners participated in recreational physical activity for 1–3 days / week (Pate *et al.,* 1995:440). These learners were not participating in moderate activities. Physical activity is recommended for a 30 minute period in most days / week (Pate *et al.,* 1995:440). Using the 24 hour recall over 7 consecutive days, Frantz (2004) found 32% to be inactive. Within these 32% inactive learners, 23% were overweight and 15% showed signs of hypertension.

In New York, the National Center for Chronic Disease Prevention and Health Promotion (NCCDPHP) (2002) revealed that only 6,7% of the children in New York enrolled for physical education classes. The Youth Risks Behaviour Surveillance (YRBS) of 1995 reported that 59,6% of children were enrolled for PE classes, with more boys than girls doing so. Boys were found to be more active than girls, 74.8% and 63.7% respectively. As the grades increased, there was a decrease in enrolled learners. Casperen *et al.* (2000:1605) reported a higher prevalence of regular PA among boys than among girls, which declined as age increased from 12 yrs–17yrs for both genders.

In Brazil, Da Silva and Malina (2000:1093) found the levels of inactivity among 18 year old boys to be lower than that of girls, 85% and 94% respectively, during weekdays. The most popular activities for boys were football and walking, and for girls was dancing. Adolescent boys and girls were also found to be spending 4,4hours / day and 4,9 hours / day, respectively, watching TV. In the Youth Risk Behaviour Surveillance (YRBS) of the United States of 2003, the study showed that participation in PA declines as children get older, and showed that 63% of high school students attended PA, while 25% did so in moderate PA. The percentage of high school students who attended PE classes daily decreased from 42% in 1991 to 25% in 1995 and remained stable until 28% in 2003 (Grunbaum, 2004). There is a trend among children not to enrol for physical education classes (Vaz de Almeida, 2004:326).

Family income, education level and unsafe environments have a negative influence on the participation in physical activity (Gordon–Larsen *et al.,* 2000:86). Therefore, physical activity of children and adolescents living in the US decrease with age, especially among girls. The researcher revealed that girls lived a sedentary lifestyle while boys were found to be engaging in vigorous physical activities, strengthening and stretching activities (Vaz de Almeida, 2004:326).

Generally, the physical activity level in males is higher than in females (Sallis *et al.,* 1996:130). Physical activity was also found to be higher among the educated than the less educated people and among those earning a lower income (Deflandre *et al.,* 2004:30). Boys were found to be active for longer periods than girls (Hickman *et al.,* 2000:80). Vaz de Almeida (2004) believes that physical activity in children and adolescents decreases with age, especially among girls and that girls are more inactive during weekdays (Da Silva & Malina, 2000:1093).

2.3 Recommendations of physical activities for children and adolescents

The World Health Organisation (2002) after realizing that most people especially children are becoming inactive, resulting in chronic diseases of life style, made a recommendation that participation in moderate physical activity for at least 30 minutes every day of the week was effective in the prevention of cardiovascular disease (CVD). In addition experts from all over the world have developed activity consensus guidelines for adolescents (ages 11 to 21) (Corbin & Pangrazi, 2001:43) as follows:

- ***Guideline 1:*** All adolescents should be physically active daily, or nearly every day (30 to 60 minutes), as part of play, games, sports, work, transportation, recreation, physical education, or planned exercise, in the context of family, school, and community activities.

- ***Guideline 2:*** Adolescents should engage in three or more sessions per week of activities that last 20 minutes or more and require moderate to vigorous levels of exertion.

Another recommendation was made by Mackett *et al.* (2003:1–2) which stated that:

- All young people should participate in physical activity of at least moderate intensity for one hour per day.
- Young people who currently do little activity should participate in physical activity of at least moderate intensity for at least half an hour per day.

Suggested activities made by Mackett *et al.* (2003:1–2) include brisk walking, cycling, swimming, sport or dance. Such activities may be carried out as part of transportation, physical activity, games, sport, recreation, work or structured exercise, and for younger children, as part of activity play.

The National Association for Sport and Physical Activity (NASPE) made the following recommendations for children, as summarized by Corbin and Pangrazi (1992:97):

- Elementary school aged children should accumulate at least 30 to 60 minutes of age and developmentally appropriate physical activity from a variety of physical activities on all, or most days of the week.
- An accumulation of more than 60 minutes, and up to several hours per day, of age and development appropriate physical activity is encouraged for elementary school aged children.
- Some of the child's activity each day should be in periods lasting 10 to 15 minutes or more and include moderate to vigorous activity. This activity should have brief periods of rest and recovery.
- Extended periods of inactivity are inappropriate for children.

2.4 Techniques for assessing physical activity in children and adolescents

Physical activity is assessed by means of various techniques, including heart rate monitors, activity monitors, pedometers, direct observation techniques and self-report questionnaires. Each of the outlined techniques had both advantages and disadvantages, as described by Welk and Wood (2000).

2.4.1 Heart rate monitor

The advantages of the heart rate monitor are that it is an accurate indicator of physical activity and has good educational potential to teach about the cardiovascular system. The disadvantages are the following: high cost, time intensive to download, difficult to assess large numbers of children, relevant only to aerobic activity and other factors that affect heart rate (illness, anxiety).

2.4.2 Activity Monitor

The advantages are accuracy and good educational potential to teach about "accumulating" activity over the whole day. The disadvantages are high cost, time intensive to download and the difficulty to assess a large number of children.

2.4.3 Pedometer

The advantage of a pedometer is that it is easy to use and records distance, while the disadvantage is that, it records the "quantity" of movement but not the "quality" (e.g. intensity of movement).

2.4.4 Direct observation

The advantages of direct of observation are that it provides quantitative and qualitative information about physical activity, while the disadvantage is that it requires trained observers. Also, it can only track several students at a time and it is very time consuming.

2.4.5 Self-report

The advantage of the self-report is its low cost. It is easy to administer to larger groups and it has a good educational potential for use in the curriculum, while the disadvantages are, that it has a potential problem with validity and reliability. The respondents must have the cognitive ability to self–report activity for a segmented day or across days. Another limitation of this format is that it assumes that the record week is representative of the child's activity in other weeks (Welk & Morrow, 2001:58).

2.5 Chapter summary

The literature review was written with the aim of providing insight into the perceived barriers and benefits of participating in physical activity, and levels of physical activity of children and adolescents from different backgrounds. It was also carried out to provide knowledge on the theoretical background regarding factors which have an effect on the perceived benefits and barriers of participating in physical activity. In addition the literature review provided information on different methods used in assessing physical activity.

From the reviewed literature it was found that barriers and benefits of participating in physical activity do exist. With regards to benefits of participating in physical activity the reviewed literature revealed that physical activity is associated with improved brain function and higher energy. It was also reported that physical activity play a role in concentration, cardio-vascular health and increased self-esteem, which

have a positive effect on a child's behaviour and educational/academic performance. In addition participation in physical activity was found to be important in building psychosocial aspects such as self-esteem, emotional well-being, relationships and others. Parents as role models were found to be a social support agent in children's attitudes and behaviour towards participation in physical activity.

The decreases in participation in physical activity was found to be accounted by a number of barriers such as lack of motivation, lack of interest and pleasure and lack of time; structural or environmental constraints, lack of financial costs, lack of public transport or facilities, lack of infrastructure; social constraints such as lack of support and encouragement of significant others. In addition lack of perception of the value of sports in society, prevailing local culture, economic and other competing pressures, time constraints, personal motivation and the lack of access to sport facilities and past experience, and the lack of availability of local physical programmes were also listed as potential barriers affecting participation in physical activity. The use of technology like TV viewing appeared to be a significant barrier for participating in physical activity.

The reviewed literature indicated that physical activity levels among adolescents' decreases with age, with girls being more affected than boys. Girls were reported to be participating more in light physical activities compared to boys and also experience different barriers to boys. The environment in which people live is also found to have a direct effect on their participation in physical activity. Differences in physical activity participation among children living in urban and rural areas were reported in the reviewed literature. The reviewed literature also provided a theoretical background on guidelines for physical activity. The reviewed literature regarding recommended participation in moderate physical activity for at least 30 minutes every day of the week to be effective in the prevention of cardiovascular disease (CVD). Different techniques of assessing PA were described according to their advantages and disadvantages among

adolescents. This indicated that self report by questionnaire was low cost effective and easy to use when assessing a larger group.

This literature review serves as a background for the development of the research articles to be discussed in the next two chapters (3 & 4).

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CHAPTER 3

Perceived barriers and benefits of participating in physical activity and the levels of physical activity of children attending farm schools

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ABSTRACT

This study investigates the perceptions of barriers and benefits of participating in physical activity and the levels of physical activity of children attending farm schools in Alma-Vaalwater area. A total of 344 children (185 boys and 159 girls) aged 15 to 16 years participated in the study. A standardized questionnaire designed by Desmond *et al.* (1990) was used to gather information on perceptions of barriers and benefits of participation in physical activity. In addition Previous Day Physical Activity Recall (PDPAR) questionnaire was used to assess the levels of physical activity. The results show high mean values in lack of time, to do work/school work and lack of skills as the three most dominant barriers for participating in physical activity. Regarding the benefits, high mean values were found in to stay in good health, to feel well and to have energy and were found to be the three dominant factors. Significant gender differences regarding the levels of physical activity with girls participating more in light physical activities than boys were found. This study recommends the need for the introduction of awareness programmes on the importance of physical activity for the improvement of general well-being. More studies with a larger sample size are required to verify the present findings.

Key words: Barriers, benefits, physical activity, farm school children, gender

INTRODUCTION

Participation in physical activity has been recognized to have multiple health benefits across all age groups (Bauman & Miller, 2004; Deflandre, Antonin & Lorant, 2004). For example, physical activity improves children's attributes such as brain function and high energy concentration, increase self-esteem that leads to better behaviour which may support educational performance, and also cardiovascular health (Tremblay, Inman & Willms, 2000; Cocke, 2002). Conversely, lack of physical activity was found to be associated with independent risk factors regarding functional dependency and mortality (Mounton, Calmbach, Dhanda, Espino & Hazuda, 2000).

Despite the proven health benefits of physical activity, sedentary lifestyles among adolescents, adults and older persons are prevalent (Brownson, Eyler, King, Brown, Shyu & Sallis, 2000; Vaz de Almeida, 2004; De Bourdeaudhuij, Philippaerts, Crombez, Matton, Wijndaele, Balduck & Lefevre, 2004). Sallis (2000) stated that children become more inactive during their teen years and when they reach high school, only a minority of them meet health-related activity guidelines. Telama, Yang, Laasko and Vikari (1997) and Dollman, Olds, Norton and Stuarts (1999) contend that participation in physical activity during childhood and adolescence increases the likelihood that the activity is continued at adulthood. Tracking studies on physical activity revealed that low levels of physical activity remain stable from adolescence to adulthood (Malina, 1996; Lefevre, Philippaerts, Delvaux, Thomis, Vamreusel, Van Den Eynde, Claessens, Lysens, Renson & Beunen, 2000), especially among females (De Bourdeaudhuij, Sallis & Vandelanotte, 2002).

Research findings revealed that people's participation in physical activity may be affected by the perceived barriers and benefits (Sallis & Hovell, 1990; Fisher & Fisher, 2000). It was indicated that exercise is negatively affected by environmental and social barriers (Rejeski, 1992; King, Stokols, Talen, Brassington & Killingswort, 2002). These barriers were found to constrain adolescents (Fergusson, Yesalis, Pomrehn & Kirkpatrick, 1989;

Saunders, Pate, Felton, Dowda, Weinrich, Ward, Parsons & Baranowski, 1997). Furthermore, barriers are linked to gender (Tergerson & King, 2002; Deflandre *et al.,* 2004), where it was found that girls perceived more barriers to physical activity than boys (Sallis, Zakarian, Hovell & Hofstetter, 1996; Deflandre *et al.,* 2004). Deflandre *et al.* (2004) revealed that strategic measures of encouraging participation in physical activity should be made available, so as to maximize the level of participation. Stephens, Craig and Ferris (1986) believes that the improvement of "well-being" seem to be the major underlying reason for participating in physical activity. Research findings indicated that individual children perceived physical activity to be beneficial to health (Zakarian, Hovell & Hofstetter, 1994; Harrison & Narayan, 2003).

Although there is an abundance of information on the relationships between the perceived benefits and barriers of participating in physical activity and the physical activity status in developed countries, such information is scarce in developing countries like South Africa, particularly for farm schools. The few available studies conducted in farm areas include the one by Vorster, Wissing, Venter, Kruger, Kruger, Malan, de Ridder, Veldman, Steyn, Margetts and Macintyre (2000), which identified farm workers in the North-West province as a vulnerable social group with regard to income, nutrition security, health status and education. Another study, conducted by Cameron (1991) indicated that farm school children in the Alma-Vaalwater area have a low growth status as compared to American children. A study by Monyeki, Coetzee, Pienaar and Kruger (2004) revealed that farm school children in the North-West province performed poorly with regard to motor performance and physical fitness. A more recent study by Lennox, Pienaar, and Coetzee (2007), which investigated barriers, motivators, sport participation and perceptions about physical activity among adolescents living in semi-rural surrounding of Potchefstroom revealed too much homework, lack of money and family responsibilities as barriers while encouragement by parents and friends as motivational factors for participation in physical activity. However, none of these studies investigated perceptions of the barriers and benefits of participating in

physical activity and the physical activity status of children in farm schools. It is against this background that this study was conducted to investigate the perceptions of barriers and benefits of participating in physical activity and the levels of physical activity of children attending farm schools in Alma-Vaalwater area.

METHODS

Study design and subjects

A cross-sectional study design was followed in a sample consisting of 344 children (185 boys and 159 girls), aged 15 and 16 years, who voluntarily participated in the study. The participants were from the farm schools around Alma-Vaalwater area in the Waterberg district in the Limpopo Province of South Africa. The children who participated in the study were from primary and secondary schools. The reasons to have children aged 15 and 16 years in the primary school is due to the socio-economic status of the area. For instance, schools are too far away from home. Therefore, children have to be old enough to walk to school. Further, the children sometimes have to leave school for a certain period in order to raise some money to buy school uniform or pay school fees, by working on the farms. Another problem that disrupts education is emigration from one farm to another (Human Rights Watch, 2004). An age limit of 15 and 16 years were used as an inclusion criteria, as it is believed that at that age range a child is cognitively developed to complete questionnaires. Limpopo is one of the provinces with a high number of farm schools. In the studied group, statistics show that 56.3% percent of children stay in informal settlements, wherein most parents are farm workers (mostly as unskilled and semi-skilled, and a few being domestic workers). The study found that 43.7% of the children were staying in the school hostels. Permission to conduct the study was obtained from the school principals, parents and informed consent was also sought. In addition, the circuit manager granted the researchers permission to conduct the study. The Ethics Committee of the Potchefstroom Campus of the North-West University approved the study.

Questionnaire

A tool for assessing perceived barriers and benefits for participating in physical activity (PA) was based on standardized questionnaire by Desmond, Price, Lock, Smith and Stewart (1990). The questionnaire relating to the perceived benefits and barriers for participating in PA had 3 sections. The first section required participants to provide biographical information (gender, name of school and examination date). The second section comprised of 21 questions which required the participants to indicate tne frequency of constraints/barriers experienced. The participants had to indicate their barriers by choosing only one answer for each question from a five point Linkert scale as follows: 1= do not know; 2= never; 3=sometimes; 4= often; 5= very often. The third section comprised of 10 questions which required participants to indicate their perceived health benefits of participating in physical activity. The participants had to indicate their benefits by choosing only one answer for each question from a five point Linkert scale as follows: 1= do not know; 2= less important; 3= not important; 4= important; 5= very important. These items form the basis for descriptive analysis reported (Allison, Dwyer & Susan, 1999). The internal consistency Cronbach alpha of the perceived benefits was 0.74 and for perceived barriers was 0.67. Furthermore, the Previous Day Physical Activity Recall (PDPAR) questionnaire compiled by Trost, Ward, Mc Graw and Pate (1999) was used to gather data on the children's physical activity of the previous day for weekdays and weekend days. The children had to recall activities they had done every 30 minutes. The intensity of the activities indicated were assigned metabolic equivalents (METs) values according to the Ainsworth, Haskell, Leon, Jacobs, Montoye, Sallis and Paffenbarger (1993) categories. The activities were scaled as light (1=<2.5), medium (2=>2.5-3.5) or hard (3=>4.4).

Procedures

Questionnaires for acquiring information regarding perceptions of barriers and benefits to participate in physical activity and the previous day's

physical activity recall (PDPAR), were administered by the researcher and research assistants in children of each participating school per arrangement.

Statistical analysis

Data was analysed as means and standard deviations. To determine differences between boys and girls, an independent *t*-test was calculated. The level of significance was set at $p<0.05$. All the statistical analyses were conducted using the SPSS program (Version 15.0; SPSS Inc, Chicago, IL).

RESULTS

Table 1 presents the characteristics of perceived barriers for participation in physical activity for the total group, gender and age. The results of the total group show high mean values in lack of time, to do work/school work and lack of skills to be the most perceived barriers affecting participation in physical activity. When analyses were performed for boys and girls separately, the boys reported high mean values in lack of time, to do work/school work, physical activity makes one sweat and lack of skills, and in girls high mean values were found in lack of time, to do work/school work, lack of equipments and lack of skills. When analyses were calculated for boys and girls by age separately, the results showed that the 15 years boys reported high mean values for 5 barriers (to do work/school work, lack of interest, lack of time and tiredness and lack of skills) while the 16 years old boys reported high mean values for 8 barriers (to do work/school work, lack of skills, physical activity makes one sweat, friends tie me during PA, too overweight to do PA, lack of time, wanting to do other things with one's time and self-conscious of my body when I do PA). In the 15 year old girls high mean values for 4 barriers (to do work/school work, lack of time, tiredness and physical activity makes sore) were found. The 16 year old girls reported high mean values in to do work/school work, lack of skills, lack of equipments and wanting to do other things with one's time as perceived barriers affecting participation in physical activity.

Table 1 Means ± standard deviations (SD) of perceived barriers for participating in physical activity by gender and age group

	Total group (n = 344)		Males (n = 185)			Females (n= 159)			15 years boys (n = 103)		15 years girls (n = 84)		16 years boys (n =82)		16 years girls (n = 75)	
How often do the following things prevent you from getting to do physical activity	**M**	**SD**	**M**	**SD**	**Rank**	**M**	**SD**	**Rank**	**M**	**SD**	**M**	**SD**	**M**	**SD**	**M**	**SD**
1. Lack of interest	2.93	1.4	2.91	1.3	8	2.94	1.5	4	3.05	1.4	2.93	1.7	2.74	1.3	2.97	1.3
2. Lack of time	3.07	1.2	3.07	1.1	3	3.08	1.2	2	3.03	1.2	3.17	1.1	3.12	1.1	2.99	1.3
3. Do work/school work	3.56	1.3	3.60	1.4	1	3.51	1.3	1	3.37	1.3	3.45	1.3	3.89	1.3	3.59	1.3
4. Laziness	2.69	1.3	2.67	1.3	17	2.69	1.3	14	2.91	1.3	2.73	1.3	2.37	1.2	2.67	1.3
5. Tiredness	2.89	1.2	2.92	1.2	7	2.87	1.2	7	3.03	1.2	3.09	1.3	2.77	1.2	2.61	1.1
6. Meal proximity	2.68	1.3	2.86	1.4	11	2.48	1.2	49	2.94	1.3	2.55	1.1	2.76	1.4	2.40	1.3
7. Wanting to do other things with one's time	2.93	1.2	2.96	1.3	5	2.89	1.2	6	2.86	1.2	2.78	1.2	3.08	1.4	3.01	1.2
8. Physical activity make sore	2.84	1.3	2.83	1.4	12	2.84	1.3	10	2.94	1.3	3.06	1.3	2.70	1.4	2.59	1.2
9. Physical activity make one sweat	2.99	1.3	3.05	1.4	4	2.91	1.3	5	2.98	1.4	2.86	1.2	3.15	1.3	2.97	1.3
10. Do not have anyone to do PA with me	2.69	1.3	2.77	1.3	14	2.60	1.2	17	2.76	1.3	2.55	1.2	2.78	1.3	2.65	1.27
11. No one at my skill level to do PA with me	2.70	1.3	2.81	1.3	13	2.57	1.2	18	2.77	1.3	2.44	1.2	2.86	1.3	2.72	1.2
12. Friends don't like to do PA	2.77	1.2	2.87	1.2	10	2.65	1.2	15	2.82	1.3	2.70	1.2	2.94	1.2	2.59	1.27
13. Friends tie me during PA	2.91	1.3	2.95	1.3	6	2.85	1.3	9	2.80	1.2	2.96	1.3	3.13	1.3	2.73	1.3
14. Too overweight to do PA	2.86	2.1	2.73	2.5	15	2.80	1.3	11	2.82	1.3	2.61	1.3	3.13	3.6	2.88	1.3
15. Weather is too bad	2.86	1.3	2.91	1.2	8	2.80	1.3	11	2.99	1.2	2.95	1.3	2.80	1.3	2.64	1.2
16. Lack of equipments	2.98	1.4	2.96	1.4	5	3.00	1.4	3	2.94	1.3	2.90	1.4	2.97	1.4	3.11	1.5
17. Lack of knowledge on how to do PA	2.85	1.3	2.83	1.3	12	2.86	1.4	8	2.78	1.3	2.82	1.3	2.91	1.3	2.91	1.4
18. Lack of skills	3.07	1.4	3.12	1.4	2	3.00	1.4	3	3.03	1.3	2.89	1.4	3.24	1.4	3.13	1.4
19. Don't want people to see my body when I do PA	2.83	1.3	2.89	1.4	9	2.76	1.3	12	2.86	1.3	2.76	1.3	2.93	1.4	2.76	1.3
20. Self-conscious about my looks when I do PA	2.67	1.2	2.71	1.3	16	2.62	1.3	16	2.71	1.2	2.68	1.2	2.70	1.4	2.55	1.3
21. Self-conscious of my body when I do PA	2.76	1.3	2.81	1.4	13	2.70	1.8	13	2.60	1.3	2.78	1.2	3.07	1.5	2.61	1.2

Note: Based on rating on a 5 point scale: 1 = Do not know, 5 = Very often

In Table 2, the descriptive characteristics of the perceived benefits of participating in physical activity are presented. The total group indicated high mean values for, to stay in good health, to feel well and to have energy as the most important benefits of participating in physical activity. After the analyses were done separately for boys and girls, and by age, the perceived benefits reported were found to be similar to the ones reported by the total group.

In Table 3, the levels of physical activity of the total group, boys and girls separately as well as by age group, are presented. The results show that during the week the total population is mostly engaged in light physical activity, with moderate physical activity during weekend. Gender differences in physical activity were found with boys found to be participating in moderate physical activity during the week and weekend days alike, while girls were found to be engaged in light physical activity during the week and moderate physical activity on weekends.

Table 2 Means ± standard deviations (SD) of perceived benefits for participating in physical activity by gender and age group

	Total group (n = 344)		Males (n = 185)			Females (n= 159)			15 years boys (n = 103)		15 years girls (n = 84)		16 years boys (n =82)		16 years girls (n = 75)	
	M	SD	M	SD	Rank	M	SD	Rank	M	SD	M	SD	M	SD	M	SD
How important is participation in physical activity to your health																
1. To stay in good health	4.62	1.4	4.72	1.8	1	4.51	1.0	1	4.63	1.8	4.62	1.0	4.75	2.2	4.49	1.0
2. To become physically fit	3.78	1.2	3.82	1.2	4	3.73	1.2	5	3.86	1.2	3.68	1.3	3.95	1.1	3.75	1.2
3. To feel well	4.20	1.1	4.23	1.0	2	4.18	1.1	3	4.25	1.03	4.15	1.1	4.30	1.0	4.19	1.1
4. To have energy	4.19	1.2	4.15	1.2	3	4.23	1.2	2	4.21	1.2	4.16	1.2	4.26	1.1	4.14	1.4
5. To have better self-image	3.63	1.3	3.55	1.3	7	3.72	1.3	6	3.70	1.3	3.55	1.3	3.61	1.4	3.81	1.2
6. To relieve stress	3.37	1.3	3.35	1.3	9	3.39	1.4	8	3.39	1.3	3.34	1.4	3.32	1.3	3.49	1.3
7. To have social interaction	3.38	1.4	3.41	1.4	8	3.34	1.4	9	3.51	1.4	3.22	1.4	3.54	1.4	3.48	1.4
8. To maintain good body weight	3.79	1.3	3.74	1.3	5	3.84	1.3	4	3.88	1.3	3.68	1.3	3.91	1.3	3.83	1.3
9. To build self-motivation	3.65	1.4	3.72	1.3	6	3.58	1.4	7	3.78	1.3	3.50	1.4	3.87	1.2	3.67	1.4
10. To develop self-perception	3.45	1.4	3.34	1.5	10	3.58	1.3	7	3.59	1.3	3.29	1.5	3.47	1.4	3.73	1.2

Note: Based on rating on a 5 point scale: 1 = Do not know, 5 = Very Important

Table 3 Means ± standard deviations (SD) of physical activity levels by gender

	Total group		Males		Females		15 years boys (n = 103)		15 years girls (n = 84)		16 years boys (n =82)		16 years girls (n = 75)	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD		
PDPAR WEEK	1.98	.92	2.58*	.90	1.48*	.75	2.51*	.95	1.48*	.77	2.50*	.76	1.50*	.75
PDPAR WEEKEND	2.58	.60	2.59*	.92	2.00*	.56	2.54*	.68	1.96*	.54	2.14	.53	2.12	.64

Note: * Significant differences $p < 0.05$

DISCUSSION

Generally, the results show somewhat similar perceptions regarding perceived barriers and benefits of participation in physical activity among children attending farm schools around Alma-Vaalwater area. Furthermore, gender differences in the levels of physical activity were found with boys being more active than the girls.

The results of the present study indicated that the most commonly perceived barriers of participating in physical activity were, lack of time, to do work/school work, lack of skills and lack of facilities. Several studies also showed lack of time, lack of interest and job/familial occupation/schoolwork, irrespective of gender and age group, as the barriers to physical activity (Dishman, *Sallis & Grenstein,* 1985; Godin, Shephard & Stephens, 1986; Sallis & Hovell, 1990; Deflandre *et al.,* 2004). To stay in good health, to feel well and to have energy were the commonly reported beneficial reasons for participation in physical activity in the present study. A study by Deflandre *et al.* (2004) revealed that participation in physical activity is associated with physical and mental health benefits.

Although 56.3% of the children reported that they walked to school, they were also found to be participating in light physical activity. The remaining 43.7% were found to be staying in the hostel. This may be the reason for finding more children in the light physical activity levels especially the girls. Research findings have revealed gender difference with regard to the levels of participation in physical activity with girls found to be in the light categories (Kimm, Glyn & Kriska, 2002). In other studies, boys were mostly found in the moderate to high physical activity levels (Kimm *et al.,* 2002). However, in the present study boys were mostly in the moderate category.

The results of the present study are somewhat different from the results reported in the literature. A study by Deflandre *et al.* (2004) indicated the most strongly perceived barriers to be proximity of the meals, the schoolwork overcharge and the fact to do others things with one's time. In

another study by Tumusiime (2004) on tertiary institution students in Rwanda revealed the perceived barriers as I do not have right equipment to exercise, I want to do other things with my time and there are other interesting things to do. In a study by Lennox *et al.* (2007) on the adolescents living in semi-urban surroundings in Potchefstroom, too much homework, lack of money and family responsibilities were reported as the most affecting barriers for participation in physical activity. Comparable to the results of the present study, lack of time, to do work\school work and lack of skills were the three dominant perceived barriers. The children attending farm schools in the present study have different backgrounds and possibly do not have the same opportunities that other children might have in other research studies.

With regard to the perceived benefits Deflandre *et al.* (2004) mentioned to become physically fit and to have energy as the most benefits of participating in physical activity. In a study by Tumusiime (2004), exercise helps me to reduce stress, exercise improves my self-esteem, exercise helps me to become strong and exercise improves my cardiovascular fitness as the important benefits of participating in physical activity. A study by Lennox *et al.* (2007) indicated to stay in good health, to feel well and to have energy as the most important benefits of participating in physical activity. Comparable to the results of the present study, to stay in good health, to feel well and to have energy were mentioned as the dominant benefits of participating in physical activity. Seemingly, the benefits mentioned by the children in the present study are more or less the same as the ones stated in the other research studies.

Some of the limitations in the study may also be strong points, the fact that the study was carried out in farm schools investigating perceptions on barriers and benefits of participating in physical activity and levels of physical activity is seen as the strong point. It is generally, a known fact that questionnaires in assessing physical activity in children have limitations. In minimising much of the limitations in the present study children were assisted by experienced researchers in the completion of questionnaires.

The cross-sectional nature of the study and small sample size might have affected the results in one way or the other; therefore more studies which may follow a longitudinal design method and also use objective method of assessing physical activity on a larger sample size are required.

It can be concluded that lack of time, work/school work and lack of skills were the most dominant perceived barriers for participation in physical activity. In addition, to stay in good health, to feel well and to have energy were reported to be the dominant perceived benefits of participating in physical activity. Furthermore, girls were found to be participating mostly in light physical activity as compared to boys. The results of the present study therefore suggest some potential public health concerns. Thus, public health education and counselling for children might include coping strategies for time management, make available physical education, to encourage mass participation and also provision for skills by potential stakeholders. Furthermore, the present results suggest that physical activity intervention strategies targeting sedentary children, be introduced. According to Emmons and Rollnick (2001), motivational intervention could be used for those who express lack of interest in physical activity. In addition, the identification of barriers to participation in physical activity during childhood may help to combat the emerging pandemic of obesity which is found to be associated with inactivity among the South African youth from all different socio-economic backgrounds.

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Chapter 4

The relationships between perceived barriers and benefits of participating in physical activity and the levels of physical activity in boys and girls attending farm schools

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ABSTRACT

The purpose of this study was to investigate the relationships between perceived barriers and benefits of participating in physical activity and levels of physical activity in boys and girls attending farm schools in the Alma-Vaalwater area of the Limpopo Province of South Africa. A cross-sectional study design was used including 344 children (185 boys and 159 girls), aged 15 to 16 years. A standardized questionnaire by Desmond *et al.* (1990) on perceptions of barriers and benefits of participating in physical activity was used to collect the data. The Previous Day Physical Activity Recall (PDPAR) questionnaire was used to assess the physical activity levels of a weekday and a weekend day. The data was analysed using descriptive statistics, independent *t*-testing and correlations by means of SPSS (Version 15.0). High mean values in barriers experienced by boys to be physically active included lack of time, to do work/school work, and physical activity makes one sweat. In girls barriers experienced to be physically active included lack of time, to do work/school work and lack of equipments. With regard to the perceived benefits of participating in physical activity both boys and girls showed high mean values in to stay in good health, to feel well and to have energy. The results further showed that lack of equipments was negatively associated with participation in physical activity in boys and girls during the week and weekend days respectively. In addition girls showed a relationship between to relieve stress and the levels of physical activity. This study recommends the need for the introduction of awareness programmes, provision of facilities for physical activity as well as well-structured programmes of physical activity by qualified personnel geared towards the improvement of general well-being of children. In addition awareness programmes regarding the importance of physical activity targeting girls and boys are recommended.

Key words: Relationship, physical activity, benefits, barriers, farm school children

INTRODUCTION

Research findings showed the relationships between perceived barriers and benefits of participating in physical activity and levels of physical activity in children and adults alike (Dishman, Sallis & Grenstein, 1985; Godin, Shephard & Colantonio, 1986; Sallis & Hovel, 1990). Regular physical activity has been found to be associated with good health benefits (Bouchard, Shephard & Stephens, 1994; U.S. Department of Health and Human Services, 1996; Deflandre, Antoning & Lorant, 2004; Vaz de Almeida, 2004). Lack of physical activity was found to be associated with numerous barriers such as environmental factors, lack of facilities, lack of time, lack of knowledge and lack of skills (Slenker, Price, Robert & Jurs, 1984; Brawley, Martin & Gyurcsik, 1998; Deflandre *et al.*, 2004). It is evident that children and adults live a sedentary lifestyle and their physical activity is influenced by perceived barriers to physical activity (Sallis, Zakarian, Hovell & Hofstetter, 1996).

Sallis, Hovell, Hofstetter, Faucher, Elder, Blanchard, Caspersen, Powell and Christenson (1989), in a large community-based study, found that barriers to physical activity were most strongly and negatively associated with self-reported vigorous activity among younger men and women and among older men and women. A study by Cheng, Cheng, Mak, Wong, Wong and Yeung (2003) in China revealed a significant correlation between physical activity, health and body image. In the same study significant relationship was found between making me feel better in the health category and the intention to participate in physical activity.

According to Harrison and Narayan (2003), the type of environment is one factor that influences the perception of physical activity participation. Involvement in physical activity among adults and children depends on the backgrounds, attitudes and beliefs of these adults and children concerning their leisure time (Dishman *et al.,* 1985; Finkenberg, 1991; Deflandre *et al.,* 2004).

The purpose of this study is to investigate the relationships between perceived benefits and barriers of participating in physical activity and levels of physical activity in boys and girls attending farm schools in the Alma-Vaalwater area.

METHODS

Study design and subjects

A cross-sectional study design was used on the 344 children (185 boys and 159 girls), aged 15 and 16 years, who were recruited and voluntarily participated in the study. The participants were from the farm schools around Alma-Vaalwater area in the Waterberg district of the Limpopo Province of South Africa. The children were from primary and secondary schools. The reason why children aged 15 and 16 years were still in primary school is due to socio-economic status of the area. For instance, schools were too far away and children had to be old enough to walk to school. Sometimes, these children had to leave school for a certain period in order to earn some money to buy the school uniform or to pay school fees by working on the farms. Another problem which disrupts schooling is emigration from one farm to the other (Human Rights Watch, 2004). An age limit of 15 and 16 years were used as an inclusion criterion, as it is believed that children in this age range are cognitively developed to complete the questionnaires. Limpopo is one of the provinces with a high number of farm schools. Demographics obtained by the study indicated that 56.3 percent of the learners stay in informal settlements, of which most parents are farm workers (mostly as unskilled and semi-skilled, with a few being domestic workers). Among the participants, 43.7% were staying in the school hostels. Permission to conduct the study was obtained from the school principals and parents and informed consent was also sought. In addition, the circuit manager granted permission to conduct the study. The Ethics Committee of the Potchefstroom Campus of the North-West University approved the study.

Questionnaire

A tool for assessing perceived barriers and benefits for participating in physical activity (PA) was based on standardized questionnaire by Desmond, Price, Lock, Smith and Stewart (1990). The questionnaire relating to the perceived benefits and barriers for participating in PA had 3 sections. The first section required participants to provide biographical information (gender, name of school and examination date). The second section comprised of 21 questions which required the participants to indicate the frequency of constraints/barriers experienced. The participants had to indicate their barriers by choosing only one answer for each question from a five point Linkert scale as follows: 1= do not know; 2= never; 3=sometimes; 4= often; 5= very often. The third section comprised of 10 questions which required participants to indicate their perceived health benefits of participating in physical activity. The participants had to indicate their benefits by choosing only one answer for each question from a five point Linkert scale as follows: 1= do not know; 2= less important; 3= not important; 4= important; 5= very important. These items form the basis for descriptive analysis reported (Allison, Dwyer & Susan, 1999). Furthermore, the Previous Day Physical Activity Recall (PDPAR) questionnaire compiled by Trost, Ward, McGraw and Pate (1999) was used to gather data on the children's physical activity of the previous day for weekdays and weekend days. The children had to recall activities they had done every 30 minutes. The intensity of the activities they indicated were assigned metabolic equivalents (METs) according to the Ainsworth, Haskell, Leon, Jacobs, Montoye, Sallis and Paffenbarger (1993) categories. The internal consistency Cronbach alpha of the benefits was 0.74 while for barriers was 0.67. The activities were scaled as light (1=<2.5), medium (2=>2.5-3.5) or hard (3=>4.4).

Procedures

Questionnaires for the perception of barriers and benefits of participating in physical activity and the previous day's physical activity recall (PDPAR) were administered by the researcher and the research assistants.

Statistical analysis

Descriptive statistics including means and standard deviations were calculated. To determine the differences between boys and girls, an independent t-test was calculated. Partial correlation coefficients were employed to study the relationships between perceived barriers, benefits and levels of physical activity. All the statistical analyses were conducted using the SPSS (Version 15.0; SPSS Inc, Chicago, IL). The level of significance was set at $p < 0.05$.

RESULTS

Table 1 presents the descriptive information on the perceived barriers for boys and girls. In boys high mean values in lack of time, to do work/school work, physical activity makes one sweat and lack of skills were found to be the most perceived barriers affecting participation in physical activity. For girls high mean values in lack of time, to do work/school work, lack of equipments and lack of skills were found to be the most perceived barriers affecting participation in physical activity. Significant differences ($p<0.05$) were found in meal proximity between boys and girls.

Table 2 shows the descriptive information on perceived benefits to physical activity by gender. It shows that the most perceived benefits are, to stay in good health, to feel well and to have energy, for both boys and girls. Both boys and girls therefore perceived similar benefits of participation in physical activity.

Table 1 Means ± standard deviations (SD) of perceived barriers for participating in physical activity in boys and girls

Variable Statements	Boys				Girls			
How often do the following things prevent you from getting to do physical activity	N	Mean Score	SD	Rank	N	Mean	SD	Rank
1. Lack of interest	185	2.91	1.3	8	159	2.94	1.5	4
2. Lack of time	185	3.07	1.1	3	159	3.08	1.2	2
3. Do work/school work	185	3.60	1.4	1	159	3.51	1.3	1
4. Laziness	185	2.67	1.3	17	159	2.69	1.3	14
5. Tiredness	185	2.92	1.2	7	159	2.87	1.2	7
6. Meal proximity	185	2.86	1.4	11	159	2.48	1.2	19
7. Wanting to do other things with one's time	185	2.96	1.3	5	159	2.89	1.2	6
8. Physical activity makes one sore	185	2.83	1.4	12	159	2.84	1.3	10
9. Physical activity makes one sweat	185	3.05	1.4	4	159	2.91	1.3	5
10. Do not have anyone to do PA with me	185	2.77	1.3	14	159	2.60	1.2	17
11. No one at my skill level to do PA with me	185	2.81	1.3	13	159	2.57	1.2	18
12. Friends don't like to do PA	185	2.87	1.2	10	159	2.65	1.2	15
13. Friends tie me during PA	185	2.95	1.3	6	159	2.85	1.3	9
14. Too overweight to do PA	185	2.73	2.5	15	159	2.80	1.3	11
15. Weather is too bad	185	2.91	1.2	8	159	2.80	1.3	11
16. Lack of equipments	185	2.96	1.4	5	159	3.00	1.4	3
17. Lack of knowledge on how to do PA	185	2.83	1.3	12	159	2.86	1.4	8
18. Lack of skills	185	3.12	1.4	2	159	3.00	1.4	3
19. Don't want people to see my body when I do PA	185	2.89	1.4	9	159	2.76	1.3	12
20. Self-conscious about my looks when I do PA	185	2.71	1.3	16	159	2.62	1.3	16
21. Self-conscious of my body when I do PA	185	2.81	1.3	13	159	2.70	1.8	13

Note: Based on rating on a 5 point scale: 1 = Do not know, 5 = Very often

Table 2 Means ± standard deviations (SD) of perceived benefits for participating in physical activity in boys and girls

Variable Statements	Boys				Girls			
How important is participation in physical activity to your health	N	Mean	SD	Rank	N	Mean	SD	Rank
1. To stay in good health	185	4.61	0.9	1	159	4.52	1.0	1
2. To become physically fit	185	3.82	1.2	4	159	3.73	1.2	5
3. To feel fine	185	4.23	1.1	2	159	4.18	1.1	3
4. To have energy	185	4.15	1.2	3	159	4.23	1.2	2
5. To have better self-image	185	3.55	1.3	7	159	3.72	1.3	6
6. To relieve stress	185	3.35	1.3	9	159	3.39	1.4	8
7. To have social interaction	185	3.41	1.4	8	159	3.34	1.4	9
8. To maintain good body weight	185	3.74	1.3	5	159	3.84	1.3	4
9. To build self-motivation	185	3.72	1.3	6	159	3.58	1.4	7
10. To develop self-perception	185	3.34	1.5	10	159	3.58	1.4	7

Note: Based on rating on a 5 point scale: 1 = Do not know, 5 = Very Important

Table 3 presents the means and standard deviations on levels of physical activity for boys and girls. The results show significant gender differences between physical activity levels of boys and girls during weekdays and weekends, with boys found to be in the moderate level, and girls in the light level.

Table 3 Means ± standard deviations (SD) of the levels of physical activity for total group and by gender

	Boys (n =52)	**Girls (n= 33)**
	Mean SD	**Mean SD**
PDPAR WEEK	2.58(0.89)*	1.48(0.75)
PDPAR WEEKEND	2.59(0.60)*	2.0 0(56)

*Significant differences $p < 0.05$

Table 4 presents the relationships between perceived barriers and benefits for physical activity and levels of physical activity for boys. Boys participation in physical activity during the week and weekend was positively associated with 8 of the ten benefits of participating in physical activity, although none of the relationships show any significance.

Table 4 Correlation between perceived barriers, benefits and physical activity levels for boys

	Variable for the perceived benefits of participating in physical activity									
Variable Statements **How often do the following things prevent you from getting to do physical activity**	To stay in good health	To become physically fit	To feel well	To have energy	To have better self-image	To relieve stress	To have social interaction	To maintain good body weight	To build self-motivation	To develop self-perception
	r	*R*	*r*	*R*	*R*	*r*	*R*	*r*	*r*	*r*
1. Lack of interest	-.012	.075	-.017	-.032	-.046	-.087	-.019	-.047	-.073	-.114
2. Lack of time	-.015	-.072	.005	-.078	-.099	-.016	.039	-.028	-.113	.034
3. Do work/school work	-.152*	-.059	.007	.093	.064	-.054	-.010	.074	-.027	-.176*
4. Laziness	-.067	.153*	-.065	-.089	.065	-.022	.008	-.078	-.038	-.023
5. Tiredness	-.076	-.006	-.129	-.014	.079	-.106	.030	-.010	-.133	.016
6. Meal proximity	-.034	.051	-.081	-.023	.025	-.081	-.004	-.039	.014	.058
7. Wanting to do other things with one's time	.033	.003	-.038	.014	-.010	-.005	.027	.099	.020	.057
8. Physical activity makes one sore	.014	-.044	.015	.025	-.034	.080	-.005	.029	-.004	.048
9. Physical activity makes one sweat	.066	.071	.010	.018	.066	-.022	-.003	-.004	-.073	.010
10. Do not have anyone to do PA with me	-.021	.056	.011	-.036	.014	.090	.020	.158	-.116	.022
11. No one at my skill level to do PA with me	-.029	.020	-.158*	-.132	-.011	.032	.063	.127	-.022	-.011
12. Friends don't like to do PA	-.032	.083	-.058	-.009	.015	-.049	-.033	.155	.105	.018
13. Friends tie me during PA	-.056	-.203**	-.117	-.072	.003	-.022	.130	-.037	.063	.000
14. Too overweight to do PA	-.093	-.046	.013	-.133	-.120	-.034	.021	-.020	-.154*	-.096
15. Weather is too bad	.029	.086	.095	.070	.056	.016	-.078	-.038	-.032	-.012
16. Lack of equipment	-.098	.005	.011	.017	.046	.111	-.056	.083	.066	-.025
17. Lack of knowledge on how to do PA	.010	-.103	-.172*	-.109	.044	-.094	-.156*	.045	-.035	-.027
18. Lack of skills	.009	.054	.005	.044	-.092	.025	-.025	-.163*	-.056	-.126
19. Don't want people to see my body when I do PA	.026	.018	.151	.090	.052	-.035	.031	.087	.075	-.040
20. Self-conscious about my looks when I do PA	-.021	-.047	.108	-.038	.068	.079	.074	-.051	.044	.073
21. Self-conscious of my body when I do PA	.002	.015	-.030	.007	.033	-.032	.206	.000	.018	.022
Physical activity										
PDPARWK	.131	.042	.084	.087	.005	.080	.015	.132	-.056	-.220
PDPARWKD	.117	.149	.245	.080	.092	.019	.156	.160	-.083	-.011

*P<0.05; **P<0.01

Table 5 shows the correlation between perceived barriers and benefits for participating in physical activity and levels of physical activity for girls. Among the girls, lack of interest was negatively associated with to feel well, to have energy and to have a better self-image. Laziness and tiredness were negative and significantly associated with to become physically fit. Six of ten benefits of participation in physical activity were positively associated with physical activity and with a significant relationship between physical activity and to relieve stress during the week and weekend.

Table 5 Correlation between perceived barriers, benefits and physical activity levels for girls

	Variable for the benefits of participating in physical activity									
Variable Statements **How often do the following things prevent you from getting to do physical activity**	To stay in good health	To become physically fit	To feel well	To have energy	To have better self-image	To relieve stress	To have social interaction	To maintain good body weight	To build self-motivation	To develop self-perception
	r	*R*	*r*	*R*	*R*	*r*	*R*	*r*	*r*	*r*
1. Lack of interest	-.004	-.073	-.121**	-.184*	-.103*	-.065	.019	-.029	-.021	-.004
2. Lack of time	-.026	.077	-.036	.021	-.010	.037	.016	.036	.002	-.060
3. Do work/school work	.153	.016	.104	.067	.022	.034	-.046	.028	-.015	-.024
4. Laziness	.117	-.208**	.053	.112	.033	-.021	.129	.175	.060	-.023
5. Tiredness	-.126	-.216**	.038	-.021	.029	.095	.135	.057	.076	.113
6. Meal proximity	.059	.077	.047	.148	.129	.112	.028	.041	-.011	.116
7. Wanting to do other things with one's time	.109	.057	.059	.077	-.040	.022	.117	-.039	-.001	.082
8. Physical activity makes one sore	.165*	-.105	.039	.055	.003	.005	.149	-.027	-.067	.065
9. Physical activity makes one sweat	-.009	.032	-.012	.057	-.019	-.023	.133	.059	.014	.015
10. Do not have anyone to do PA with me	.038	.048	-.033	.070	.069	-.073	-.057	.088	-.021	.092
11. No one at my skill level to do PA with me	.022	.031	.010	.162*	.093	-.056	.002	.081	-.081	-.029
12. Friends don't like to do PA	.137	.133	.151	-.041	-.025	.077	.086	.118	.250	.153
13. Friends tie me during PA	-.101	.145	-.094	.156*	-.042	-.034	.060	.044	.014	-.017
14. Too overweight to do PA	-.012	-.149	-.047	.049	-.006	-.063	-.035	-.025	-.104	-.063
15. Weather is too bad	.128	.242	.232	.108	.195	-.045	-.062	.026	.108	.135
16. Lack of equipment	.083	.084	.037	.067	.092	-.051	.043	.076	-.091	-.026
17. Lack of knowledge on how to do PA	-.042	-.059	-.035	-.070	-.022	-.048	.008	-.054	.021	-.059
18. Lack of skills	-.091	.071	-.113	-.026	.033	.094	-.046	-.078	.043	.016
19. Don't want people to see my body when I do PA	.228	.026	.035	.055	.077	.124	.153	.088	.027	.025
20. Self-conscious about my looks when I do PA	.054	.046	.101	-.051	.101	.015	.108	-.026	.018	.027
21. Self-conscious of my body when I do PA	.118	-.071	-.034	.159	.087	-.074	.064	.114	-.065	-.091
Physical activity										
PDPARWK	.044	.240	.059	-.088	-.070	.367*	-.087	.061	.150	-.190
PDPARWKD	.170	.079	.000	-.105	-.226	.356*	-.257	.083	.278	-.076

*P<0.05; **P<0.01

Table 6 presents the relationships between perceived barriers and levels of physical activity during the week and weekend days for boys and girls. Some barriers were negatively associated with levels of physical activity in boys and girls during the week and weekend days. Significant associations were found for lack of interest, wanting to do something with someone's time and lack of equipments with levels of physical activity during the week and weekends respectively in boys. Lack of equipments was negatively associated with the level of physical activity in girls during the week.

Table 6 Correlation between perceived barriers and levels of physical activity for boys and girls

	Boys		Girls	
	Variable of physical activity			
Variable Statements **How often do the following things prevent you from getting to do physical Activity**	**PDPARWK**	**PDPARWKD**	**PDPARWK**	**PDPARWKD**
	R	***R***	***r***	***r***
1. Lack of interest	-.357**	-.016	.092	-.086
2. Lack of time	.039	-.053	.005	.046
3. Do work/school work	.094	-.109	.069	.250
4. Laziness	.007	.011	-.019	-.240
5. Tiredness	.003	.035	-.304	.000
6. Meal proximity	.011	.016	-.050	-.248
7. Wanting to do other things with one's time	-.184	-.296*	.081	-.282
8. Physical activity makes one sore	.121	.029	-.078	.000
9. Physical activity makes one sweat	-.188	-.069	.284	-.081
10. Do not have anyone to do PA with me	.097	-.146	.139	-.039
11. No one at my skill level to do PA with me	-.060	-.192	.044	.212
12. Friends don't like to do PA	.073	-.158	.123	-.313
13. Friends tie me during PA	.026	-.153	-.321	.077
14. Too overweight to do PA	.010	-.064	-.056	.156
15. Weather is too bad	.234	.028	-.187	-.254
16. Lack of equipment	-.157	-.283*	-.351*	.247
17. Lack of knowledge on how to do PA	-.125	-.185	-.058	.077
18. Lack of skills	.005	-.244	-.028	-.103
19. Don't want people to see my body when I do PA	.046	-.006	.029	-.268
20. Self-conscious about my looks when I do PA	-.006	-.030	-.107	-.153
21. Self-conscious of my body when I do PA	.071	.080	.089	.119

*P<0.05; **P<0.01

DISCUSSION

The objective of this study was to determine relationships between perceived barriers and benefits of physical activity and physical activity levels of children attending farm schools aged 15 and 16 years. Few but not significant negative relationships between perceived barriers and benefits were found. Though not significant, other relationships were in the expected direction.

The study revealed that boys are more active than girls. These findings are in agreement with some studies which indicated that girls were more inactive than boys (Allison, Dwyer & Makin, 1999; Gordon-Larsen, McMurray & Popkin, 2000; Kimm, Glynn & Kriska, 2002; Kirtland, Porte & Addy, 2003). These differences may somehow be explained by the fact that most of the time girls do much indoor activities while boys spent more time outside.

The results of the present study were somewhat similar to the previous findings. With regard to perceived barriers for participating in physical activity the most barriers experienced for not being active were lack of time, to do work/school work and lack of skills among boys and girls. Furthermore, physical activity makes one sweat was another perceived barrier in boys and lack of equipments as a perceived barrier in girls. A study by Tappe, Dudda & Menges-Ehrnwald (1989) identified the most frequent perceived barriers to exercise by adolescent students as time constraints, unsuitable weather, school and schoolwork and lack of interest or desire and job responsibility. Lennox *et al.* (2007) study on adolescent boys and girls learners in Potchefstroom identified the most frequently perceived barriers as too much homework, lack of money, house and family responsibility, lack of facilities and coaches, watching television (TV) and time constraints.

The most frequently mentioned perceived benefits of participating in physical activity by boys and girls in the present study were to stay in good health, to feel well and to have energy. These findings were congruent with studies done in Rwanda and Potchefstroom. A study done in Rwanda stated benefits of participating in physical activity as reducing stress and improvement of self-

esteem (Humpel, Owen & Leslie, 2002). The study of Lennox *et al.* (2007) revealed improved self-image, doing something with friends and raising their energy levels as benefits of participating in physical activity.

Lack of equipments during the week showed a negative relationship with levels of physical activity of girls, while boys experienced lack of equipments to have a negative relationship on their physical activity levels during the weekend. This may be explained by the fact that some equipments for playing netball or other sport activities in their schools are not available during the week. The other reason in particular during weekend physical activity participation may be linked to the fact that no recreational facilities are available in the communities in which the boys lived. Boys indicated the relationships between physical activity and lack of interest, and wanting to do other things with ones time. These may be explained by the fact that boys might have other activities not investigated in the present study which are not physical activities but which keeps them busy. These findings support those of Deflandre *et al.* (2004), which found associations between the time spent on physical and sport activities per day among girls, fathers and mothers, but not among boys.

The results also show a significant relationship between physical activity and to relieve stress during the week and weekends in girls. This significant relationship between physical activity and to relieve stress may be explained by the fact that girls like women are reported to have high levels of chronic and daily stressors than men (Hogan, Carlson & Dua, 2002; Tamres, Janicki & Helgenson, 2002). In boys non-significant positive relationships between physical activity and perceived benefits of participating in physical activity were found. Though the results in the present study showed non-significant relationships (particularly in boys) between physical activity and the perceived benefits of participating in physical activity, the trends were somewhat congruent with findings from other researchers, who stated that participation in physical activity is beneficial for health (Deflandre *et al.,* 2004).

CONCLUSIONS

It can be concluded that boys and girls perceived similar benefits and different barriers to participate in physical activity. Furthermore, lack of equipments was negatively associated with participation in physical activity in boys and girls during the week and weekend days respectively. In addition girls showed a relationship between to relieve stress and the levels of physical activity, indicating that they realise the benefits of physical activity in their lives. Boys showed relationship between lack of interest, and wanting to do other things with ones time and physical activity. It is therefore recommended that well-structured programmes in physical activity be implemented by qualified personnel as well as provision of physical activity facilities and proper equipments at these farm schools. In addition awareness of the importance of physical activity targeting girls to improve their physical activity levels is recommended. Boys also need to understand the importance of physical activity in order to make more active choices during weekend days when they want to do other things with their time. These strategies will encourage these children to practice healthy lifestyles through engagement in physical activities which may track well into their adult life.

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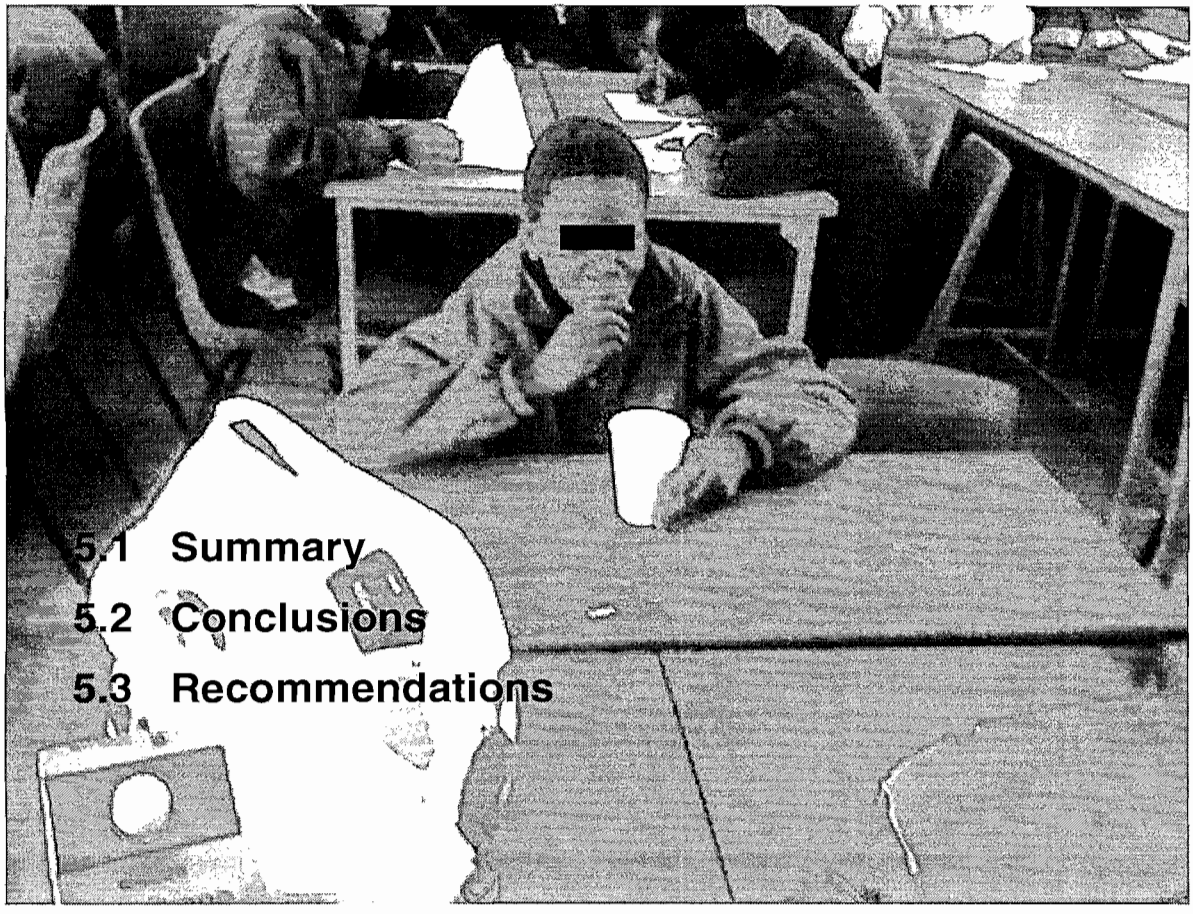
CHAPTER 5
SUMMARY, CONCLUSIONS AND RECOMMENDATIONS FOR FURTHER RESEARCH



5.1 Summary

5.2 Conclusions

5.3 Recommendations

5.1 Summary

Literature indicated that children are becoming physically inactive, though there are reported health benefits of participating in physical activity. This state of the art is found to be associated with numerous factors such as perceived knowledge with regard to the benefits and barriers of participating in physical activity.

The first aim of the study was to investigate perceptions with regard to barriers and benefits of participating in physical activity and the levels of physical activity in children attending farm schools around Alma-Vaalwater area, and secondly to determine the relationships between perceived benefits and barriers of participating in physical activity and physical activity levels in boys and girls attending farm schools. Chapter 1 describes the problem, aims and hypothesis of the study.

Chapter 2 consists of a literature review, where the relationships between the perception of benefits and barriers of participating in physical activity and the levels of physical activity, guidelines for playing activities for children and adolescents and techniques for assessing physical activity among children and adolescents are discussed. In this literature review specific attention was focused on the factors such as perceived barriers and benefits of participating in physical activity and levels of physical activity. The literature indicated no differences between boys and girls relating to benefits to participate in physical activity, and indicated that benefits are less defined with age. It was found that regular physical activity is associated with health benefits and improved well-being. Researchers also reported that physical activity in children is more developed through participation in extra–curricular sports within the school and in the community, as apposed to spontaneous engagement in any light physical activity. The most frequently found associations were reported to be between physical activity and barriers i.e. lack of time, lack of interest, job/familial occupation or schoolwork in children, more so in girls, and income, age and educational levels in adults. The

literature study further indicated a higher prevalence of participation in physical activity in adolescent boys, as compared to girls.

Chapter 3 is presented in an article format and prepared according to the guidelines of the *African Journal for Physical, Health Education, Recreation and Dance* for submission. The aim of this study was to investigate the perceptions on barriers and benefits of participating in physical activity and the levels of physical activity in children attending farm schools. A cross-sectional study design was used including 344 children (185 boys and 159 girls), aged 15 to 16 years Participants were from farm schools around Alma–Vaalwater area in the Waterberg District of Limpopo Province in South Africa. Participants were from secondary and primary schools. The tools for assessing perceived barriers and benefits of participating in physical activity were based on standardized questionnaires. To gather information on the children's physical activity of the previous day for the week and weekend days, a Previous Day Physical Activity Recall (PDPAR) was utilized. The activities were assigned METs values and this was used to classify the children in the light (<2.5), medium (<2.5-4.4) and hard (>4.4) physical activity zones. Means, standard deviation, frequencies and *t*-testing were used to analyse the data. The results show high mean values in lack of time, to do work/school work and lack of skills as the three most dominant barriers for participating in physical activity. Regarding the benefits, high mean values were found in to stay in good health, to feel well and to have energy to be the three dominant factors. Significant gender differences regarding the levels of physical activity with girls participating more in light physical activity than boys were found.

The results analysed in relation to age and gender, showed that the 15 years old boys experienced high mean values in 5 perceived barriers (lack of interest, lack of time, do work/school work, tiredness and lack of skills), while the 16 year old boys experienced high mean values in 8 perceived barriers (lack of time, do work/school work, wanting to do other things with one's time, physical activity makes one sweat, friends tie me during PA, too overweight to do PA, lack of skills and self conscious of my body when I do PA) to

participation in physical activity. High mean values in four perceived barriers for the 15 and 16 years old girls were found. The 15 year olds indicated high mean values in lack of time, to do work/school work, tiredness and physical activity make sore while the 16 year olds mentioned to do work/school work, wanting to do other things, lack of equipments and lack of skills as their perceived barriers.

The results showed that girls and boys perceived similar benefits for participating in PA. The most perceived benefits for participating in physical activity were found to be, to stay in good health, to feel well and to have energy.

With regard to the levels of physical activity gender differences in physical activity participation during the weekday and weekend days were found. Boys were found to be engaged in moderate physical activities in both the week and weekend days. Girls engaged in light physical activities during the week and moderate physical activities on weekends.

Chapter 4 present an article on the relationships between perceived benefits and barriers of participating in physical activity and levels of physical activity in boys and girls attending farm schools in the Alma-Vaalwater area. The article was prepared for submission according to the guidelines of the *African Journal for Physical, Health Education, Recreation & Dance.* A cross-sectional study design was used including 344 children (185 boys and 159 girls), aged 15 to 16 years. The tools for assessing perceived barriers and benefits for participating in physical activity were based on standardized questionnaires. To gather information on the children's physical activity of the previous day for the week and weekend days, a Previous Day Physical Activity Recall (PDPAR) was utilized. Descriptive statistics, independent t-test and correlation analysis were used for the analysis of the data. The results revealed negative relationships between perceived barriers and participation in physical activity. Among boys during weekends, wanting to do other things with one's time was negatively associated with PA, while for both boys and girls, lack of equipments was negatively associated with PA. Further in boys

negative relationship was found between lack of interest and physical activity during the week. Positive relationship was found between to relieve stress and physical activity among girls during the week and weekend days but no significant association was found in boys.

5.2 Conclusion

The conclusions of this study are made with regard to the set hypotheses.

5.2.1 Hypothesis 1: Boys and girls have different perceptions with regard to the barriers and benefits of participation in physical activity and have different levels of physical activity

The results obtained concerning the abovementioned hypothesis showed different perceptions with regard to barriers of participating in physical activity and the levels of physical activity. Barriers experienced by boys to be physically active included lack of time, to do work/school work, and physical activity makes one sweat. In girls barriers experienced to be physically active included lack of time, to do work/school work and lack of equipments. Similar perceptions regarding the benefits of participating in physical activity were found for to stay in good health, to feel well and to have energy for boys and girls. Regarding physical activity levels, the results show that girls participate more in light physical activities than boys who engage in moderate physical activities.

Hypothesis 1 is accepted for the first part regarding perceived barriers of participating in physical activity and levels of physical activity. The second part of the hypothesis regarding the perceived benefits is rejected as both boys and girls showed the same benefits.

5.2.2. Hypothesis 2: Positive associations exist between perceived benefits and physical activity, and negative associations exist between perceived barriers and the levels of physical activity in boys and girls.

The results showed few significant negative relationships between perceived barriers and physical activity participation. Physical activity was positively associated with the benefits of participating in physical activity (i.e. to relieve stress) in girls, though not significantly so in boys, but in the expected direction.

Hypothesis 2, given the fact that positive and negative relationships between perceived barriers and benefits and physical activity and levels of physical activity were observed in the above studied hypothesis, therefore, it can be concluded that this hypothesis is accepted.

5.3 Recommendations

5.3.1 From the results of this study it seems that perceived barriers observed by children in farm schools do affect participation in physical activity which warrants the development of physical activity programs in schools and communities. In addition the results recommended that facilities which will cater for physical activity participation be made available in schools and communities so that children could participate fully in physical activity. It is also recommended that well-structured programmes in physical activity be implemented by those qualified to do so.

5.3.2 The results of this study revealed that participation in physical activity is beneficial for health. Given the fact that some of the children indicated lack of knowledge regarding the benefits of physical activity to health as a barrier, it is therefore recommended that programs which aimed at educating children about the health benefits of participating in physical activity be made available in schools and communities.

5.3.3. The results show that girls participate more in light physical activities than the boys. The study recommended the need for the introduction of awareness programmes targeting less active girls as well as all children on the importance of physical activity to the general well being.

Although the study was thoroughly planned, some limitations were evident and should be addressed if future similar studies are planned. The following recommendations are made in this regard:

5.3.4 The relative small sample size of the children may have affected the results in one way or the other, and therefore, it is recommended that similar research studies be conducted on larger samples of children attending farm schools.

5.3.5 The cross-sectional nature of the study might have affected the results in one way or the other, therefore more studies which may follow a longitudinal design method are required.

5.3.6 It is generally a known fact that questionnaires in assessing physical activity in children have limitations. To minimise much of the limitations in the present study children were assisted by experienced researchers in the completion of the questionnaires. Though the study was conducted by experienced researchers, more studies using objective instruments are recommended in order to verify their physical activity levels.

APPENDIX

A

LETTERS TO THE SCHOOLS, PARENTS, AND CIRCUIT MANAGER, AND CONSENT AND INFORMED CONSENT FORMS

NORTH-WEST UNIVERSITY
YUNIBESITI YA BOKONE-BOPHIRIMA
NOORDWES-UNIVERSITEIT

School of Biokinetics, Recreation and Sport Science
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Potchefstroom
2520
South Africa
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Fax: +27 18 299 1825
E-mail: andries.monyeki@nwu.ac.za
12 June 2007
http://www.nwu.ac.za

The School Principal

.....

.....

.....

.....

Sir / Madam

REQUEST TO CONDUCT RESEARCH ON PERCEPTIONS OF PARTICIPATING IN PHYSICAL ACTIVITY IN YOUR SCHOOL

We as the research team from the North-West University (Potchefstroom Campus) hereby request permission to conduct research in your school.

To give a background of the study: Given the fact that children these days are becoming inactive and subsequently, are confronted with obesity and other related diseases (e.g. hypertension, sugar diabetes, etc) which are becoming a major problem to the people's health. The aims of the research study is to investigate the perceptions on barriers and benefits of participating in physical activity and the physical activity levels, of farm school children aged 15 to 16 years. Basically the study will only gather information from the children through the use of questionnaires. No blood samples will be taken from the children. The information to be collected will be mainly used for research purposes, and personal information of the participants will be held confidential at all times.

Your assistance in this regard will be highly appreciated.

Yours sincerely,

Dr M.A. Monyeki
(Project Leader)

Mrs K.S. Shirinde
(Research investigator)

LETTER TO THE CIRCUIT MANAGER

Eng: K.S. SHIRINDE
084 0596 766

Moshia Secondary School
P.O. Box 79
ALMA
0512

27 November 2006

The Circuit Manager

Mr V.R. MALOKA

Vaalwater Circuit

0530

Sir

REQUEST TO CONDUCT RESEARCH WITHIN YOUR CIRCUIT

The above matter refers:

1. Permission is requested to conduct research in the following schools:

    1.1. Moshia Secondary School
    1.2. Mohlakamotale High School
    1.3. Meetsetshehla High School
    1.4. Leseding High School
    1.5. Laërskool Alma
    1.6. Mahlasedi Primary School

2. The targeted groups are boys and girls aged from 15years to 16 years.
3. The targeted term is the first term of 2007
4. Attached please find copies of documents to be used during the research and others to be forwarded to the targeted school for perusal.

    4.1. Certificate of registration
    4.2. Letter to the parent/guardian
    4.3. Assent form.
    4.4. Consent form
    4.5. Physical activity questionnaire
    4.6. Questionnaire on benefits and barriers to participate in physical activity

Hoping for a positive response.

Your sincerely,

K.S. SHIRINDE (MRS)

LETTER TO THE PARENTS, ASSENT AND CONSENT FORMS

Dear Parent/Guardian,

We would like to ask your permission to allow your child (or a child under your care) to participate in our study on individual perception with regard to benefits, and barriers to participation in physical activity, levels of physical activity and other factors of quality life. Your child (or child under your care) has been identified by Ms K.S. Shirinde an educator and investigator at Moshia Secondary School to participate in this study. Your child (or a child under your care) will be asked to answer a series of questions on the benefits, and barriers to participation in physical activity, levels of physical activity, and other quality of life. There are no costs required from your child (or a child under your care) to participate in the study. Further, no payment will be granted to your child (or a child under your care) for participating in the study. The questionnaire will take about 25 minutes to complete. The study will be conducted by researcher(s) from North-West University together with Ms K. S. Shirinde.

Yours truly,

Ms K.S. Shirinde
Investigator

CONSENT FORM

PERCEIVED INFORMATION ON BENEFITS, BARRIERS TO PARTICIPATE IN PHYSICAL ACTIVITY PROJECT: INFORMATION ON THE STUDY.

THE PROJECT HAS BEEN APPROVED BY THE ETHICS COMMITTEE OF THE NORTH-WEST UNIVERSITY (Potchefstroom Campus).

It has been explained to me, that:

1. The purpose of the research study is to collect information on the benefits, and barriers for participation in physical activity, the levels of physical activity and other factors of quality of life.
2. I voluntarily agree to participate in a research study. I understand that the purpose of this research is to gain knowledge on benefits, and barriers to physical activity, levels of physical activity and other factors of quality of life in farm school learners.
3. The procedures involved have been fully explained to me by the investigator(s). The completion of the questionnaires will take about 25 minutes.
4. I will receive no direct benefits (e.g. monetary gain) from participating in this research study, although the results of the study will contribute to the general knowledge on how physical activity benefits my health.
5. There are no stipulated costs for me when participating in this study.
6. I understand that participation is voluntary, and that I may withdraw and discontinue participation at any time without penalty, or loss of compensation.
7. I also understand that I will not be identified in any presentation of the information obtained from this study. All information collected will be kept confidential except if it may be required by the law. I will receive a copy of this consent form for my records. I understand that all data collected for the study will be achieved for possible further analysis and maintained in a locked file cabinet.
8. I may contact the principal investigator at any time during the course of this study to answer any additional questions regarding the purpose, procedures and risks involved.
9. I have read the information given above. I understand the meaning of this information. I hereby give consent to participate in the study.

The information in this consent form was explain to me by _____ (name of interviewer) in _____ (language) and I confirm that I have a good command in this language and understood the explanations, OR it was translated to me by _____ (name of translator) in my language _____ . I was also giving the opportunity to ask questions on things I did not understand clearly.

I the participant (child) hereby agree voluntarily to take part in this research survey.

Signed/confirmed at _____ on the _____ day of _____ 2006.

Witness _____

Representative of participant
(Parent/guardian)

ASSENT FORM

I, ... (Full names), have been asked to participate in this research study, which has been explained to me by .....

The purpose of the study.
The purpose of the study is to learn more about benefits that may be achieved by participating in physical activity or barriers that may affect participation in physical activity, and levels of physical activity and other factors of quality of life.

Description of procedure.
This study will be done at my school. I will participate in a group discussion that will take about one hour. I may see the discussion questions before signing this page. I may not answer all of the questions due to discomfort.

Discomfort.
Some of the questions may be difficult and I may not enjoy trying to answer them.

Benefits.
I understand that this study is not expected to be of direct benefit to me, but what they learn from this study may be of help to other people.

Confidentiality.
I have been promised that my personal information for this study will be kept confidential.

Voluntary participation.
My participation in this study is voluntary and if I feel uncomfortable I have the right to accept or reject the instructions. I have been allowed to ask questions about the research, and all my questions were answered.

.....	.....	.....
Subject signature	**Date**	**Time**
.....	.....	.....
Signature of investigator/ Investigator's Representative	**Date**	**Time**

APPENDIX

B

QUESTIONNAIRES ON PERCEIVED BENEFITS, BARRIERS FOR PARTICIPATION IN PHYSICAL ACTIVITY AND LEVELS OF PHYSICAL ACTIVITY

PERCEIVED INDIVIDUAL BENEFITS/BARRIERS AND SOCIAL SUPPORT FOR PARTICIPATING IN PHYSICAL ACTIVITY

SUBJECT NO: .....

GENDER: **MALE** ☐ **FEMALE** ☐ **AGE** ☐

NAME OF THE SCHOOL: ..... **EXAMINATION DATE:** .....

Introductory question

BARRIERS TO PARTICIPATE IN PHYSICAL ACTIVITY
How often do the following things prevent you from getting to do physical activity?

	Very often	Often	Sometimes	Never	Do not know	Order of preferences
Computer coding labels	5	4	3	2	1	
1. Lack of interest (not to like)						
2. Lack of time						
3. Work/school work						
4. Laziness						
5. Tiredness						
6. Meal proximity						
7. Wanting to do other things with one's time						
8. To make soreness						
9. To make sweating						
10. Do not have anyone to do PA with me						
11. No one at my skill level to do PA with me						
12. Friends don't like to do PA						
13. Friends ties me during PA/Sports						
14. Too overweight to do PA						
15. Weather is too bad						
16. Lack of equipments						
17. Lack of knowledge on how to do PA/PE class						
18. Lack of skills						
19. Don't want people to see my body when I do PA						
20. Self-conscious about my looks when I do PA						
21. Self-conscious of my body when I do PA						

PERCEIVED HEALTH BENEFIT

	Very important	Important	Less important	Do not know	Order of preferences
Computer coding labels	4	3	2	1	
1. To stay in good health					
2. to become physically fit					
3. To feel well					
4. To have energy					
5. To have better self-image					
6. To relieve stress					
7. To have social interaction					
8. To maintain good body weight					
9. To build self-motivation					
10. To develop self-perception					

!!!!!!!!!!!!!!!!!!!! **THANK YOU FOR PARTICIPATION**!!!!!!!!!!!!!!!!!!!!

Physical activity questionnaire of the previous week day

Subject nr

Name:

Race: 1 W | 2 B | 3 C | 4 I

Age: Date of birth

Gender: M F

Grade:

School:

Teacher:

Date: d d m m y y

Classification:

Think back about yesterday. For each of the 30 minutes periods, select a primary activity that you performed and write the type of activity in the type of activity column.

Mark the day of the week that you fill in this form

Monday | Tuesday | Wed | Thursday | Friday

Time	TIPE	Activity	METS	Very light	Light	Med-ium	Hard
7:00			•				
7:30			•				
8:00			•				
8:30			•				
9:00			•				
9:30			•				
10:00			•				
10:30			•				
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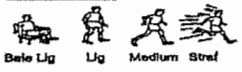

Physical activity questionnaire of the previous weekend day

Subject no

Name:

Race: 1 W | 2 B | 3 C | 4 I

Age: Date of birth

Gender: M | V

Grade:

School:

Teacher:

Date: d d m m y y

Classification:

Think back about the weekend. For each of the 30 minutes periods, select a primary activity that you performed and write the type of activity in the type of activity column.

Mark the day of the weekend that you fill in this form

Saterday | Sunday

Time	TIPE	Activity	METS	Very light	Light	Med-ium	Hard
7:00							
7:30							
8:00							
8:30							
9:00							
9:30							
10:00							
10:30							
11:00							
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22:00							

APPENDIX

C

GUIDELINES OF SUBMISSION OF AN ARTICLE TO THE "AFRICAN JOURNAL FOR PHYSICAL, HEALTH EDUCATION, RECREATION & DANCE"

The African Journal for Physical, Health Education, Recreation and Dance (AJPHERD) is a peer-reviewed journal established to:

i) provide a forum for physical educators, health educators, specialists in human movement studies and dance, as well as other sport-related professionals in Africa, the opportunity to report their research findings based on African settings and experiences, and also to exchange ideas among themselves.
ii) afford the professionals and other interested individuals in these disciplines the opportunity to learn more about the practice of the disciplines in different parts of the continent.
iii) create an awareness in the rest of the world about the professional practice in the disciplines in Africa.

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authors should make such declarations. Where part of a paper has been published or presented at congresses, seminars or symposia, reference to that publication should be made in acknowledgement section of the manuscript.

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Three copies of original manuscript and all correspondence should be addressed to the Editor-In-Chief:

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Articles can also be submitted electronically, i.e. via e-mail attachment. However, the corresponding author should ensure that such articles are virus free. AJPHERD reviewing process normally takes 4-6 weeks and authors will be advised about the decision on submitted manuscripts within 60 days. In order to ensure anonymity during the reviewing process authors are requested to avoid self-referencing or keep it to the barest minimum.

PREPARATION OF MANUSCRIPT

Manuscripts should be type written in fluent English (using 12-point Times New Roman font and 1,5 line spacing) on one side of white A4-sized paper justified fully with 3cm margin on all sides. In preparing manuscripts, MS-Word, Office 98 or Office 2000 for Windows should be used. Length of manuscripts should not normally exceed 12 printed pages (including tables,

figures, references, etc). For articles exceeding 12 typed pages US$ 10.0 is charged per every extra page. Longer manuscripts may be accepted for publication as supplements or special research reviews. Authors will be requested to pay a publication charge of US$ 150.0 to defray the very high cost of publication.

Title page:

The title page of the manuscript should contain the following information:

Concise and informative title.
Author(s') name(s) with first and middle initials. Authors' highest qualifications and main area of research specialisation should be provided.
Author(s') institutional addresses, including telephone and fax numbers.
Corresponding author's contact details, including e-mail address.
A short running title of not more than 6 words.

Abstract

An abstract of 200-250 words is required with up to a maximum of 5 words provided below the abstract. Abstract must be typed on a separate page using single line spacing, with the purpose of the study, methods, major results and conclusions concisely presented. Abbreviations should either be defined or excluded.

Text

Text should carry the following designated headings: Introduction, materials and methods, results, discussion, acknowledgement, references and appendices (if appropriate).

Introduction

The introduction should start on a new page and in addition to comprehensively giving the background of the study should clearly state the problem and purpose of the study. Authors should cite relevant references to support the basis of the study. A concise but informative and critical literature review is required.

Materials and Methods

This section should provide sufficient and relevant information regarding study participants, instrumentation, research design, and validity and reliability estimates, data collection procedures, statistical methods and data analysis techniques used. Qualitative research techniques are also acceptable.

Results

Findings should be presented precisely and clearly. Tables and figures must be presented separately or at the end of the manuscript and their appropriate location in the text indicated. The results section should not contain materials that are appropriate for presentation under the discussion section. Formulas, units and quantities should be expressed in the system international (SI) units. Colour printing of figures and tables is expensive and could be done upon request authors' expense.

Discussion

The discussion section should reflect only important aspects of the study and its major conclusions. Information presented in the results section should not be repeat under the discussion. Relevant references should be cited in order to justify the findings of the study. Overall, the discussion should be critical and tactfully written.

References

The American Psychological Association (APA) format should be used for referencing. Only references cited in the text should be alphabetically listed in the reference section at the end of the article. References should not be numbered either in the text or in the reference list.
Authors are advised to consider the following examples in referencing:

Examples of citations in body of the text:-

For one or two authors; Kruger (2003) and Travill and Lloyd (1998). These references should be cited as follows when indicated at the end of a statement: (Kruger, 2003); Travill & Lloyd, 1998).

For three or more authors cited for the first time in the text; Monyeki, Brits, Mantsena and Toriola (2002) or when cited at the end of a statement as in the preceding example; (Monyeki, Brits, Mantsena & Toriola, 2002). For subsequent citations of the same reference it suffices to cite this particular reference as: Monyeki et al. (2002).

Multiple references when cited in the body of the text should be listed chronologically in ascending order, i.e. starting with the oldest reference. These should be separated with semi colons. For example, (Tom, 1982; McDaniels & Jooste, 1990; van Heerden, 2001; de Ridder et al., 2003).
Reference List

In Compiling the reference list at the end of the text the following examples for journal references, chapter from a book, book publication and electronic citations should be considered:

Examples of journal references:

Journal references should include the surname and initials of the author(s), year of publication, title of paper, name of journal in which the paper has been published, volume and number of journal issue and page numbers.

For one Author: McDonald, A.K. (1999). Youth sports in Africa: A review of programmes in selected countries. *International Journal of Youth Sports*, 1(4), 102-117.

For two authors: Johnson, A.G. & O'kefee, L.M. (2003). Analysis of performance factors in provincial table tennis players. *Journal of Sport performance*, 2(3), 12-31.

For multiple authors: Kemper, G.A., McPherson, A.B., Toledo, I. & Abdullah, I.I. (1996). Kinematic analysis of forehand smash in badminton. *Science of Racket Sports*, 24(2), 99-112.

Examples of book references:

Book references should specify the surname and initials of author(s), year of publication of the book, title, edition, page numbers written in brackets, city where book was published and name of publishers. Chapter references should include the name(s) of the editor and other specific information provided in the third example below.

For authored references: Amusa, L.O. & Toriola, A.L. (2003). *Foundation of Sport Science* (1st ed.) (pp. 39-45). Mokopane, South Africa: Dynasty Printers.

For edited references: Amusa, L.O. and Toriola, A.L. (Eds) (2003). *Contemporary Issues in Physical Education and Sports* (2nd ed.) (pp.20-24). Mokopane, South Africa: Dynanty Printers.

For chapter references in a book: Adams, L.L. & Neveling, I.A. (2004). Body fat characteristics of sumo wrestlers. In J.K. Manny and F.O. Boyd (Eds.), *Advances in Kinanthropometry* (pp. 21-29). Johannesburg, South Africa: The Publishers Company Ltd.

Examples of electronic references:

Electronic sources should be easily accessible. Details of Internet website links should also be provided fully. Consider the following example:

Wilson, G.A. (1997). Does sport sponsorship have a direct effect on product sales? The Cyber-Journal of Sport Marketeing (online), October, 1(4), at http://www.cad.gu.au/cjsm/wilson.html. February 1997.

PROOFREADING

Manuscript accepted for publication may be returned to the author(s) for final correction and proofreading. Corrected proofs should be returned to the Editor-In-Chief within one week of receipt. Minor editorial corrections are handled by AJPHERD.

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