

**IMPACT OF A LIFESTYLE PHYSICAL ACTIVITY
INTERVENTION ON SCHOOL GOING CHILDREN'S
PHYSICAL ACTIVITY PARTICIPATION**

BY

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**A thesis in partial fulfilment of the requirements for the degree of
Master of Science (Physiotherapy) in the Department of
Physiotherapy, University of the Western Cape**

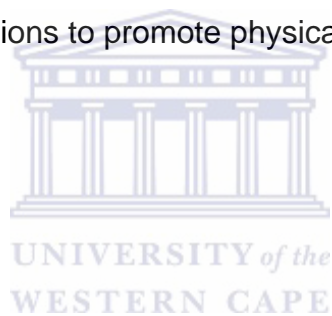
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**Supervisor: Prof. J.S Phillips
(University of the Western Cape)**

ABSTRACT

Associated with physical inactivity and obesity are numerous other health risks which have become a major health concern. A steady decrease in the levels of physical activity during childhood and adolescents have been noted in various parts of the world. The picture of low physical activity levels in developed countries is no different in developing countries. Children spend the majority of their day at school therefore a school setting is ideal to conduct physical activity intervention studies. The primary aim of this study was to measure the effect of an intervention programme on the physical activity participation levels among school going children and adolescents. The study was carried out at an urban independent Catholic school. The sample, which was conveniently selected, which included 100 learners from grade 5 to 7 with parental consent. A quantitative approach using a quasi-experimental design was used in this study. Baseline data included levels of physical activity participation, Body Mass Index (BMI), hip-waist ratio, and socio-demographic variables. Physical activity was assessed with the Modifiable Activity Questionnaire for Adolescents. The Promoting Lifestyle activity for Youth (PLAY) programme was implemented at the school. This process-oriented programme shifts the focus from fitness toward regular participation in daily physical activity, and it is not intended to replace a comprehensive physical education programme. Two weeks after the 12 week intervention programme, repeat measurement of variables, such as BMI, hip-waist ratio, and physical activity participation patterns were collected. The Statistical Package for the Social Sciences (SPSS) version 16.0 was used for data analysis. T-tests were used to determine statistical significant differences between groups

(independent t-tests) and within groups (paired t-sample t-tests). The results show that the mean number of sessions of vigorous physical activity (VPA) per week was significantly higher after the intervention program (3.71 days) than before (3.17 days)($p < 0.05$). A higher prevalence of boys (27.1%) were categorized as active than girls (22.4%) and all bivariate correlations between the family and friends social support for physical activity and moderate physical activity were positive and some were statistically significant ($p < 0.05$). The results of the study clearly indicated that an intervention programme such as PLAY have the potential to increase the levels of physical participation among learners. These findings have implications for both school-based and community-based interventions to promote physical activity levels among school going children.



DECLARATION

I hereby declare that **“Impact of a lifestyle physical activity intervention on school going children’s physical activity participation”** is my own work, that it has not been submitted, or part of it, for any degree or examination in any other university, and that all the sources I have used or quoted have been indicated and acknowledge by means of complete references.

Tamara A. Figaji

Signature.....



October 2009-10-17

Witness.....

Prof. Julie Phillips

DEDICATION

I dedicate this to my parents Brian and Vera Figaji and my brother David Figaji thank you for your love and for being my role models, it has made me who I am.



ACKNOWLEDGEMENTS

Firstly, I would like to thank God for all the many blessings He has graced me with throughout my life.

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TABLE OF CONTENTS

TITLE PAGE	i
DECLARATION	ii
DEDICATION	iii
ACKNOWLEDGEMENTS	iv
ABSTRACT	v
TABLE OF CONTENTS	vi
APPENDICES	vii
LIST OF FIGURES	viii
LIST OF TABLES	viii



CHAPTER ONE
INTRODUCTION

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1.1	INTRODUCTION TO THE CHAPTER	1
1.2	BACKGROUND	1
1.3	PROBLEM STATEMENT	6
1.4	AIM OF THE STUDY	7
1.5	OBJECTIVES	7
1.6	SIGNIFICANCE OF THE STUDY	7
1.7	DEFINITIONS OF TERMS	8
1.8	ABBREVIATIONS	9
1.9	OUTLINE OF THESIS	10

CHAPTER TWO
LITERATURE REVIEW

2.1	INTRODUCTION	12
2.2	LEVELS OF PHYSICAL ACTIVITY	12
2.3	CONSEQUENCES OF PHYSICAL INACTIVITY	17
2.3.1	Obesity and Overweight	18
2.3.2	Chronic Diseases of Lifestyle	20
2.4	FACTORS INFLUENCING PHYSICAL ACTIVITY	24
2.4.1	PSYCHOLOGICAL FACTORS	24
2.4.2	SOCIAL SUPPORT	26
2.4.3	ENVIRONMENTAL FACTORS	28
2.5	SCHOOLS AS A SETTING FOR PHYSICAL ACTIVITY INTERVENTION PROGRAMMES	29
2.6	IMPACT OF PHYSICAL ACTIVITY INTERVENTIONS	31
2.7	SUMMARY	35

CHAPTER THREE
METHODOLOGY

3.1	INTRODUCTION	36
3.2	RESEARCH SETTING	36
3.3	STUDY POPULATION AND SAMPLE	36
3.4	STUDY DESIGN	37
3.4	DATA COLLECTION	37
3.4.1	Research Instrument	37

3.4.2	Validity and Reliability	39
3.4.3	Intervention Programme	40
3.5	PROCEDURE	41
3.6	DATA ANALYSIS	42
3.7	ETHICAL CONSIDERATIONS	42
3.8	SUMMARY	43

CHAPTER FOUR RESULTS

4.1	INTRODUCTION	44
4.2	DESCRIPTION OF STUDY SAMPLE	44
4.3	ANTHROPOMETRIC MEASUREMENTS OF STUDY SAMPLE BEFORE INTERVENTION	45
4.4	PERCEPTIONS OF SUPPORT FOR PHYSICAL ACTIVITY BEFORE INTERVENTION	47
4.5	ENJOYMENT OF PHYSICAL EDUCATION AND PHYSICAL ACTIVITY BEFORE INTERVENTION	51
4.6	PHYSICAL ACTIVITY PARTICIPATION	53
4.7	EFFECTS OF THE PHYSICAL ACTIVITY INTERVENTION	59
4.7.1	ANTHROPOMETRIC MEASUREMENTS	59
4.7.2	PERCEPTIONS OF SUPPORT FOR PHYSICAL ACTIVITY	61
4.7.3	PHYSICAL EDUCATION AND PHYSICAL ACTIVITY ENJOYMENT	66
4.7.4	PHYSICAL ACTIVITY PARTICIPATION	68
4.8	SUMMARY	72

CHAPTER FIVE

DISCUSSION

5.1 INTRODUCTION	73
5.2 PHYSICAL ACTIVITY PARTICIPATION AMONG SCHOOL GOING CHILDREN	73
5.2.1 FACTORS INFLUENCING PHYSICAL ACTIVITY PARTICIPATION	73
5.2.2 PARTICIPATION IN TEAM OR COMPETITIVE SPORTS	75
5.2.3 SEDENTARY BEHAVIORS	76
5.3 PERCEPTIONS OF SUPPORT FOR PHYSICAL ACTIVITY	77
5.4 ENJOYMENT OF PHYSICAL ACTIVITY AND PHYSICAL EDUCATION	80
5.5 EFFECTS OF INTERVENTION PROGRAMME	82
5.6 REFLECTION ON THE INTERVENTION PROGRAMME	85
57 SUMMARY	88



CHAPTER SIX

SUMMARY, CONCLUSION AND RECOMMENDATIONS

6.1 CONCLUSION	89
6.2 LIMITATIONS	89
6.3 RECCOMENDATIONS	91
6.4 SUMMARY	92
REFERENCES	93

LIST OF APPENDICES

Appendix A Questionnaire

Appendix B Letter to Principal

Appendix C Parents Information Sheet

Appendix D Participants Information Sheet

Appendix E Parental Consent

Appendix F Participants Consent

Appendix G PLAY Information Sheet for Parents



LIST OF FIGURES

Figure 4.1	Physical activity levels of study sample	55
Figure 4.2	Physical activity levels by gender	56
Figure 4.3	Physical activity levels of study sample after intervention	70
Figure 4.4	Physical activity levels by gender after intervention	71



LIST OF TABLES

Table 2.1	School-based physical activity intervention studies among	34
Table 4.1	Demographic characteristics of study sample (n=100)	45
Table 4.2	Mean anthropometric measurements of study sample before intervention (Mean, SD) (n=100)	46
Table 4.3	Mean anthropometric measurements of study sample by gender before intervention (Mean, SD)	46
Table 4.4	Perceptions of support for physical activity at school (Mean, SD) (n=100)	48
Table 4.5	Perceptions of support for physical activity from friends and family (Mean, SD) (n=100)	50
Table 4.6.	Enjoyment of physical education and physical activity (Mean, SD) (n=100)	52
Table 4.7	Physical activity participation overall before intervention (Mean, SD)(n=100)	54
Table 4.8	Team sports participated in 12 months prior to the study	57
Table 4.9	Mean number of team sports participated in by gender	58
Table 4.10	Bivariate correlations of family and friends social support variables with days moderate and vigorous activity	58
Table 4.11	Mean anthropometrics of study sample before and after intervention (Mean, SD)	60
Table 4.12	Mean anthropometrics of study sample before and after intervention by gender (Mean, SD)	61
Table 4.13	Overall perceived school climate before and after Intervention	62

Table 4.14	Perceived support for PA before and after intervention (Mean, SD)	64
Table 4.15	Perceived support for physical activity from friends and family (Mean, SD)	65
Table 4.16	Overall enjoyment of physical education and physical activity	66
Table 4.17	Enjoyment of physical education and physical activity before and after intervention (Mean, SD)	67
Table 4.18	Overall physical activity participation before and after intervention (Mean, SD)	68
Table 4.19	Female physical activity participation before and after Intervention	69
Table 4.20	Male physical activity participation before and after intervention	69
Table 4.21	Bivariate correlations of family and friends social support variables with days moderate and vigorous activity after intervention	72





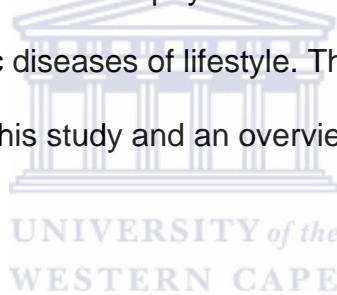
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CHAPTER ONE

INTRODUCTION

1.1 INTRODUCTION TO THE CHAPTER

The present study measured the effect of an intervention programme on the physical activity participation patterns among school going children and adolescents. In this chapter the rationale of the study highlights the growing epidemic of physical inactivity among school going children and adolescents. The purpose of the study is explained and the specific aims outlined. Finally the significance of the study demonstrates physical activity as a cost effective way to manage and prevent chronic diseases of lifestyle. The chapter ends with the definitions of terms used in this study and an overview of the structure of the thesis.



1.2 BACKGROUND

During the last decade physical inactivity and obesity among school going children and adolescents have reached epidemic proportions globally (Bauer, Nelson, Boutelle & Neumark-Sztainer, 2008, Rukavina & Li 2007, Phillips, 2006b). Various researchers have highlighted the decline of physical activity during the last twenty years and they have identified adolescence as the age of greatest decline (Biddle, Gorley & Stensel, 2004; Sallis, 2000). This is a pointer to the need for effective interventions that promote physical activity among children and adolescents. Associated with physical inactivity among children are numerous other health risks which have become a major health concern (Zhang,

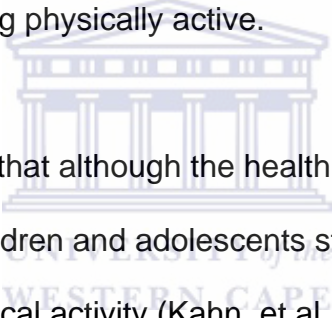
Middlestad & Ji, 2007). Furthermore various researchers have cautioned us that physical inactivity in children and adolescents will continue into adulthood (Tergerson & King, 2002)

The American College of Sports Medicine (ACSM) were the first to formulate physical activity guidelines in 1988 for young people and produced an opinion statement on the amount of physical activity needed for optimum functional capacity and health (Andersen et al., 2006). Various organizations such as the ACSM, World Health Organisation (WHO) and Centers for Disease Control and Prevention (CDC) subsequently recommended empirically based physical activity guidelines for children and adolescents. The CDC in the US has guidelines stating that adolescents and children should accumulate at least 60 minutes of moderate physical activity on most if not all the days of the week (Butcher, Sallis, Mayer & Woodruff, 2008). However, a steady decrease in the levels of physical activity during childhood and adolescents have been noted in various parts of the world (Pate, et al., 2007; Hohepa, Schofield & Kolt, 2006; Frantz, 2005). Various researchers have reported on the decline of physical activity over the last two decades, with adolescence identified as the age of the greatest decline (Haerens, De Bourdeneaudhuij, Maes, Cordon & Deforche 2007; Hagger, Chatzisarantis & Biddle, 2001). Furthermore, adolescent females are more likely to be report lower levels of physical activity than their male counterparts (Butcher, et al., 2008).

Physical activity levels among children and adolescents have been proven to be low in most parts of the world. Trost et al. (1997) have alerted us more than a decade ago, to the fact that regular physical activity levels among children and adolescents are low in the USA. A study conducted in Sweden by Sollerhed and Ejlertsson (2006) showed that many school going children do not achieve the lowest level of recommended daily physical activity of at least moderate intensity. Saudi Arabian children and adolescents also showed that their weekly requirement of moderate to vigorous physical activity is not being achieved (Al-Hazzaa, 2002). Lowther, Mutrie, Loughlan and McFarlane, (1999, p244) stated that, '...a high proportion of the British population can be targeted with intervention aimed at increasing physical activity.'

Physical inactivity as a major factor for childhood obesity has also been found true in Africa (World Health Organisation, 2003). The picture of low physical activity levels in these developed countries has been shown to be no different in developing countries (Phillips, 2006a, Phillips, 2006b). Over a decade ago Noakes and Lambert (1995) warned that the levels of habitual physical activity among urbanized South Africans were no better than what obtained in similarly urbanized populations in other countries. Phillips (2006a) found a prevalence of over 60% of physical inactivity among adolescents of all races in a local community in the Western Cape. In a study among black adolescent girls, Phillips (2006b) found that 51% of the sample was considered inactive. Furthermore, inactivity prevalence increased with increasing grade level and age.

In a national study on various risk behaviours among adolescents in South Africa, Reddy et al. (2003) found that more than one-third of school going learners did not participate in any physical activity. Furthermore, Frantz (2005) found that one-third of the learners in a local Western Cape community did not meet the requirements of being physically active for at least 30 minutes per day on seven days of the week. Phillips (2006a) had similar findings in South Africa as Butcher et al. (2008) in that she found a higher prevalence of physical inactivity among adolescent girls than boys. According to Phillips (2006b) for adolescent girls their appearance and fear of making fools of themselves hindered them from becoming physically active.



Researchers have indicated that although the health benefits of physical activity have been proven, many children and adolescents still do not meet the current guidelines for sufficient physical activity (Kahn, et al., 2008). Some of the consequences of physical inactivity such as coronary heart diseases, diabetes mellitus, hypertension, and a wide range of other chronic diseases of lifestyle, have put physical inactivity on the public health agenda for the last decades (Katzmarzyk, Gledhil & Shephard, 2000; Lacar Soto & Riley, 2000). Obesity which is also a consequence of physical inactivity has gained in prevalence among children due to lifestyle factors that increase energy intake e.g. consumption of fast foods and decrease energy expenditure e.g. sedentary lifestyle such as watching television (Joens-Matre, et al, 2008; Stovitz, Steffen & Boostrom, 2008; Dietz, 2001). According to Zhang et al. (2007) the increasing

obesity rates in developing countries are due to the progressive influence of these above mentioned factors in developed societies. Obesity in childhood together with its associated health risks usually persist adulthood (Butcher, et al., 2008; Nihiser et al. 2007)

There are various factors that influence physical inactivity in children such a self-efficacy and social support. A study by Simons-Morton et al. (1997) confirmed that there is a relationship between children's self efficacy to physical activity and participation in physical activity. Research has also indicated that children and adolescents need their parents' and teachers' support and encouragement to enable them to participate in physical activity and other healthy behaviours (O'Dea, 2003).



Children spend approximately 6 hours per day for nearly 40 weeks of the year at school. Thus, a number of researchers are in agreement that schools seem to be a logical setting to utilize for the promotion of physical activity (Bauman, Bellew, Vita, Brown & Owen 2002; US Department of Health and Human Services, 2000). Furthermore, Nihiser et al. (2007) assert that more than 95% of young people are enrolled in schools, and that schools can use key strategies to prevent obesity by promoting physical activity. Furthermore, Haerens et al.(2007) argued that schools provide, opportunities to promote physical activity through health or physical education classes. A study by Pate et al. (2007), show that a multi-component school-based intervention has a positive effect on children's

physical activity levels. Cale and Harris (2006, p. 402) also state that “school-based physical activity interventions have an inherent advantage over interventions in other settings because programmes can become institutionalized into the regular school curriculum, staff development and other infrastructures”.

School-based intervention programmes to increase physical activity levels ranged from as little as 4 weeks to as long as 8 continuing years (Shaya, Flores, Gbarayor & Wang, 2008; Cale & Harris, 2006). These intervention programmes had various degrees of effectiveness. After a review of literature on school-based physical activity interventions, Cale and Harris (2006) concluded that these interventions can be successful and achieve a wide range of positive outcomes. Some revealed increases in participation of physical activity while others revealed decreases, and others showed improvements in knowledge about physical activity (Cale & Harris, 2006). They further argued that schools and teachers should be encouraged to plan and implement programmes to promote physical activity.

1.3 PROBLEM STATEMENT

Lack of physical activity among children and adolescents has become a major health concern. Physical inactivity as a major factor for childhood obesity and predisposing factor for chronic diseases of lifestyle has been found world wide.

1.4 AIM OF THE STUDY

The primary aim of this study was to assess the effect of an intervention programme on the physical activity participation among school going children.

1.5 OBJECTIVES

- To establish the participation in physical activity among school going children.
- To examine school going children's perceptions of support for physical activity.
- To examine school going children's enjoyment of physical activity and physical education.
- To implement a physical activity intervention programme for school going children.
- To determine the effects of a physical activity intervention programme on the physical activity participation patterns, perceptions of support for physical activity and enjoyment of physical activity and physical education among school going children.

1.6 SIGNIFICANCE OF THE STUDY

Research has indicated that physical activity is a cost-effective way to manage and prevent chronic diseases of lifestyle in adulthood. Although most of the chronic diseases of lifestyle affect adults, they all have their origin in the pediatric years. It is thus clear that physical activity should be encouraged in children and

young people. According to the 'Healthy Active Kids South Africa' report card there is a clear lack of a physical activity and sports participation culture in children and adolescents (Healthy Active Kids South Africa, 2008). They further recommended a need to engage with children and adolescents, parents and teachers to create a culture of healthy lifestyles in our children and youth through education and by changing the social norms.

1.7 DEFINITIONS OF TERMS

Body Mass Index: BMI assesses weight relative to height and provides an easy method for evaluating a large number of participants. Calculated as [Weight in Kilograms/ Height in centimeters²] (Cole, Bellizi, Flegal, Dietz, 2000).

Physical activity: is defined as the behaviours that result in 'any movement contributing to human total energy expenditure'. It includes all large muscle movement, for whatever purposes, carried out throughout the day (Baumann, Phongsavan, Schoeppe and Owen, 2006)

Physical activity guidelines: sixty minutes of moderate physical activity on most if not all days of the week (Andersen et al., 2006)


Physical Education: education about, in, and through movement (Eitan & Shiri, 2009).

Sedentary: The original meaning of the word “sedentary” is related to the higher propensity to be sitting down without performing any physical activity that requires energy expenditure (Varo et al., 2003)

Obesity and overweight: For children obesity is defined as a body mass index (BMI = weight in kg divided by height in meters squared) of >95th percentile for age of the population, while overweight is defined as a BMI between 85th and 95th percentile for age (Dietz, 1994)

1.8 ABBREVIATIONS

The following abbreviations have been used in the thesis:



ASCM:	American College of Sports Medicine
BMI:	Body Mass Index
CDC:	Centre for Disease Control and Prevention
PA:	Physical Activity
VPA:	Vigorous Physical Activity
MPA:	Moderate Physical Activity
PE:	Physical Education
PLAY:	Promoting Lifestyle Activity for Youth
WHO:	World Health Organisation

1.9 OUTLINE OF THESIS

The first chapter highlighted the growing epidemic proportions of physical inactivity and obesity among school going children and adolescents. The impact of physical inactivity on children and adolescents were also highlighted. The study objectives and significance are given and the chapter ends with the definition of key terms used in this study and the outline of chapters.

Chapter two gives an overview of physical activity among school going children and adolescents. Literature on levels of physical activity, benefits of physical activity and physical activity interventions are reviewed.

Chapter three describes the research methods used in the study. This chapter also gives details of the study population, the research instrument and the procedures followed are also outlined. The chapter ends with an explanation of data analysis used and the ethical considerations followed in the study.

Chapter four reports the results of the quantitative data collected. The results include information related to the demographics of the study sample, patterns of physical activity participation among school going children, enjoyment of physical activity and physical education and perceived support for physical activity.

Furthermore the effect of the intervention on these variables are presented.

Chapter five discusses the findings of the present study and compares it with other studies.

Chapter six provides a summary of the study and draws conclusions based on the findings. The chapter also highlights the limitations of the study. It also provides recommendations based on the findings of the study.



CHAPTER TWO

LITERATURE REVIEW

2.1 INTRODUCTION

This chapter gives an overview of physical activity levels among school going children and adolescents and the consequences of physical inactivity. The available literature on the factors influencing physical activity is also reviewed. Furthermore, literature regarding schools as a setting for physical activity interventions is reviewed.

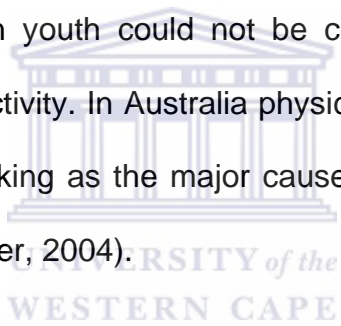
2.2 LEVELS OF PHYSICAL ACTIVITY

The promotion of physical activity among children and adolescents has been a priority area for public health professionals for some time now (Ridgers, Stratton, Fairclough & Twisk, 2007; Trost, et al., 2000). Physical activity has gained a considerable amount of attention due to its role in preventing premature disease and disability (Valois, Umstattd, Zullig, & Paxton, 2008; Ridgers, Stratton & Fairclough, 2006). Furthermore scientific evidence links regular physical activity to a wide range of physical and mental health benefits. In addition, physical activity in children and youth has been generally identified as needed for normal growth and development, and the maintenance of good health and fitness (Al-Hazzaa, 2002). Despite the evidence that exist for the benefits of physical activity, concerns about physical inactivity among children and adolescents have been raised in various countries. The Centers for Disease Control and Prevention (CDC) in the United States of America has expressed concern that

the greatest reductions in physical activity occur during adolescence (Centers for Disease Control and Prevention, 1997).

It is well known that adolescents and children are generally more active than adults. However, their participation in physical activity has not met the recommended levels to gain the health benefits associated with physical activity. Adolescents need to accumulate at least 60 minutes of moderate physical activity on most of the days of the week (Strong et al., 2005). Bauer et al.(2008) have however found that more than half of the adolescents in their study in the United States participated in physical activity on less than three days a week. The National Longitudinal Study of Adolescent Health in the United States also confirmed that most of males and an even bigger proportion of female adolescents did not participate in enough moderate to vigorous physical activity (Gordon-Larsen, Nelson & Popkin, 2004). Several other researchers have confirmed the decline in physical activity participation among adolescents in the United States (Pate et al., 2006; Jamner, Spruijt-Metz, Bassin & Cooper, 2004; Sallis, Prochaska & Taylor, 2000). Of further concern was that these adolescents engaged in sedentary behaviours like television viewing for about five hours per day. In a study done by Pate et al. (2006) on sixth grade girls in the US, they found that only 24 minutes were spent daily in moderate or vigorous physical activity.

The patterns of inactivity are not confined to the USA only, as similar patterns have been noted in other developed countries. Only 27% of girls and 40% of boys participating in 'The Health Behaviour in School-aged Children's survey, in 35 countries in Europe and America met the recommended levels of physical activity (Verstraete, Cardon, De Clercq & Bourdeaudhuij, 2006). Harris, Cale and Bromwell (2004) pointed out that only 50% of boys and 33% of girls in the UK were sufficiently active when compared to the recommended guidelines. Canadian youth are also not active enough to achieve health benefits (Tucker et al, 2008). The 1998 Physical Activity Monitor (2000) confirmed this as it stated that over 60% of Canadian youth could not be considered active enough to support a habit of lifelong activity. In Australia physical inactivity is so substantial that it ranks second to smoking as the major cause of death and disability, 7% and 11% respectively (Struber, 2004).



Lower levels of physical activity have also been reported in some Middle-Eastern and Far-Eastern countries. The levels of physical activity for children in Saudi Arabia have been shown to be considerably lower than other countries (Al-Hazzaa, 2002). In a study among Iranian girls Taymorri, et al. (2008) found only 36% of girls aged 12-17 years were achieving the recommended levels of physical activity. The World Health Organization (2003) reported that only 21% of youth living in Beijing, China were engaging in sufficient physical activities for at least 60 minutes per day.

This trend of physical inactivity in the developed world is also reflected in the developing countries. According to the World Health Organization (2003) in most countries in the African region there is a lack of understanding of the health benefits of physical activity. The attention needed for other vital needs like HIV/AIDS, communicable diseases and nutrition, overshadows the promotion of physical activity in the region. To further aggravate the situation, physical education and sport in schools in the African region are under threat due to lack of facilities, financial restraints and parental support. In the Global School-based Student Health Survey (GSSHS) in Kenya among students aged 13-15 years, 12% of these students were found to be physically active for a total 60 minutes per day on all 7 days during the 7 days preceding the survey (GSSHS, 2003). In the same survey, it was found that overall 37.8% of the students spent three or more hours per day sitting and watching television, playing computer games, talking to friends, or doing other sitting activities (GSSHS, 2003).

Frantz, Phillips, Matheri and Kibet (2009) also found that almost half (48%) of school-going adolescents in Kenya were considered physically inactive. In a study done in Rwanda on 'habitual activity patterns among adolescent's learners' Murenzi (2001) reported that learners spent more time on sedentary activities than on non sedentary activities. In a study among Senegalese adolescents Benefice, Garnier & Ndiaye (2001) found that younger adolescents were more sedentary than the older adolescents and this was because older adolescents

spent most of the time doing subsistence work like farming, fetching water and carrying firewood.

The concerns about low levels of physical activity among children and youth in other parts of the world also extend to South Africa. As stated before, researchers expressed their concern about low levels of physical activity among South African children (Noakes and Lambert ,1995). Various studies done in the Western Cape, South Africa have indeed shown that levels of physical activity in children and adolescents are lower than the recommended levels (Phillips, 2006 a & b; Frantz, 2005). Frantz (2005) found that 32% of learners in her study did not meet the recommended requirements of being physically active for at least 30 minutes per day on seven days of the week. The South African Report Card on South Africa's overall health for children further attests to this (Healthy Active Kids South Africa, 2008). According to this report the physical fitness of South African youth appears to be on the decline, with about 40% of South African youth and children not getting the required amount of moderate to physical activity each week. The report further stated that about 25% of children and adolescents watch more than 3 hours of television per day.

To adequately monitor the trends of physical activity levels in children and youth, studies that are longitudinal in nature seems to be the most appropriate design. Kim et al. (2000) reported a dramatic decrease in the levels of physical activity in the transition period between childhood and adolescence over a 10 year period.

Khan et al. (2008) also noted the biggest decline in levels of physical activity for both boys and girls after the age of 13 years in a 3 year longitudinal study.

Studies have explored a number of variables predicting changes of physical activity over time but age has always been the variable that was significantly associated with change (Kahn et al, 2008).

2.3 CONSEQUENCES OF PHYSICAL INACTIVITY

Physical inactivity has been recognized as a major risk factor for both physical and psychological ill health, including several diseases that start during childhood but only show during adulthood (Higgins, Gaul, Gibbons & Van Gyn, 2003).

Research has shown that physical activity levels decrease as children and adolescents make the transition into young adulthood, putting them at risk for the adverse health outcomes associated with physical inactivity (Bauer et al., 2008).

Associated with increased physical activity and hence increased energy expenditure is not only the short-term improvement of quality of life but also the reduction of overweight and obesity and the increase of self-esteem and efficacy and improved scholastic success. In addition the long-term health benefits associated with increased physical activity includes the prevention of chronic diseases of lifestyle such as diabetes, cardiovascular disease, colon cancer and stroke (Sollerhed & Ejlertsson, 2008; Taymoori et al., 2008; Tucker et al., 2008; Springer, Kelder & Hoelscher, 2006; Strong et al., 2005; Malina, 2001). More importantly, researchers have recognized the possible link between current and

future physical activity behaviours with physically active adolescents being more likely to be active during adulthood (Tucker et al., 2008).

2.3.1 OBESITY AND OVERWEIGHT

Research has shown evidence that the prevalence of childhood obesity is increasing rapidly worldwide (Lobstein, Baur & Uauy, 2004; Flegal, Carroll, Orgen & Johnson, 2002; Dietz, 2001; Cole, Bellizzi, Flegal & Dietz, 2000).

According to the World Health Organization approximately 20 million children below the age of 5 were considered overweight worldwide.

Nihiser et al. (2007) and others (Thorpe, et al., 2004; Pangrazi, Beighle, Vehige, Vack, 2003) has stated that obesity among children and adolescents has become a major public health concern in the United States. Furthermore childhood obesity is associated with a large number of physical and mental health problems such as type 2 diabetes, depression and obesity in adulthood.

These authors alerted us that the prevalence of obesity among children aged 7 to 11 years tripled from 7% to 19% from 1980 to 2004. Furthermore the prevalence of obesity among adolescents in the US aged 12 to 19 years also tripled from 5% to 17%.

The United Kingdom is experiencing the same increase in the prevalence of obesity as the United States. Banwen, Hinde, Dixon and Sibthorpe (2005) stated that obesity in the UK is increasing at an uncontrollable rate. Researchers have

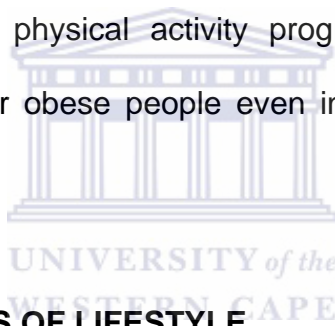
also alerted to the drastic increase in obesity among children in Australia (Salmon & Timperio, 2005). Margarey, Daniels and Bolton (2001) reported that one in five children and adolescents in Australia were overweight or obese. Furthermore Booth et al. (2003) raised the concern that both the prevalence of obesity is increasing and the incidence is accelerating in Australia. The WHO (2004) highlighted that the rate of overweight and obesity in urban school children almost doubled from 8% in 1991 to 12% in 1997 in China.

The South African Report Card on South Africa's overall health for children made it clear that South Africa is a country of contradiction where obesity and early nutritional deficiency occurs together in children (Healthy Active Kids South Africa, 2008). The report further stated that the prevalence of overweight and obesity among primary school children are 22% for girls and 17% for boys. The prevalence of obesity or overweight in children under the age of 9 years is 17%.

Physical activity has been recommended as an important part in fighting the increasing prevalence of obesity. According to various institutions and researchers, physical inactivity and sedentary behaviour are the main objectives for changing energy balance in decreasing obesity (Zhang et al. 2007; Goran, Reynolds & Lindquist, 1999; Centers for Disease Control and Prevention, 1996). Moreover evidence exist that participation in regular physical activity normalize energy balance, enhances the control of body weight and thus preventing excessive weight gain and diseases related to obesity. Roberts (2002)

highlighted the role of physical activity in the management of obesity in his study which showed that a greater total fat loss occurred with exercise and food restrictions than with food restriction alone. Serdula, Khan and Dietz (2003) has also shown that exercise or physical activity may increase fat loss and decrease the loss of fat-free mass, which is important for long-term weight maintenance.

Several researchers have shown that people who are overweight or obese and active to have a lower morbidity and mortality rate than those of normal weight but sedentary (Deforche, De Bourdeaudhij & Tanghe, 2006; Bahr, 2001). Starting and maintaining a regular physical activity programme thus produces very important health benefits for obese people even in the absence of substantial weight loss.



2.3.2 CHRONIC DISEASES OF LIFESTYLE

Chronic diseases of lifestyle are a group of diseases that share similar factors as a result of exposure, over a number of years, to unhealthy diets, smoking, physical inactivity and possibly stress. The major risk factors include hypertension, tobacco addiction, high blood cholesterol and diabetes. Physical inactivity is a well-established risk factor for several chronic diseases in adults. Schneider et al. (2004) are of the opinion that these conditions have not historically been prevalent among children and therefore the link between them and physical activity has been slower to become apparent. Research has however shown evidence that many of these chronic diseases occurring in

adulthood, start in childhood (Zieske, Malcolm, Strong, 2002). Given that physical activity (PA) habits are developed during childhood years and carry on into later adult life, regular physical activity participation during childhood and adolescent years are crucial in the prevention of chronic diseases of lifestyle in later life (Telema, Yang, Viikari, Valimaki, Wanne & Raitakari, 2005). Furthermore increased levels of physical activity can also decrease the complications associated with chronic diseases of lifestyle in those individuals who have it already (Hu, Stampfer & Solomon, 2001). Several researchers have highlighted the important role physical activity play in reducing morbidity and mortality from chronic diseases of lifestyle (Martison, O'Connor & Pronk, 2001; Pratt, Macera & Wang, 2000).



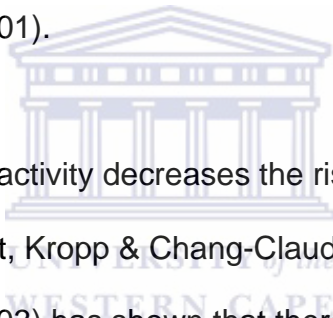
Research has shown evidence of a marked increase in the prevalence of chronic diseases of lifestyle such as cardiovascular diseases, stroke, diabetes, cancers and respiratory problems in both developed and developing countries (Bauman et al 2006; WHO, 2002). The increase in the prevalence of these diseases is usually parallel to the increase in obesity and physical inactivity. According to the WHO (2008) chronic diseases of lifestyle represent 60% of all deaths, and if no action is taken, approximately 388 million people will die from these chronic diseases of lifestyle in the next 10 years. The WHO (2004) and others (Beaglehole & Yach, 2003) are of the opinion that the most important factors increasing the risk of chronic diseases of lifestyle are the increased intake of energy-dense, nutrient poor foods, high in fat, sugar and salt; decreased levels of

physical activity and the use of tobacco. Research has provided evidence for the fact that physical activity plays a big role in the reduction of risk for heart disease (Thompson et al., 2003), osteoporosis (Todd & Robinson, 2003), diabetes (Kriska, 2003), and some forms of cancers (Friedenreich & Orenstein, 2002).

It is reported that 171 million people worldwide are suffering from diabetes (WHO, 2006). Diabetes is a costly public health problem in both developed (Plotnikoff, 2006; IDF, 2005; Skyler & Oddo, 2000) and developing countries (Chaturvedi, 2007; Torun et al., 2002). It is well established that physical inactivity is an important risk factor for type 2 diabetes (Kristensen et al., 2006; Meisinger, Lowel, Thorand & Doring, 2005). Various researchers have shown evidence that type 2 diabetes can be prevented by lifestyle changes, such as incorporating physical activity, in both developed and developing countries (Ramachandran et al., 2006; Tuomilehto et al., 2001). Observational studies have shown that physical activity of moderate intensity and duration can reduce the risk of developing type 2 diabetes (Smith et al, 2007). Epidemiological studies have also shown that physical activity reduces the risk of type 2 diabetes by 30% in the general population (Morrato, Hill, Wyatt, Ghushchyan & Sullivan, 2007).

Rees et al. (2009) stated that cardiovascular diseases are increasing fast world wide. The prevalence of cardiovascular disease risk factors in children and adolescents has also increased considerably in recent years (Kristin, Ondrak, McMurray, Shrikant, & Harrell, 2007). According to these authors, the two

variables mostly associated with increased cardiovascular disease risk factors, are low physical fitness, exemplified by low aerobic power and high percent body fat. Various researchers are in agreement that increased physical activity has the most potential to result in a decrease in cardiovascular diseases (Eisenmann et al., 2005; Dubbert, 2002; Katzmarzyk, et al., 2000). Physical activity has been shown to have a direct effect on the heart, in that it increases myocardial oxygen supply, decreases oxygen demand and improves myocardial contraction and its electrical impulses stability (Thompson et al., 2003). Furthermore increased levels of physical activity are also associated with lower systolic and diastolic blood pressures (Fagard, 2001).



Evidence exist that physical activity decreases the risk of developing some forms of cancer (Steindorf, Schmidt, Kropp & Chang-Claude, 2003; Mackinnon, 2002; Slevin, 2002). The WHO (2003) has shown that there is an association between increased physical activity and lowered risk of developing colon cancer. It has been established that physical activity may reduce the risk of colon cancer through its effect on prostoglandins and the reduced intestinal transit time and higher antioxidant levels (Mackinnon, 2002). Physical activity's effect on hormonal metabolism may be the possible association with a decreased risk of breast cancer. Research has indeed revealed that women who are leading active lifestyles have a reduced risk of breast cancer (Steindorf et al., 2003; Bahr, 2001; Mackinnon, 2002; Littman, Voigt, Beresford & Weiss, 2001).

2.4 FACTORS INFLUENCING PHYSICAL ACTIVITY

Various factors have been shown to influence children's physical activity levels. Buckworth and Dishman (2002) confirmed that adolescents' physical activity is influenced by factors that exist in a variety of domains including psychological, biological, social, and cultural and the physical environment. These authors further stated that these factors may affect the individual's decision to adopt and maintain a physically active lifestyle.

Other factors highlighted by literature include self-efficacy (Adkins, Sherwood, Story & Davis, 2004; Trost, Kerr, Ward & Pate, 2001); parental support (Trost et al., 2003) and the physical environment (American Academy of Pediatrics, 2007). Gorden-Larsen et al. (2000) was of the opinion that although participation in physical activity among adolescents are influenced by environmental factors, it is influenced a lot more by socio-demographic factors such as the level of education of the parents, family income and gender. Some of the factors influencing physical activity in children and adolescents are reviewed and discussed below.

2.4.1 PSYCHOLOGICAL FACTORS

Self efficacy is a very important aspect associated with both the adoption and maintenance of physical activity. Valois et al. (2008) defined self-efficacy as a person's belief in their ability to effectively perform a course of action and influence the choices of the activities in which they participate. Winters, Petosa and Charlton (2003) defined self-efficacy for exercises as "the perceived ability to

overcome barriers to exercise". In a review of the correlates of physical activity of children and adolescents, Sallis et al. (2000), concluded that it was not possible to establish if self-efficacy is related to physical activity during the adolescent period. Winters et al. (2003) however were of the opinion that these researchers used a diverse set of definitions of self-efficacy and these include: self-efficacy to exercise, self-efficacy to gain social support, self-efficacy to exercise even though other activities are available, and self-efficacy to overcome barriers to exercise.

Several cross-sectional studies implied that physical activity and physical self-concept were modestly associated (Higgins, et al., 2003; Calfas & Taylor, 1994). According to Strong et al. (2005) and others (Ekeland, Heian, Hagen, Abbot & Nordheim, 2004) self-concept refers to the perception of self. They further stated that self-concept includes a number of domains including academic and non-academic, social and emotional and physical and that the structure of self-concept change as an individual gets older. Schneider et al. (2007) however stated that the terms self-concept and self-esteem are often used interchangeably. They are however of the opinion that self-concept is the more all-encompassing concept from which self-esteem is drawn. In their study Schneider et al (2007) found that there was a link between improved cardiovascular fitness and improved physical self-concept. Several other researchers have also found that physical activity was positively associated with

self-concept (Tucker et al., 2008; Dishman et al., 2006; Raustorp, Stahle, Gudasic, Kinnunen & Mattson, 2005; Asci, Kosar & Isler, 2001).

Research has shown a link between physical activity and reduced levels of depression. Higgens et al. (2003) argued that the goal-setting orientation to physical activity presents the individual with a feeling of achievement. Together with this, individuals also develop new social, mental and physical skills, thus reducing the sense of loss of control which is frequently associated with depression. Several other researchers have stated that regular physical activity is linked with a decrease in depression and stress (Schmaltz, Deane, Birch & Davison, 2007; Dunn, Madhukar & O'Neal, 2001; Sale, Guppy & El-Sayed, 2000).



2.4.2 SOCIAL SUPPORT

Literature has underpinned social support as the most well-established determinant reinforcing physical activity (Sallis & Owen, 1999). Furthermore literature has shown evidence that both parents and peers play a central role in supporting children's engagement in physical activity (Okun, Karoly, Lutz, 2002; Sallis et al., 2000). Several researchers have stated that children and adolescents' engagement in health behaviours, including physical activity is influenced largely by their families (Davison, Cutting & Birch, 2003; Trost et al., 2003; McGuire et al., 2002). Bauer et al. (2008) showed that parental encouragement for physical activity of young adolescents, to be more physically

active, as a predictor of physical activity in young adolescents. According to Ornelas, Perreira & Ayala (2007) parents' participation in activities with their children, their support and encouragement, all result in a change in behaviour and positive health outcomes. In a study done by Trost et al. (2003) the results showed parental provision of transport to physical activities, watching their children's participation in physical activities and participating in physical activities with their children, were related to both the child's level of physical activity and the child's self-efficacy to be active.

Literature has shown evidence that engagement in physical activity with friends are associated with increased physical activity among youth (Salvy et al., 2008a; Salvy et al. 2008b). Jago et al. (2009) stated that a child that is confident in performing activities in front of friends is more likely to be physically active. Furthermore, they suggested that engaging in physical activity with friends is more likely to build a sense of relatedness and self-sufficiency to engage in independent physical activity. Previous research has shown that children report spending time with their friends as a key influence in their participation in physical activity (Dishman et al., 2005; Wilson, Williams, Evans, Mixon & Rheuma, 2005). In the study done by Jago et al. (2009), participants reported that belonging to several groups of friends was advantageous as it gives them alternative opportunities for physical activity. The authors thus concluded that belonging to different friendship groups may thus be beneficial as the child has more friendship resources to draw upon and thus engaging in higher levels of

physical activity. Jago et al. (2009) further suggested that helping children to develop physical activity behaviours with several groups will be key in increasing their levels of physical activity.

2.4.3 ENVIRONMENTAL FACTORS

The Policy Statement of the Committee on Environmental Health (2009) postulates that children's lives are affected by the environment in which they live. The policy further highlighted how the built environment of a specific community influences children's opportunities to participate in physical activity. Literature indeed provides evidence that aspects of the built environment can either facilitate or prevent physical activity (Kirby, Levesque, Wabano, Robertson-Wilson, 2007; Giles-Corti, Timperio, Bull & Pikora, 2005; Popkin, Duffey & Gordon-Larsen, 2005). Furthermore the importance of access to recreational facilities in the neighborhood (Tucker, et al., 2008; Frank, Kerr, Chapman & Sallis, 2007; Tucker, Gilliland & Irwin, 2007) and the location and characteristics of exercise facilities (Irwin et al., 2005) and its effect on physical activity has been shown. Tucker et al. (2008) stressed the importance of further research to ascertain the link between the environment and physical activity levels among children and youth, especially for the development of interventions promoting life long healthy behaviours.

Research has shown that physical activity among children up to the age of 12 years increases with increased park area in their neighbourhood (Roemmich,

Epstein, Raja & Yin, 2007; Roemmich et al., 2006). The Policy Statement of the Committee on Environmental Health (2009) however cautioned that although the availability of parks in an area does not guarantee physical activity participation for the nearby residents, it does offer them the opportunity to be physically active. To this end, Humbert et al. (2006) reported that adolescents with lower socio-economic status reported that nearby recreational facilities does effect their participation in physical activity.

Cooper, Andersen, Wedderkopp, Page and Froberg (2005) stated that the trip to school should be seen as an opportunity for children to be physically active but children are being driven to school increasingly however. Dietz (2001) also cautioned that a decrease in these type of opportunities in many communities impact on the levels of physical activity among children.

2.5 SCHOOLS AS A SETTING FOR PHYSICAL ACTIVITY INTERVENTION PROGRAMMES

A very large proportion of young people are enrolled in schools and it thus seems to be the ideal setting for promoting physical activity and other healthy behaviours. Birnbaum et al. (2005) argued that due to the fact that children spend a considerable amount of time at school, researchers should understand the role this environment play in physical activity behaviours. Furthermore, it has been accepted that schools are the primary institution responsible for promoting physical activity in young people. Researchers have expressed that little doubt

can exist about the fact that the school should be the perfect setting for the promotion of physical activity and other appropriate long-term behaviours (Waring, Warburton & Coy, 2007). According to these authors the full socioeconomic spectrum is present at school for at least eleven years on a regular basis and for a very big part of their waking life.

Cale and Harris (2006) recognized that school Physical Education (PE) has a key role to play in the promotion of physical activity among youth. Sollerhed and Ejlertson (2006) also argue that school physical education is the societal program that should take up the responsibility of training and socializing youth to be physically active. Promoting life-long physical activity has been an important aim of the physical education curricula and sport policy in many countries (Telema et al., 2005). According to Waring et al. (2007) physical education at schools is a window of opportunity in schools for children to participate in both moderate and vigorous physical activities. These authors further argue that physical education should continue with the development and improvement of physical activity at schools. They however warned that free time during school breaks are not utilized effectively for the promotion of physical activity.

Research has provided evidence that well-designed, well-implemented programs at schools promote physical activity and healthy eating habits (Nihiser et al., 2007). In a systematic review of the literature Van Sluijs, McMinn and Griffin (2007) also found strong evidence for the efficiency of school-based interventions

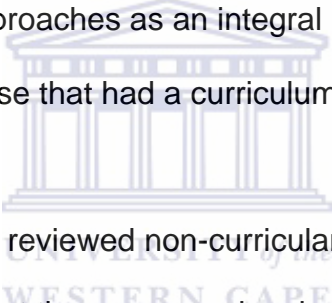
including family and community involvement. Jamner et al. (2004) are of the opinion that a well planned, school-based intervention program can improve physical activity behaviours among youth and thus prevent a decrease in cardiovascular fitness. Furthermore these interventions during the critical developmental period of adolescence have major health benefits for these adolescents over a period of time. It is however recognized that the physical inactivity problem does not end when the school day is over.

2.6 IMPACT OF PHYSICAL ACTIVITY INTERVENTIONS

Researchers have studied a wide variety of physical activity interventions. It has been recognized that more studies examining physical activity interventions have been conducted among adults than children and adolescents, but the literature for intervention studies for children and adolescents has grown within the past few years (Marcus et al., 2006). Furthermore it has been recognized that most of these interventions have been school-based because most of children spend the majority of the day at school. Biddle et al. (2004) however stated that there is an increasing recognition that community based and family based interventions are also important, taking into consideration that physical education alone will not change the physical activity behaviour of children and adolescents. In addition, a lot of the children's activities take place outside of school.

Having said that most interventions targeting physical activity among children and adolescents have been school-based, it has been shown that these studies

have contradictory and at best fairly small short-term increases in physical activity during the school day among children and adolescents (Biddle, et al., 2004). Moreover those studies that have shown an increase in physical activity have not generalized to outside the school setting and in addition the continuation of these increases have either not been assessed or poor (Biddle et al., 2004; Marcus et al., 2006). In contrast to this Cale and Harris (2006) found that physical activity interventions at schools can accomplish a wide range of encouraging results and it can also increase adolescent physical activity. Timperio, Salmon and Ball (2004) argued that school-based programs that had policy and environmental approaches as an integral part of it generally have been more effective than those that had a curriculum-only approach.



Jago and Baranowski (2004) reviewed non-curricular approaches to increase physical activity and found that these approaches have some limited effectiveness for physical activity promotion during school breaks. They further stated that the few studies investigating after-school programs in their review reported high dropout rates and therefore has produced questionable results. Several other researchers have also argued that community- and family-based programmes are more promising than those done in schools only, because of the potential multilevel approach (Biddle et al., 2004; Stone et al., 1998). Reviews have however indicated that the few community- and family-based studies done thus far have not shown significant improvement in physical activity among adolescents and children. Segar, Jayaratner and Richardson (2002) found that

the interventions using behavioural techniques, targeting specific populations and emphasizing low intensity activity were more successful than other interventions. On the other hand, studies done among American children (Roemmich et al. 2004), American adolescent girls (Jamner et al., 2004) and French middle school children (Simon et al., 2004) have shown initial support for the fact that targeting a decrease in sedentary behaviours in youth may be a more successful strategy for the increase of physical activity among youth.

As mentioned before physical inactivity has been identified as a major risk factor for various chronic diseases of lifestyle. As a result of this various reports and conferences have emphasized the importance of the promotion of a physically active lifestyle for children and adolescents amongst others (Stone et al., 1998). As indicated in the previous section many interventions have been done to improve physical activity among youth in schools and outside of schools with varying degrees of success. Some of these school-based physical activity intervention studies are illustrated in Table 2.1.

Table 2.1 School-based physical activity intervention studies among children

Study	Study design	Intervention	PA target
Sports, Play, and Active Recreation For Kids (SPARK) Sallies et al. (1997)	Quasi-experimental	Social Cognitive Theory Self Monitoring PE-specialist-led PE Trained teacher-led PE Self-management curriculum 2 years for PE; 1 semester Self monitoring	Increase PA in PE. Increase out-of-school moderate-vigorous physical activity.
Child and Adolescent Trial for CV Health (CATCH) Luepker et al. (1996)	Experimental	Social Cognitive Theory and Organizational Change Curricula, lunch, PE, family, Policy 21/2 years food service and PE	Increase moderate-vigorous physical activity in PE. Increase out-of-school PA. Improve cardiovascular fitness.
Lifestyle Education For Activity project (LEAP) Pate et al. (2005)	Experimental	Social Cognitive Theory and Organizational Change PE with education and Self-Monitoring units, Curriculum, parent newsletters, Student advocacy groups, policy. 2 Semesters	Increase MVPA in and out of school Cardiovascular fitness Modify PE
Oslo Youth Study Tell and Vellar (1987)	Quasi-Experimental	Social influences, Self-Monitoring Curriculum for diet, smoking and PA Based on Know Your Body parents For diet, peer, policy 2 years	Increased knowledge and attitudes for PA Increase PA Increase VO ₂ max uptake levels Change PE
Planet Earth Gortmaker et al. (1999)	Experimental	Social Cognitive Theory, Behavioural choice Interdisc. Curriculum In math, science, lang. Arts, social studies, PE. 2 years	Decrease in TV viewing, Increase in MVPA
Promoting Lifestyle Activity for Youth Pangrazi et al. (2003)	Quai-Experimental	Self monitoring Behavioural choice 12 weeks	Increase PA Increase knowledge attitudes for PA

2.7 SUMMARY

The literature review above indicates that physical activity among children has become a major public health concern. It is also apparent that children are not meeting the recommended levels of physical activity and therefore are at risk of numerous other health risks, including future chronic diseases of lifestyle. The review further highlights various interventions to promote physical activity among children with specific reference to school-based intervention programmes.

The methodology used to meet the objectives of the study is outlined and discussed in the next chapter.



CHAPTER THREE

METHODOLOGY

3.1 INTRODUCTION

In this chapter the methods used to carry out the present study are described. A description of the research setting, study population and sample are given. The chapter also describes the research instrument used and the procedure followed. Finally the methods used to analyse data and the ethical consideration followed are outlined.

3.2 RESEARCH SETTING

The study was carried out at an urban independent Catholic school in the Metropole North Education Management and Development Centre (EMDC) of the Western Cape Education Department. It is situated in a middle- to upper-income residential area. The staff profile included 19 teachers in 2008. The school has learners from the age of 5 years in grade R to grade 7. At the beginning of the 2008 academic year, approximately 440 learners from Grade R to grade 7 were enrolled at the school. Of these about 54% were females.

3.3 STUDY POPULATION AND SAMPLE

The population of the study included all the learners in the senior phase of the school (i.e. grades 5 to 7). The sample, which was conveniently selected, included all learners from these grades with parental consent. At the beginning of

the 2008 academic year, these grades had 156 learners in total of which 55% were females. A final number of 100 learners had parental consent to participate in the study.

3.4 STUDY DESIGN

A quantitative approach using a quasi-experimental design was used in this study. Although this design has neither a control group nor randomization, the only kind of comparison that was made was pre and post intervention as the major aim of the present study was to determine the effect of a physical intervention programme.



3.4 DATA COLLECTION

Data regarding physical activity patterns of participation, perceived support for physical activity and enjoyment of physical activity and physical education was collected before and after the intervention programme. This data was collected by means of with a self administered questionnaire.

3.4.1 Research Instrument

The questionnaire consisted of five sections (Appendix A). The first section of the questionnaire requested demographic information such as gender, age, head of the household and number of siblings in the house. Furthermore height, weight, hip and waist measurements were recorded. BMI was calculated from measured

height and weight and recorded. BMI assesses weight relative to height (weight in kg/height in meters²).

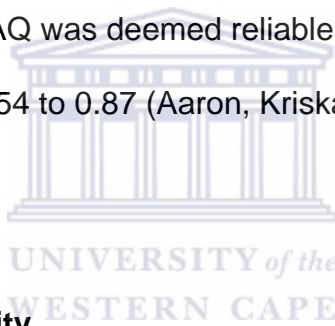
The second section of the questionnaire assessed the support that learners get from teachers, and other girls and boys at school regarding physical activity. This scale was adopted from the Physical Education Program Improvement and Self-study (NASPE, 1998). The scale included 6 items on a 5-point Likert-type ranging from 1 (disagree a lot) to 5 (agree a lot). This girls scale has been shown reliable for the children and adolescent group, with reliability coefficients ranging from 0.59 (support from teachers) to 0.56 (support from boys) (Birnbaum et al; 2005).



The third section assessed physical education and physical activity enjoyment using seven items from the Physical Education Program Improvement and Self-study (NASPE, 1998), on 5-point Likert-type scale ranging from 1 (disagree a lot) to 5 (agree to lot). Both, physical education and physical activity enjoyment, as well as the social support for physical activity scales were also deemed reliable for the adolescent age group with coefficients of 0.84 and more (Dishman, Motl & Sallis, 2005; Motl, Dishman, Saunders, Dowda, Felton & Pate, 2001). The fourth section assessed the social support for physical activity (including family and friends). Three items were used to assess support from friends and five items was used to assess support from family. This scale has been deemed reliable

with Kappas ranging from 0.9 for friends subscale to 0.8 for family subscale (Dishman et al, 2005, Motl, 2001).

The fifth section assessed the levels of physical activity using the Modifiable Adolescent Physical Activity Questionnaire (MAPAQ). Learners were requested to indicate on how many days of the week preceding the study they participated in vigorous and moderate activities for at least 20 minutes. Participation on sports teams during the past 12 months was also requested for. They were further requested to indicate the number of hours they watch television, and play computer games. The MAPAQ was deemed reliable and valid for this age group with Kappas ranging from 0.54 to 0.87 (Aaron, Kriska, Cauley, Metz & LaPorte, 1995).



3.4.2 Validity and Reliability

The reliability of the self administered questionnaire was discussed under the research instrument. Height was measured to the nearest 0.1 cm. Two height measurements were taken and a third was taken if the first two were more than 0.5 cm apart. Weight was measured to the nearest 0.1 kg with a calibrated scale with the learners wearing light uniform. Two weight measurements were obtained, and a third was taken if the first two differed by more than 0.2 kg.

The questionnaire was preliminary tested on 10 learners aged between 10 and 13 years, not included in the study, to obtain views about the design and clarity of

the questions. No changes were necessary to the questionnaire after the pilot study.

3.4.3 Intervention Programme

The intervention programme that was implemented at the school was the Promoting Lifestyle activity for Youth (PLAY) programme (Pangrazi, Beighle, Vehige & Vack, 2003). This process-oriented programme shifted the focus from fitness toward regular participation in daily physical activity. This programme is not intended to replace a comprehensive physical education programme and it consists of 3 phases. The first step or phase, with duration of 1 week, was to promote play behaviour. Teachers discussed the importance of physical activity with the learners in a classroom setting. Teachers were told to encourage movement from the learners by leading by example, such as teachers walking with students to their next class. At the end of a lesson, if children were not required to change venue, teachers and children could march on the spot. Teachers were given clear instructions on their role in this step of the intervention programme prior to the implementation. The 2nd phase, with a duration of 3 weeks, consists of teacher-directed activities. The major aim of this step was to expose the learners to a variety of games with minimal equipment that can be done outside school hours as well. A choice of 15 activities or games was taught to learners by the teachers. Teachers had clear instructions on the games with teaching tips. Games included different forms of tag or “on-on”, indoor games such as balloon volleyball, and dancing such as the Macerena. All these games

encouraged team work. These activities were for a duration of 15 minutes daily and were in addition to activities introduced in the first step. The 3rd phase of the programme ran for 8 weeks and the aim was to encourage learners to take responsibility for their own physical activity independent of their teachers. Learners were encouraged to be physically active for at least 30 minutes for 5 days of the week by the researcher and teachers. Learners were encouraged to record their daily activities on a log-sheet in class at the beginning of the next school day.

3.5 PROCEDURE

Permission and ethical clearance was obtained from Senate Research Grants and Study Leave Committee and the Higher Degree Committee of University of the Western Cape. Furthermore, permission from the school principal was obtained (Appendix B). Permission was then sought from the parents and learners involved (Appendix C & D). Permission to use the PLAY programme was gained from Robert Pangarazi the researcher that designed the PLAY programme. The data was collected by the researcher and a trained research assistant in the second semester of the 2008 academic year. Furthermore, teachers were trained as soon as permission was granted. Teachers had two training sessions in preparation of the intervention programme. The training included initial meetings to discuss the overall intervention programme. Furthermore the benefits of the programme were highlighted. All 15 activities to be introduced in the third phase of the programme were thoroughly explained to

the teachers. A group practical session was done to demonstrate and try out the games. If any difficulties arose, teachers could discuss these with the researcher. Before the implementation of the intervention program the research instrument was administered to the learners with parental consent. The 12-week intervention program was then implemented in three phases. Two weeks after the completion of the 12 week-intervention program, the research instrument was administered to the learners again.

3.6 DATA ANALYSIS

Completed data was captured on spreadsheet using the Microsoft Excel program in preparation for analysis. The data was then transferred into the Statistical Package for the Social Sciences (SPSS) version 16.0. Descriptive statistics were employed to summarize the demographic data and were presented using frequency tables and expressed as percentages, means and standard deviations. The Chi-square test was used to explore associations between nominal and numerical data. T-test was used to determine statistical significant differences between groups (independent t-test) and within groups (paired sample t-test). Alpha level was set at $p < 0.05$.

3.7 ETHICAL CONSIDERATIONS

Ethical clearance and approval from the Senate Research and Study Grants Committee at UWC was sought before the study. Permission was also gained from the school principal. Written parental consent was obtained before the study

(Appendix E). Furthermore signed informed written consent was obtained from each participant (Appendix F). The aim of the study was clearly explained to the relevant parents, teachers and the learners. The participants were assured that all the information will be confidential. All the participants had the right to withdraw from the study at anytime. The research findings will be made available to all the stakeholders with recommendations. In the case of BMI indicating obesity, or other abnormalities, participants was referred for treatment and/or consultation to a general medical practitioner and dietician in the area.

3.8 SUMMARY

In this chapter the method used to meet the research objectives were outlined. The procedures and an explanation of the research instruments used were given. A brief explanation of the data analysis procedure was also given. In the next chapter the results of the data analysis will be presented.

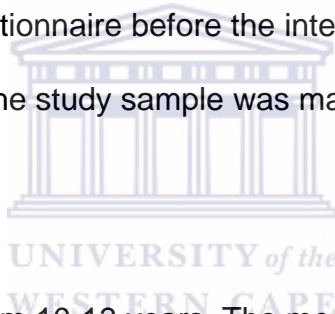
CHAPTER FOUR RESULTS

4.1 INTRODUCTION

This chapter describes the results of statistical analysis that attempted to answer the research objectives stated in chapter one.

4.2 DESCRIPTION OF STUDY SAMPLE

Six classes in which 156 learners were enrolled were conveniently selected to participate in the study. Of these learners selected one hundred (100) had signed parental consent thus the overall response rate was 64.1%. Therefore, 100 learners completed the questionnaire before the intervention programme. An equal percentage (50%) of the study sample was male and female as illustrated in table 4.1.



The learners' age ranged from 10-13 years. The mean age was 11.545 years (SD =0.89 years). Thirty eight percent of the participants were in grade 7, 36% of the participants were in grade 5 and 26% were in grade 6 as outlined in table 4.1.

The majority of the participants (82%) lived with both their parents in the household. Most of the participants (85%) had siblings that lived with them.

Table 4.1 Demographic characteristics of study sample (n=100)

Variable	Frequency (n)	Percentage (%)	Mean age (SD)
Gender			
Male	50	50	11.54 (0.89)
Female	50	50	11.54 (1.09)
School Grade			
5	36	36	10.58 (0.5)
6	26	26	11.42 (0.58)
7	38	38	12.53 (0.5)
Household			
Both parents	82	82	11.5 (0.97)
One parent	17	17	11.56 (1.03)
Missing	1	1	



4.3 ANTHROPOMETRIC MEASUREMENTS OF STUDY SAMPLE BEFORE INTERVENTION

The mean height and weight for the study sample was 1.50 (SD= .92) and 44.95 (SD=13.09) respectively as illustrated in table 4.2. The overall BMI and the hip waist ratio of the study sample was 19.66 and 0.83 respectively.

Table 4.3 illustrates the pre-intervention anthropometrics of the study sample by gender before the intervention. Both males and females had similar height (1.51 and 1.50) and BMI (19.70 and 19.61) measurements. No statistical significant difference was found between the measurements of males and females ($p>0.05$)

Table 4.2 Mean anthropometric measurements of study sample before intervention (Mean, SD) (n=100)

Variable	Mean	SD	Range
Height (cm)	1.50	.92	1.31-1.72
Weight (kg)	44.97	13.09	28.40-118.80
BMI	19.66	4.28	13.78-42.09
Hip (cm)	84.46	9.30	70.00-115.00
Waist (cm)	70.24	8.19	57.00-98.00
Hip Waist Ratio	0.83	0.05	0.71-0.94

Table 4.3 Mean anthropometric measurements of study sample by gender before intervention (Mean, SD)

Variable	Males (n=50)	Females (n=50)
Height (cm)	1.51(0.101)	1.50(0.08221)
Weight (kg)	45.33(14.23)	44.56(11.9623)
BMI	19.70(4.48188)	19.61(4.10332)
Hip (cm)	83.90(7.50034)	85.01(10.85784)
Waist (cm)	70.16(7.960)	70.32(8.49836)
Hip Waist Ratio	.84(0.04509)	.83(0.05009)

4.4 PERCEPTIONS OF SUPPORT FOR PHYSICAL ACTIVITY BEFORE INTERVENTION

Within The School Environment

Perceptions of support for physical activity within the school environment were measured. These included perceived support from teachers, boys and girls by a 5-point Likert-type scale where 1= disagree a lot, 2= disagree, 3=neutral, 4= agree and 5= agree a lot. Items were scored so that a lower score corresponds with a more positive perception of support from teachers and boys. A higher score indicated a more positive perception of support from girls.

Overall the sample responded positively when asked about perceived support for physical activity from teachers and girls. In these items the mean score for perceived support from teachers were lower than the midpoint (neutral) and higher than the midpoint (neutral) for perceived support from girls as illustrated in Table 4.4. The sample responded negatively when asked about perceived support for physical activity from boys.

When compared to girls, the boys perceived significantly lower levels of teacher support for physical activity ($p < 0.05$) as illustrated in table 4.4. Furthermore, boys perceived higher levels of support from other boys and girls for PA when compared to girls. These differences however were not statically significant ($p > 0.05$).

Table 4.4



Family and friends

Perceived support for physical activity from friends and family were measured on a 5-point Likert scale. A higher score for these scales indicated a more positive perception of support for physical activity. The study sample responded positively when asked about support from friends (mean=9.65) and family (mean=15.44).

When compared to girls, boys perceived significantly higher levels of support from friends and family ($p < 0.05$) as illustrated in table 4.5.



Table 4.5



4.5 ENJOYMENT OF PHYSICAL EDUCATION AND PHYSICAL ACTIVITY BEFORE INTERVENTION

Enjoyment of physical education and physical activity were measured using a 5-point Likert-type scale where 1= disagree a lot, 2= disagree, 3=neutral, 4= agree and 5= agree a lot. Items were scored so that a lower score indicates greater enjoyment of physical activity and a higher score indicates a greater enjoyment of physical education. Overall the study sample responded positively to both physical education (PE) and physical activity (PA) enjoyment. In these items the mean score was higher for PE enjoyment and lower for PA enjoyment than the mean scores as illustrated in Table 4.6.

Both boys and girls responded positively to physical education enjoyment (mean score higher than the midpoint). When compared to girls, boys reported significantly more enjoyment of PE Enjoyment ($p < 0.05$) as illustrated in Table 4.6. No significant difference was observed when physical activity enjoyment was compared between girls and boys.

Table 4.6



4.6 PHYSICAL ACTIVITY PARTICIPATION

The overall study sample reported participation in vigorous and moderate physical activity for less than half (3.5 days) of the week preceding the study as highlighted in table 4.7. The mean number of sports teams the study sample participated in was 2.37 (SD=1.42). The study sample further reported watching television for 2.88 hours (SD=1.94) per week.

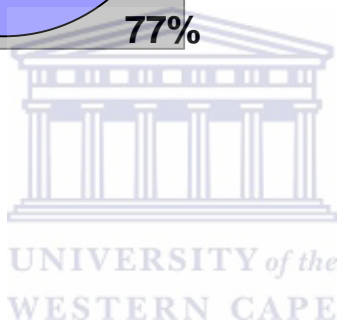
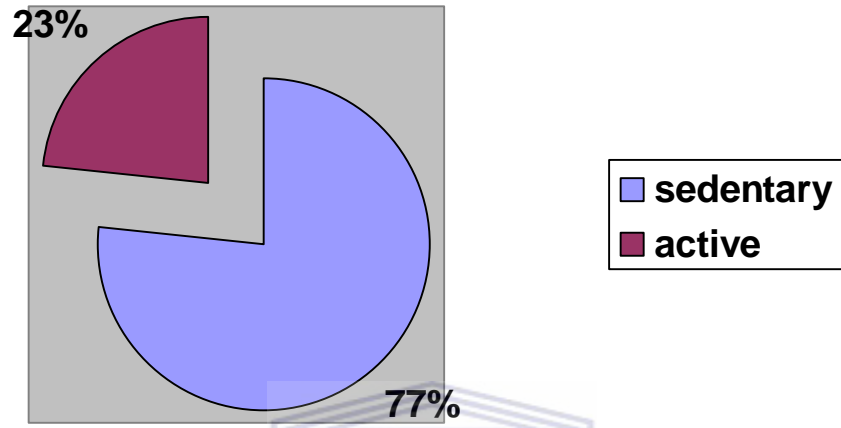
Boys reported significantly more hours of vigorous physical activity when compared to girls ($p < 0.05$). Boys also reported more hours of moderate physical activity than girls, although not significant ($p > 0.05$) as illustrated table 4.7.

According to the recommended guidelines for physical activity for children and adolescents they should engage in PA on most if not all the days of the week. For the purposes of this study, the sample was categorized as active or sedentary (meeting or not meeting the requirement) based on engagement in PA on 5 or more days per week. According to these criteria, 23.2% of the study sample was categorized as active as illustrated in figure 4.1. No significant difference for age was found between the learners classified as active (mean=11.52, SD=1.12) and sedentary (mean=11.53, SD= 0.94)

Table 4.7



Figure 4.1 Physical activity levels of study sample



A higher prevalence of boys (26.5) were categorized as active than girls (20%) as illustrated in figure 4.2. this difference was found to not be statically significant.

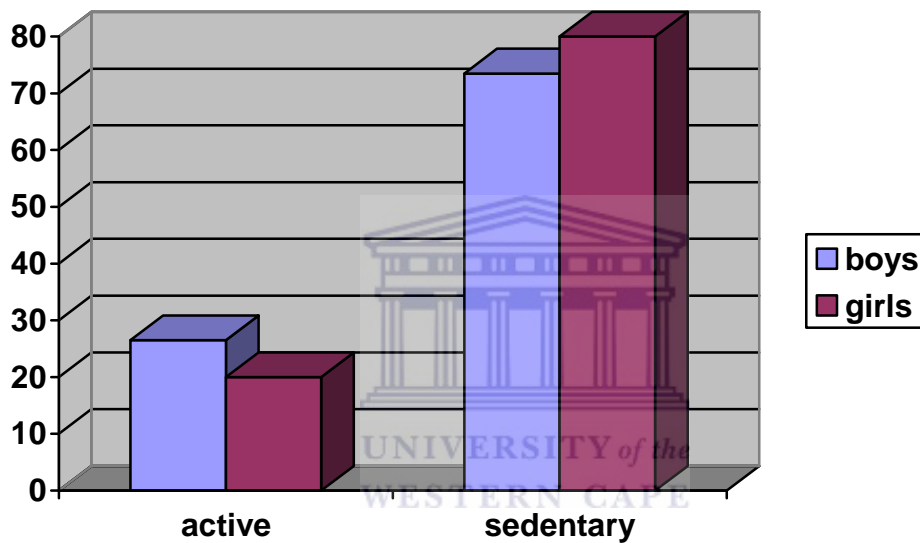


Figure 4.2 Physical activity levels by gender

Learners reported on the team sports they participated in during the twelve months preceding the study. Soccer was the most reported activity as illustrated in table 4.8.

Table 4.8 Team sports participated in 12 months prior to the study

Variable	Frequency (n)
Soccer	41
Netball	30
Athletics	30
Tennis	20
Hockey	18
Cricket	18
Swimming	14
Dancing	11
Running	7
Karate	3

* Learners could report participation in more than one team sport

The majority of the study sample (95.9%) reported involvement in one sport on a competitive level in the 12 months prior to the study (mean=2.37, SD=1.42).

Boys participated in significantly a higher number of team sports than girls in the 12 months prior to the study as illustrated in table 4.9 (p<0.05)

Table 4.9 Mean number of team sports participated in by gender

Variable	N	Mean number of teams	SD
Boys	49	2.65	1.56
Girls	49	2.08	1.20

4.6.1 Influence of social support on moderate and vigorous physical activity

Table 4.10 Bivariate correlations of family and friends social support variables with days moderate and vigorous activity

Variable	Vigorous PA	Moderate PA
Family Participation ^a	0.397**	0.257*
Family Encouragement ^b	0.398**	0.203*
Friend Participation ^a	0.308**	0.286**
Friend Encouragement ^b	0.380**	0.145
Family Transportation ^c	0.296**	0.249*

^a Family/Friend participation: frequency that family or friends did physical activities with student during typical week based on 5-point scale from never to everyday.

^b Family/Friend encouragement : frequency that family or friends encourage students to be physically active during typical week based on 5-point scale from never to everyday.

^c Family transportation: frequency that family provided transportation to where they can participate in physical activity in a typical week based on 5-point scale from never to everyday.

* p<0.05, **p<0.01

Overall, the mean number of sessions of vigorous physical activity increased with the frequency of family and friends social support. All bivariate correlations between the family and friends social support variables and vigorous physical activity were positive and statistically significant ($p < 0.01$) as highlighted in table 4.10.

4.7 EFFECTS OF THE PHYSICAL ACTIVITY INTERVENTION

Two weeks after completion of the PLAY programme the research instrument was administered to the study sample again. Due to absenteeism on the day of data collection, only 97 learners completed the questionnaire. Of the three learners absent, two were boys and one girl.

4.7.1 Anthropometric measurements

Table 4.11 illustrates the anthropometric measurement of the study sample before and after the intervention programme. The height and weight measurement of the study sample were significantly, higher after the intervention programme ($p < 0.05$). All the other measurements differed minimally but these differences were not statistically significantly ($p > 0.05$).

Table 4.11 Mean anthropometrics of study sample before and after intervention
(Mean, SD)

Variable	Before (n=100)	After (n=97)
Height (cm)*	1.50 (0.09)	1.53 (0.08)
Weight (kg) *	44.95 (13.2)	46.08 (13.64)
BMI	19.69 (4.28)	19.47 (4.6)
Hip (cm)	84.46 (9.4)	84.29 (9.80)
Waist (cm)	70.19 (8.14)	69.91 (10.28)
Hip Waist Ratio	0.83 (0.05)	0.83 (0.05)

*indicates significance

When boys were compared to girls before and after the PLAY intervention programme, the height and weight measurements of both were significantly higher after the intervention programme ($p < 0.05$). BMI of both boys (19.82 vs. 19.54) were slightly lower after the intervention of programme as illustrated in Table 4.12.

Table 4.12 Mean anthropometrics of study sample before and after intervention by gender (Mean, SD)

Variable	Males		Females	
	Before	After	Before	After
	Intervention (n=50)	Intervention (n=48)	Intervention (n=50)	Intervention (n=49)
Height (cm)*	1.51 (0.10)	1.54 (0.09)	1.50 (0.08)	1.53 (0.07)
Weight (kg) *	45.58 (14.45)	46.75 (15.55)	44.33 (11.97)	45.42(11.59)
BMI	19.82 (4.5)	19.54 (5.02)	19.56 (4.06)	19.41 (4.2)
Hip (cm)	84.00 (7.61)	84.71 (10.39)	84.91 (10.94)	83.88 (9.27)
Waist (cm)	70.33 (8.01)	71.33 (11.97)	70.04 (8.35)	68.51 (8.19)
Hip Waist Ratio	0.84 (0.05)	0.84 (0.05)	0.83 (0.05)	0.82 (0.05)

*indicates significance for both males and females before and after intervention

4.7.2 PERCEPTIONS OF SUPPORT FOR PHYSICAL ACTIVITY

Within the school environment

Perceptions of support for physical activity in the school environment were measured again after the intervention programme. Overall the sample perceived significantly higher levels of teacher support for physical activity after the intervention programme ($p < 0.05$) as illustrated in table 4.13. The sample perceived lower levels of support from boys and girls for physical activity after the intervention program. These differences were not statistically significant ($p > 0.05$).

Table 4.13



Boys perceived significantly higher levels of teacher support for physical activity after the intervention programme ($p < 0.05$) as illustrated in table 4.14. Although not statistically significant, both girls and boys also perceived higher levels of support from boys for physical activity.

Family and Friends

Overall the study sample perceived lower levels of support from friends for physical activity after the intervention programme, although not statistically significant ($p > 0.05$). Furthermore the sample perceived higher levels of support from family for physical activity after the intervention programme.

Table 4.15 illustrates that both girls and boys perceived lower levels of support from friends for physical activity after the intervention programme. Furthermore both boys and girls perceived higher levels of support from family for physical activity after the intervention programme. These differences were not statistically significant ($p > 0.05$).

Table 4.14



Table 4.15



4.7.3 Physical education and physical activity enjoyment

Table 4.16 Overall enjoyment of physical education and physical activity

Variable	Before	After	p-value
PA enjoyment	11.60(4.31)	11.23(4.39)	0.422
PE enjoyment	4.51(0.97)	4.29(1.04)	0.056

Overall the study sample responded less positive when asked about physical education enjoyment after the intervention programme. As illustrated in table 4.16. They however responded more positively when asked about physical activity enjoyment after the intervention programme. The differences observed above was not statistically significant ($p>0.05$).

With further analysis it was shown that both boys and girls responded less positive when asked about physical education enjoyment as illustrated in table 4.17

Table 4.17



4.7.4 Physical activity participation after the intervention programme

The study sample reported participation in vigorous physical activity for a little more than half (3.71 days) of the week preceding the study. The mean number of sessions of VPA per week was significantly higher after the intervention program (3.71 days) than before (3.17 days)($p < 0.05$). No statistical difference was observed for MPA before and after the intervention programme as illustrated in Table 4.18.

Table 4.18 Overall physical activity participation before and after intervention (Mean, SD)

Variable	Before (n=50)	After (n=49)
VPA#	3.17(1.84)	3.71(1.81)
MPA	3.19(2.1)	3.32(1.89)
Hrs television	2.86(1.88)	3.12(2.05)

indicates significance

The participation in vigorous and moderate activity for boys and girls are illustrated in Table 4.19 and 4.20 respectively. No statistical difference was observed between participation in vigorous or moderate PA before and after the intervention programme.

Table 4.19 Female physical activity participation before and after intervention

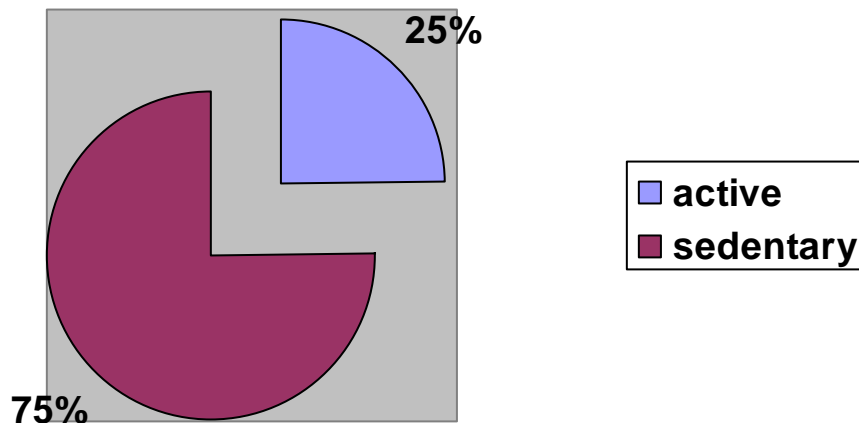
Variable	Before (n=50)	After (n=49)
VPA	2.71 (1.59)	3.08 (1.43)
MPA	3.04 (2.03)	3.22 (1.69)
Hrs television	2.86 (1.88)	2.96 (2.09)

Table 4.20 Male physical activity participation before and after intervention

Variable	Before (n=50)	After (n=48)
VPA	3.64 (1.97)	4.17 (1.86)
MPA	3.34 (2.13)	3.19 (2.05)
Hrs television	2.86 (1.96)	3.28 (2.01)

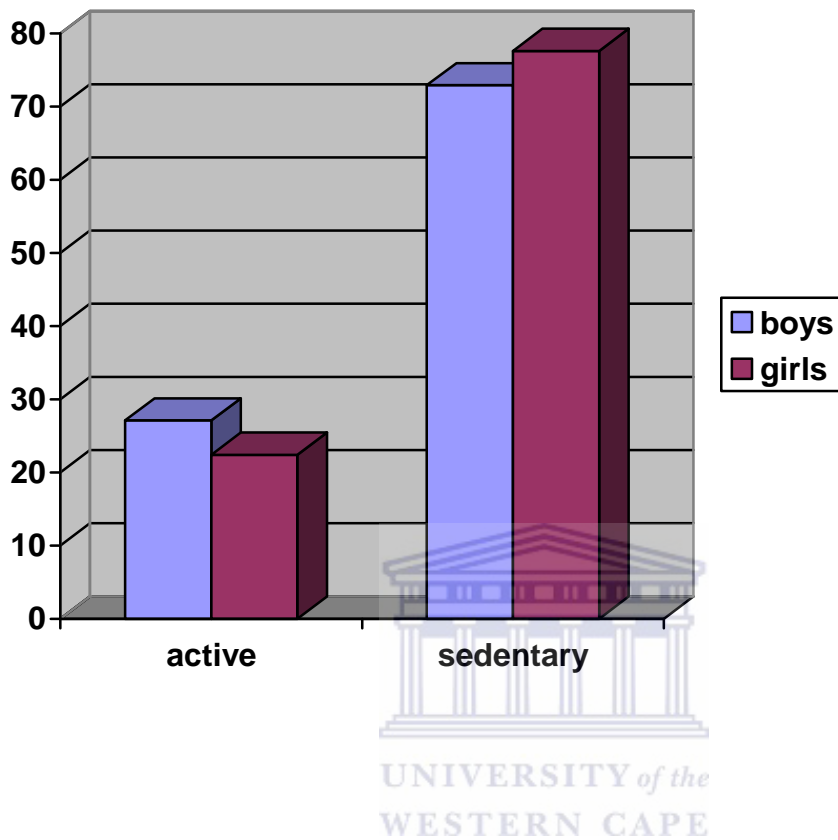
According to the ACSM guidelines, 25% of the study sample was categorized as active and 75% as sedentary as illustrated in figure 4.3.

Figure 4.3 Physical activity levels of study sample after intervention



A higher prevalence of boys (27.1%) were categorized as active than girls (22.4%) as illustrated in figure 4.4. this difference was found to not be statistically significant ($p>0.05$).

Figure 4.4 Physical activity levels by gender after intervention



The mean number of sessions of moderate physical activity increased with the frequency of family and friends social support. All bivariate correlations between the family and friends social support variables and moderate physical activity were positive and some were statistically significant ($p < 0.05$) as highlighted in table 4.21.

Table 4.21 Bivariate correlations of family and friends social support variables with days moderate and vigorous activity after intervention

Variable	Vigorous PA	Moderate PA
Family Participation ^a	0.406**	0.154
Family Encouragement ^b	0.301**	0.028
Friend Participation ^a	0.447**	0.075
Friend Encouragement ^b	0.505**	0.127
Family Transportation ^c	0.344**	0.278**

^a Family/Friend participation: frequency that family or friends did physical activities with student during typical week based on 5-point scale from never to everyday.

^b Family/Friend encouragement : frequency that family or friends encourage students to be physically active during typical week based on 5-point scale from never to everyday.

^c Family transportation: frequency that family provided transportation to where they can participate in physical activity in a typical week based on 5-point scale from never to everyday.

* p<0.05, **p<0.01

4.8 SUMMARY

This study aimed to assess participation in physical activity among learners as well as their perceptions of support for physical activity. A significant number of learners were not classified as physically active. Support from friends' and family was positively correlated to participation in VPA. The next chapter will discuss these findings.

CHAPTER FIVE

DISCUSSION

5.1 INTRODUCTION

The main aim of this study was to measure the effect of an intervention programme on the physical activity participation patterns among school going children and adolescents at a school in the Western Cape, South Africa. This chapter discusses the findings of the current study and compares the findings with similar published studies.

5.2 PHYSICAL ACTIVITY PARTICIPATION AMONG SCHOOL GOING CHILDREN

5.2.1 Factors influencing physical activity participation

Physical inactivity has become a major public health concern contributing to the non-communicable epidemic worldwide. This study highlights that school going learners are not meeting the required amount of physical activity to gain health benefits. The study sample reported participation in vigorous and moderate physical activity for less than half (3.5 days) of the week while guidelines are clearly stating engagement in vigorous or moderate PA on at least five days per week to gain the health benefits associated with it. This is of great concern as studies have shown that levels of PA tend to decline with age (Khan et al, 2008) and the current sample's mean age was only 11.54 years. To add to this dilemma, studies have shown that the decline in PA appeared to be the greatest between the ages of 13 and 18 (Khan et al., 2008). This decline is also evident in

the present study in which older learners were found to have been involved in less moderate physical activity than the younger learners.

On categorizing the overall study sample into physically active or sedentary, more than three-quarters (77%) were classified as sedentary according to recommended guidelines. These findings are sharp contrasts to that of Frantz et al. (2009) who reported 48% of their study sample to be sedentary. Possible reasons for the big discrepancy could be the research settings of the two studies. The present study was done at an urban independent school while that of Frantz et al. (2009) reported on physical activity among learners in both rural and urban schools in Kenya. Therefore socio-economic differences between these groups could have influenced these findings. Irrespective of these differences, attention is again drawn to the need to decrease the percentage of the learners categorized related to physical inactivity among youth.

Researchers worldwide have expressed concern particularly regarding adolescent girls not meeting the recommended amount of physical activity. Studies have also shown the decline of physical activity by age to be more profound for girls (Caspersen, Periera & Curran, 2000; Sallis et al., 2000). In the present study the boys reported significantly more days of vigorous activity than girls. A number of studies have demonstrated similar gender differences in PA (Kahn et al, 2008). Although specific factors for girls lower participation in PA was not examined specifically in the present study literature has highlighted some

barriers to PA specifically for girls. Some of these barriers were identified in literature as self-consciousness, embarrassment about appearance while exercising, dislike of sweating, shyness and not wanting to spoil their hair and make-up (Grieser et al.,2006; Robbins, Sikorskii, Hamel, Wu & Wilbur, 2009 & Vu, Murrie, Gonzalez & Jobe, 2006. The findings of the present study thus highlight the gender difference in physical activity participation and have implications for future intervention programs. These interventions need to pay special attention to the reasons for the lower levels of physical activity among girls as they are an important target group for intervention.

5.2.2 Participation in team or competitive sports

Robinson et al. (2003) are of the opinion that participation in team sports could be perceived as fun and highly motivating by children. This can be attributed to mentoring received, modeling and friendship from young adult coaches and the opportunities created to demonstrate skills to family and friends. Various researchers have also stated that children involved in team sports tend to participate in more physical activity than those not involved in team sports (Ara et al., 2006, Alfano, Klesges, Murray, Beech & Mc Clacnahan, 2002; Salbe et al., 2002). It is thus promising to note that 95.9% of the study sample in the present study reported involvement in at least one team sport in the 12 months preceding the study. This prevalence is considerably higher than the 53% reported by Weintraub et al. (2008) and Pate, Trost, Levin and Dowda (2000) in the U.S.A. Some researchers are however of the opinion that that even though

formal sports are valuable for teaching character and establishing fitness, this may not necessarily lead to lifetime physical activity.

Boys reported more involvement in team sports than girls. This is of concern as studies have clearly shown that with an exception of those on sports teams, while in elementary school, the transition to middle school goes hand in hand with a decrease in PA (Robbins et al, 2009). Weintraub et al. (2008) however have stated that, ‘...although children involved in team sports tend to be more physically fit than their uninvolved peers and have greater involvement in physical activity across, team sports have not yet been tested as an approach to involve overweight children in regular physical activity or reduce weight gain...’

5.2.3 Sedentary behaviors

Researchers, parents, teachers and health care professionals have all expressed concern about children’s television viewing for a significant number of years (Jordan, Hersey, McDivitt & Heitzler, 2006). Salmon and Timperio (2005) have further cautioned that children now have increased opportunities to engage in sedentary behaviors such as television viewing. Organizations such as the American Academy of Pediatrics have recommended that parents should limit their children’s total number of hours spent watching television to no more than 1-2 hours per day. When measured against these recommendations, it becomes evident that the learners in the present study should be advised to decrease their time spent in sedentary behaviours such as television viewing. Although the

learners spent more than two hours per day watching television (mean=2.88hrs) it was still considerably less than the average of 6 hours and 32 minutes per day reported by Springer, Kelder and Hoelscher (2006) and 4 hours per day reported by Fox and Riddoch (2000).

The findings of the current study (2.88hrs per day) are similar to that of Australian children aged 5-12 years (2.5hrs per day) (Australian Bureau of Statistics, 2001). Wiecha et al.(2006) also reported an average of 2.44hrs per day of television viewing by their sample of American youth. Estimates of screen time in South Africa suggest that 25% of adolescents watch more than 3 hours of television per day (Healthy Active Kids South Africa, 2008). Participants in the present study thus seemed to do better than the average child/adolescents in South Africa as the Healthy Active Kids South Africa Report Card (2008) further reported an average of 9 hours per day of sedentary activities. Barlow (2007) have stated that health care professionals should encourage parents to limit their children's sedentary activities such as TV viewing in the effort to increase physical activity and decrease obesity.

5.3 PERCEPTIONS OF SUPPORT FOR PHYSICAL ACTIVITY

Researchers are in agreement that adolescent' perceptions of support for physical activity in the school environment are important and critical as they spent a fair amount of time at school. Furthermore many opportunities for physical activity exist within the environment (Grieser et al., 2008; Salmon &

Timperio, 2005). In the present study, learners perceived reasonable support from teachers at school for physical activity. Boys however perceived less support from teachers than girls for physical activity. Grieser et al.(2008) suggested two possible explanations for these differences. First of all teachers could be encouraging girls more than boys to be physically active at school. Secondly, there could be no actual difference in the encouragement teachers give to girls and boys but boys might just perceive less support for PA from teachers. The more perceived support from teachers for girls' PA could be seen in a positive light as researchers have found that this is a strong predictor for change in PA levels among inactive girls (Barr-Anderson et al, 2008; Neumark-Sztainer, Story, Hannan, Tharp & Rex, 2003).

Support from family and friends for physical activity were also examined in the present study. Researchers have highlighted the importance of parental involvement in the promotion of physical activity for their children (Terguson & King, 2002). These authors further highlighted that parents must be made aware of their children's levels of physical activity to be supportive of their children's desire to be physically active. Bower et al (2008) their study indicated that parental encouragement for physical activity predicted physical activity participation. They further stated that boys and girls were not influenced equally by both parents, which concurs with the findings of the present study where girls perceived less support from parents (Mean=14.02 SD=4.34) than boys (Mean=16.83. SD=4.37). Previous research has highlighted the higher levels of

PA among boys and the more support received from parents for PA than girls (Ornelas et al., 2007). Additional research is therefore needed for to examine these differences and parental influences critically.

Khan et al. (2008) alerted to the fact that parental modeling through their attitudes towards and their beliefs about PA and encouragement to be physically active will influence children's levels of physical activity. Adkins et al. (2004) study found that regardless of the type of support provided, girls who had high levels of support from at least one parent were more likely to report being highly physically active. This is in agreement with the findings of the present study that found a positive correlation between support from family for physical activity and the levels of both moderate and vigorous levels of physical activity. Special attention thus needs to be paid to the perceived lack of support from parents for girls to participate in physical activity as more actual support or perceived support has the potential to increase levels of physical activity overall but especially among girls. Parents need to be made aware of their children's perceptions and the importance of actual support for children.

Research also indicates that children's peers influence their choice to participate in physical activity. This was apparent in the present study where a positive correlation between participation of friends with learners in PA and their levels of vigorous and moderate PA was found. Hoehpa, Schofield and Kolt (2006) supported this in their study among high school girls and found that "peers

exhibiting a reciprocal friendship demonstrated a stronger correlation in activity behaviors compared to students in non-reciprocal friendships”. A gender difference of perceived support from friends for PA was again noted. Boys perceived significantly higher levels of support from friends than girls. This perception of more support could be again an indication of the higher levels of physical activity among boys than girls in the present study as research have indicated that individual, parental and environmental factors do play a role in adolescent physical activity levels or participation.

5.4 ENJOYMENT OF PHYSICAL ACTIVITY AND PHYSICAL EDUCATION

Researchers are of the opinion that children’s physical activity can consist of organised sport, active play, school physical education (PE) and sport, and active transport (Salmon and Timperto, 2005). Furthermore, it has been observed that enjoyment may be an important mediating factor in motivating adolescents to be physically active. In the present study the overall sample responded positively to both physical education (PE) and physical activity (PA) enjoyment. Boys reported significantly higher values for PE Enjoyment than girls in the present study.

Enjoyment of PE is an important factor to consider in planning interventions to promote physical activity. Weis and Ferter-Caja (2002) are of the opinion that enjoyment is central to participation behaviours. They further stated that if girls do not experience PE as enjoyable, they will lack the motivation to participate in physical education/activity. Several researchers are in agreement that children of all ages should be given the opportunity to engage in activities are of their choice

and if these activities are enjoyable, children are more likely to sustain their participation in it (Stratton, 2000, Sallis & Patrick, 1994).

In their review of studies exploring the role of PE in promoting PA among children, Wallhead & Buckworth (2004) found a strong association between enjoyment of PE and physical activity levels in girls more than in boys. In the present study a significant correlation was found between PE enjoyment and the number of days engaging in moderate physical activity for the overall sample, but not more for girls than boys as was the case with Wallhead & Buckworth (2004). Barr-Anderson et al. (2008) also reported enjoyment of PE class to be one of the strongest and most consistent correlates of physical activity among youth in grades 4-12. Although no significant difference for the correlation between girls and boys PE enjoyment and levels of MPVA was found, PE enjoyment is a factor that should be taken seriously as researchers have shown that enjoying PE class can have a significant effect on children's and especially girls' willingness to engage in PA (Wallhead & Buckworth, 2004). Researchers have also speculated that enjoyment of PE could be less about the enjoyment of PA and more about having fun with their friends in a less structured atmosphere (Grieser et al.2008).

It is thus clear from the findings of the present study and those of others (Barr-Anderson, 2008; Grieser et al., 2008) that PE enjoyment plays an important role in children's participation in PA. Barr-Anderson et al. (2008) have emphasized that PE teachers should aim for PE classes to be comfortable and

enjoyable. Concerns regarding the situation and standing of physical education has been raised world-wide for many years (Doll-Tepper, 2006). Frantz (2005) has also highlighted that the teaching of physical education in schools in South Africa is greatly diminished or non-existent. It has been confirmed by many stakeholders, such as the IOC that physical education and school sport has the, '...potential to make a significant contribution to the overall education and development of children and young people in many ways.'(Doll-Tepper, 2006:74). The children's enjoyment of PE should thus be used maximally in the promotion of PA and PE among youth. Physical education provides an excellent opportunity for children to learn health skills.

5.5 EFFECTS OF INTERVENTION PROGRAMME

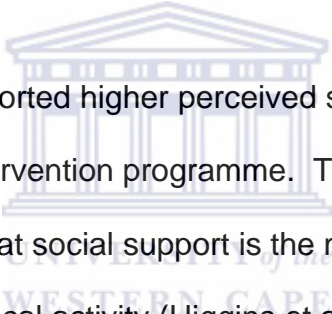
Researchers are in agreement that school represents a suitable setting for intervention programmes that aim to increase and promote physical activity among children (Ridgers et al., 2006). Moreover, opportunities such as physical education and playtime exist within the school day during which children can be physically active. The present study aimed to examine the effects of a school-based intervention programme on physical activity levels among school going children. Overall the study sample reported significantly higher levels of vigorous physical activity but not higher levels of moderate physical activity after the intervention programme. This is contradictory to what was expected as the aim of the PLAY programme was to increase moderate activity more than vigorous activity in youth. Salmon et al. (2007) also reported an increase in self-reported

PA among both boys and girls after 12 weeks of an intervention programme (PLAY) in their review.

A study done by Pangrazi et al. (2003) using the PLAY intervention programme also showed an increase in levels of PA among participants. Although their study used pedometers to assess levels of physical activity a significant difference in steps were observed after the intervention programme. Pangrazi et al.(2003) are thus of the opinion that an intervention programme such as PLAY can potentially increase the levels of activity of children by implementing a simple 15-minute activity break emphasizing PA. Other researchers such as Jurg, Kremers, Candel, Van der Wal and De Meij (2006) are of the opinion that negligible effects on the levels of PA with an intervention programme such as PLAY could be attributed to the lack of attention to environmental challenges, no involvement of parents and short time intervention.

Both boys and girls reported more perceived support from teachers for physical activity after the intervention programme. This could be attributed to the fact that the first two steps, spanning over four weeks, were teacher directed. In these steps teachers discussed the importance of physical activity and introduced a variety of games and activities promoting physical activity. Barr-Anderson et al. (2008) emphasized the importance of getting the support from teachers in the promotion of physically active lifestyles for children at school. Birnbaum et al. (2005) confirmed this in their study that reported learners' perceptions of

environmental equality provided by teachers to be significantly associated with physical activity levels. These findings are important for future physical activity interventions as research has highlighted that the role of adults supervising play time/ physical activity among children, has been largely neglected (Ridgers et al., 2006). These authors however noted that these teachers/supervisors should be trained properly as expanding their knowledge of children's games could increase the levels of physical activity among children. Future training of teachers to expand knowledge of appropriate games for children and benefits of physically active lifestyle for children should thus be encouraged.



Overall the study sample reported higher perceived support from family for physical activity after the intervention programme. This is encouraging as literature clearly highlights that social support is the most well-established determinant reinforcing physical activity (Higgins et al., 2003). Other researchers have agreed in stating that both parents and friends play a central role in supporting children's physical activity experiences (Sallis et al, 2000; Okun et al., 2002). Possible reasons for higher perceived support or actual support from family /parents could be that the consent letter/participation information sheet highlighted the importance of physical activity for children. Furthermore at the beginning of the 3rd step of the intervention programme, parents received additional information regarding the benefits of PA and games to increase PA for children.

Although not significant, a slight decrease in BMI of the overall study sample was observed after the intervention programme. This is promising as physical activity has been recommended as a crucial part in the fight against overweight and obesity among children and adolescents (Zhang et al., 2007; Goran et al., 1999). However, it *is* possible that this decrease could be attributed to the growth spurt of adolescents, a factor which should be taken into consideration when gender differences are interpreted, seen the difference in maturation patterns between boys and girls. It could, however, be speculated that a bigger decrease is possible in the event of a longer follow-up period after the intervention programme.

5.6 REFLECTION ON THE INTERVENTION PROGRAMME

Promoting Lifetime Activity for Youth (PLAY) is an activity based programme designed to increase moderate to vigorous physical activity in grades 4-8.

In 1996 the PLAY programme was started by the Arizona Department of Health Services and County Health Departments and since then has had over, 24000 participants each year in the U.S.A. The aim of PLAY is to get the learners to take responsibility for their own physical activity by teaching them the skills for self management. This will encourage them to reach their recommended daily physical activity levels of 60 minutes of moderate to vigorous physical activity.

The principal of the school was eager for the intervention programme to be implemented at her school as she was of the opinion that children were

increasingly becoming less physically active. As a result of her personal conviction, she played a major role in encouraging the teachers and parents to give their full support to me. She was taking a leading role in the stages before implementation of the programme. She provided me with a dedicated space to for collection of baseline data and meetings with the participating teachers. I visited the school on a weekly basis to monitor each step of the programme and to address any questions regarding these steps.

Step 1: Promoting PLAY Behavior

This took place over one week. The teachers' play a key role here as they were meant to lead by example to get the learners' more active. At the beginning of this week all the teachers agreed to be more active and the participants/learners were looking forward to starting the programme. It was noted that the majority of the participants were in grade five and grade seven. The grade seven teachers were particularly excited as they were of the opinion that the older girls were becoming less interested in PA.

Step 2: Introduction of teacher-Directed Activities.

This took place over three weeks and the goal was to get the teachers to show the learners a variety of 15min activities, which they could reproduce easily on their own. Again the teachers play key role here in the motivation and attitude towards physical activity. At the start of this step I met with the teachers and went through each of their folders of activities individually. The grade five and seven

teachers had a very positive attitude towards this process during all three weeks. However one of the grade six teachers was not as positive, after the second week meeting with that teacher, she commented.”...that her class had been doing enough activity that week by walking on and off the stage practicing for prize giving...” I wasn’t sure how to handle her attitude change, but I decided to keep on emphasizing the importance of the activities during our session. During the weeks that followed her attitude remained the same. I met with the principal and then I learnt that the relevant teacher was a substitute teacher and was leaving the school soon after the completion of the programme. This may be the reason for her lack of enthusiasm towards the programme because being a substitute teacher she has had no or would have no long term ties with the school and learners as the other permanent teachers. In hindsight this might be the reason why the grade six class in particular had the least amount of participants when compared with the other grades.

Step 3: Encourage Self-Directed Activity

During this step the role was taken away from the teachers and the responsibility for physical activity was placed on the learners. The learners were still very positive towards the programme as a whole. I also found the grade seven teachers to be especially involved in this programme and included learners’ weekly activity feedback sessions as part of their life orientation class. The excitement of the children during the intervention was noticeable.

5.7 SUMMARY

This chapter discussed the findings of the present study and compared it with other studies found in literature. The next chapter draws conclusions from the findings and also highlights the limitations of the study. Furthermore recommendations are outlined.



CHAPTER SIX

CONCLUSION, LIMITATIONS AND RECOMMENDATIONS

6.1 CONCLUSION

The growing epidemic of physical inactivity among children has received tremendous attention by researchers, governments and the media. The health consequences of physical inactivity and the benefits of adopting a physically active lifestyle have also received a great amount of attention. The purpose of this study was thus to measure the effect of an intervention programme on the physical activity participation of the learner. The results of the study clearly indicated that an intervention programme such as PLAY have the potential to increase the levels of physical participation among learners. Furthermore, support for physical activity from teachers, parents and friends were also shown to have a positive effect on physical activity participation.

The findings of the present study has implications for both school based and Community-based interventions to promote physical activity levels among school going children.

6.2 LIMITATIONS

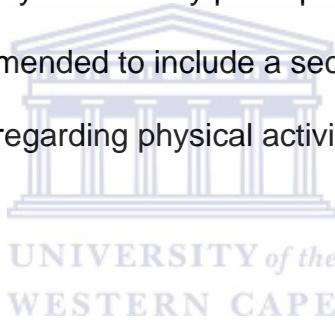
The results of the present study should be interpreted in light of the following limitations.

1. Data regarding physical activity and perceptions of support were collected by means of a self administered questionnaire and thus based on self reports. The data were thus vulnerable to misinterpretation in simplifying or exaggerating them. There is however growing evidence that such measures are generally reliable and valid.
2. Data of each phase was analysed cross-sectionally, thereby limiting the ability to make causal references. A learner a participating or not participating in physical activity will not necessarily continue to do so.
3. The sample was relatively homogenous in terms of schooling and age, i.e. learners aged between 11-13 years from a independent catholic school. Due to this generalisation of the findings to other schools are thus limited.
4. The enthusiasm of the teachers towards the programme could have influenced the implementation and outcome of the intervention study. The researcher however monitored the programme on a weekly basis.
5. This short period between the end of the intervention programme and the follow-up data collection might have influenced the maintenance effects of the intervention programme.



6.3 RECOMMENDATIONS

1. An intervention programme emphasising enjoyable participation in physical activity is recommended to become part of the Life Orientation Curriculum. Emphasis should be placed on assisting learners to develop knowledge, attitudes and confidence to adopt and maintain active lifestyles.
2. The study has shown that parental support for physical activity plays an important role in the physical activity participation patterns of learners. Therefore, it is recommended to include a section on parental education and parental support regarding physical activity in an intervention programme.
3. Although teacher education formed part of this intervention programme, a more extensive, comprehensive and continuous education component is recommended. This component should include the knowledge and skills needed to effectively and successfully promote enjoyable lifelong physical activity to the learners'.
4. Continuous feedback regarding the various stages of the programme from teachers to parents is recommended for inclusion in the intervention programme as this can improve participation in physical activity.



5. Although the emphasis of this intervention programme is focused on schools it is recommended that attention should be given to the role of community organisations and health care professionals.
6. Schools should be encouraged to provide extra-curricular physical activity programmes that interesting and enjoyable to all learners.
7. Regular evaluation of physical activity intervention programmes, including instruction and facilities, by the school is recommended.
8. It is recommended that this programme include a longer follow-up period to determine maintenance effects.
9. The current study was limited to a single school and a research including multiple schools is recommended.



6.4 SUMMARY

The final chapter concluded the study and it made recommendations for further actions and research. Furthermore, the limitations of the study were outlined.

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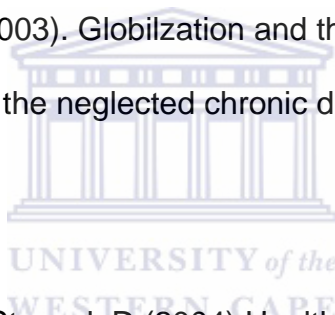
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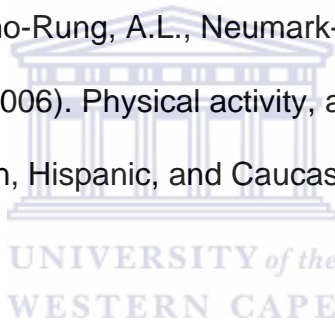
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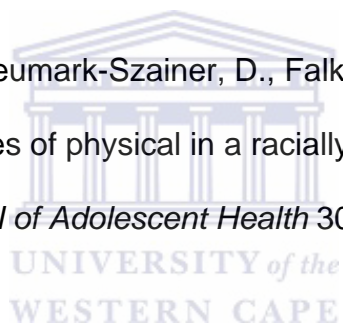
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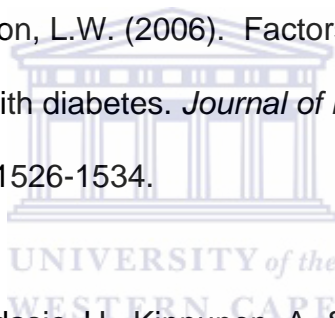
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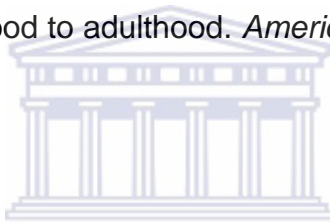
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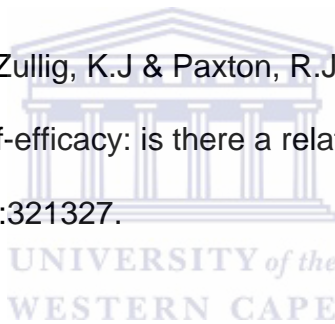
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Table 4.4 Perceptions of support for physical activity at school (Mean, SD) (n=100)

Scale	Overall	Boys	Girls	Range
Support from teachers#	4.82(1.67)	5.28 (1.84)	4.38 (1.35)	2.0-10.0
1. In my school, PE teachers act like they think it is more important for boys to be physically active than girls				
2. In my school, most other teachers act like they think it is more important for boys to be physically active than girls				
Support from boys	7.74(2.74)	7.33(2.55)	8.15 (2.87)	3.0-15.0
1. In my school, boys make rude comments around girls who are being physically active				
2. In my school, being physically active around boys makes me uncomfortable				
3. In my school, boys stare too much at girls who are being physically active				
Support from other girls*	3.24(1.67)	3.3 (1.10)	3.18 (0.91)	1.0-5.0
1. In my school, most girls think it is important to be physically active				



*Items were reversed scored so that a higher score corresponds with a more positive perception.

#Indicates significance

Table 4.5 Perceptions of support for physical activity from friends and family (Mean, SD) (n=100)

Scale	Overall	Boys	Girls	Range
Social support (friends)*#	9.65(3.38)	11.10 (3.06)	8.22 (3.07)	3.0-15.0
During a typical week, how often . . .				
1. Do your friends encourage you to do physical activities or play sports?				
2. Do your friends do physical activity or play sports with you?				
3. Do your friends tell you that you are doing well at physical activities or sports?				
Social support (family)*#	15.44(4.56)	16.83(4.37)	14.02 (4.34)	5.0-25.0
During a typical week, how often has a member of your household (eg, your father,mother, brother, sister, grandparent, or other relative)				
1. Encouraged you to do physical activities or play sports?				
2. Done a physical activity or played sports with you?				
3. Provided transportation to a place where you can do physical activities or play sports?				
4. Watched you participate in physical activities or sports?				
5. Told you that you are doing well in physical activities or sports?				



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*Items were reversed scored so that a higher score corresponds with a more positive perception.

#Indicates significance

Table 4.6. Enjoyment of physical education and physical activity (Mean, SD) (n=100)

Scale	Overall	Boys	Girls	Range
PE enjoyment*#	4.51(0.96)	4.77 (0.55)	4.26 (1.17)	1.0-5.0
1. I enjoy PE				
PA enjoyment	11.73(4.53)	11.69 (4.63)	11.78 (4.48)	7.0-35.0
When I am active . . .				
1. I feel bored				
2. I dislike it				
3. It's no fun at all				
4. It makes me depressed				
5. It frustrates me				
6. It's not at all interesting				
7. I feel as though I would rather be doing something else				



*Items were reversed scored so that a higher score corresponds with a more positive perception.

#Indicates significance

Table 4.7 Physical activity participation overall before intervention (Mean, SD)

(n=100)

Variable	Overall(SD)	Boys	Girls	Range
VPA*	3.17(1.84)	3.64(1.97)	2.71(1.59)	0-7
MPA	3.19(2.1)	3.34(2.13)	3.04(2.03)	0-7
Hrs television	2.86(1.88)	2.86(1.96)	2.86(1.88)	0.7
Team sport per year	2.37(1.42)	2.65(1.56)	2.08(1.20)	

*indicates significance

Table 4.14 Perceived support for PA before and after intervention (Mean, SD)

Variable	Girls		Boys	
	Before	After	Before	After
Support from teachers#	4.42(1.34)	3.94(1.9)	5.40(1.78)#	4.65(2.19)#
1. In my school, PE teachers act like they think it is more important for boys to be physically active than girls				
2. In my school, most other teachers act like they think it is more important for boys to be physically active than girls				
Support from boys	8.24(2.9)	8.04(2.84)	7.24(2.52)	6.53(2.30)
1. In my school, boys make rude comments around girls who are being physically active				
2. In my school, being physically active around boys makes me uncomfortable				
3. In my school, boys stare too much at girls who are being physically active				
Support from other girls*	3.26(0.88)	3.2(0.75)	3.34(1.11)	3.34(1.04)
1. In my school, most girls think it is important to be physically active				



*Items were reversed scored so that a higher score corresponds with a more positive perception.

#Indicates significant

Table 4.15 Perceived support for physical activity from friends and family (Mean, SD)

Variable	Girls		Boys	
	Before	After	Before	After
Social support (friends)*#	8.35(3.04)	7.90(2.58)	11.23(3.05)	10.49(3.76)
During a typical week, how often . . .				
1. Do your friends encourage you to do physical activities or play sports?				
2. Do your friends do physical activity or play sports with you?				
3. Do your friends tell you that you are doing well at physical activities or sports?				
Social support (family)*#	14.13(4.40)#	14.22(4.60)#	16.98(4.40)	17.28(4.60)
During a typical week, how often has a member of your household (eg, your father,mother, brother, sister, grandparent, or other relative) . . .				
1. Encouraged you to do physical activities or play sports?				
2. Done a physical activity or played sports with you?				
3. Provided transportation to a place where you can do physical activities or play sports?				
4. Watched you participate in physical activities or sports?				
5. Told you that you are doing well in physical activities or sports?				

*Items were reversed scored so that a higher score corresponds with a more positive perception.

#Indicates significance



Table 4.17 Enjoyment of physical education and physical activity before and after intervention (Mean, SD)

Variable	Girls		Boys	
	Before	After	Before	After
PE enjoyment*	4.27(1.19)	3.98(1.16)	4.76(0.57)	4.63(0.77)
1. I enjoy PE				
PA enjoyment	11.79(4.52)	11.98(5.01)	11.40(4.11)	10.42(3.5)
When I am active . . .				
1. I feel bored				
2. I dislike it				
3. It's no fun at all				
4. It makes me depressed				
5. It frustrates me				
6. It's not at all interesting				
7. I feel as though I would rather be doing something else				



*Items were reversed scored so that a higher score corresponds with a more positive perception.

#Indicates significance

Table 4.13 Overall perceived school climate before and after intervention

Variable	Before	After	p-value
Support from teachers#	4.91(1.65)	4.29(2.07)	0.001
1. In my school, PE teachers act like they think it is more important for boys to be physically active than girls			
2. In my school, most other teachers act like they think it is more important for boys to be physically active than girls			
Support from boys	7.75(2.74)	7.3(2.68)	0.136
1. In my school, boys make rude comments around girls who are being physically active			
2. In my school, being physically active around boys makes me uncomfortable			
3. In my school, boys stare too much at girls who are being physically active			
Support from other girls*	3.30(0.998)	3.27(0.91)	0.796
1. In my school, most girls think it is important to be physically active			

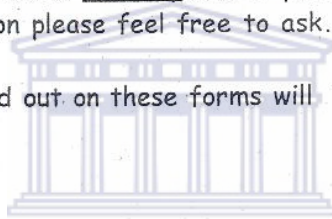
*Items were reversed scored so that a higher score corresponds with a more positive perception.
significant



Impact of a lifestyle physical activity
intervention on school going children's
physical activity participation

Please answer all these questions honestly and if you do not understand a question please feel free to ask.

All information that is filled out on these forms will be kept confidential.



UNIVERSITY *of the*
WESTERN CAPE

Socio-demographic Information

ID.....

Name:.....

Age:.....

Grade:.....

Who do you live with?

Mom.....Dad.....Grandmother.....Grandfather.....

Sister.....Brother.....

Other.....

Baseline Data

Height.....m

Weight.....kg

Hip.....cm

Waist.....cm

BMI.....



UNIVERSITY of the
WESTERN CAPE

Part 2: Circle the appropriate response

Perceived School climate

In my school, PE teachers act like they think it is more important for boys to be physically active than girls

1. disagree a lot 2. disagree 3. neutral 4. agree 5. agree a lot

In my school, most other teachers act like they think it is more important for boys to be physically active than girls

1. disagree a lot 2. disagree 3. neutral 4. agree 5. agree a lot

In my school, boys make rude comments around girls who are being physically active

1. disagree a lot 2. disagree 3. neutral 4. agree 5. agree a lot

In my school, being physically active around boys make me uncomfortable

1. disagree a lot 2. disagree 3. neutral 4. agree 5. agree a lot

In my school, boys stare too much at girls who are being physically active

1. disagree a lot 2. disagree 3. neutral 4. agree 5. agree a lot

In my school, most girls think it is important to be physically active

1. disagree a lot 2. disagree 3. neutral 4. agree 5. agree a lot

PE enjoyment

I enjoy PE

1. disagree a lot 2. disagree 3. neutral 4. agree 5. agree a lot

PA enjoyment

When I am active.....

1) I feel bored

1. disagree a lot 2. disagree 3. neutral 4. agree 5. agree a lot

- 2) I dislike it
1. disagree a lot 2. disagree 3. neutral 4. agree 5. agree a lot
- 3) It's no fun at all
1. disagree a lot 2. disagree 3. neutral 4. agree 5. agree a lot
- 4) It makes me depressed
1. disagree a lot 2. disagree 3. neutral 4. agree 5. agree a lot
- 5) It frustrates me
1. disagree a lot 2. disagree 3. neutral 4. agree 5. agree a lot
- 6) It's not at all interesting
1. disagree a lot 2. disagree 3. neutral 4. agree 5. agree a lot
- 7) I feel as though I would rather be doing something else
1. disagree a lot 2. disagree 3. neutral 4. agree 5. agree a lot

Social support (friends)

During a typical week, how often.....

Do your friends encourage you to do physical activities or play sport?
1. Never 2. Once /week 3. Twice a week 4. Three times /week 5. everyday

Do your friends do physical activity or play sports with you?
1. Never 2. Once /week 3. Twice a week 4. Three times /week 5. everyday

Do your friends tell you that you are doing well at physical activities or sports?
1. Never 2. Once /week 3. Twice a week 4. Three times /week 5. everyday

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WESTERN CAPE

Social support (family)

During a typical week, how often has a member of your household (eg. Your father, mother, brother, sister, grandparent, or other relative)

Encourage you to do physical activities or play sport?
1. Never 2. Once /week 3. Twice a week 4. Three times /week 5. everyday

Done a physical activity or played sport with you?
1. Never 2. Once /week 3. Twice a week 4. Three times /week 5. everyday

Provided transportation to a place where you can do physical activities or play sport?
1. Never 2. Once /week 3. Twice a week 4. Three times /week 5. everyday

Watched you participate in physical activities or sports?
1. Never 2. Once /week 3. Twice a week 4. Three times /week 5. everyday

Told you that you are doing well in physical activities or sports?
1. Never 2. Once /week 3. Twice a week 4. Three times /week 5. everyday

Part 3: Modifiable Physical Activity Questionnaire

1. How many times in the past week have you done at least 20 minutes of exercises **hard** enough to make you breathe heavily and make your heart beat fast? (eg. Playing netball, soccer, jogging, etc).
 1 2 3 4 5 6 7
 2. How many times in the past week have you done at least 20 minutes of **light** exercises that was **not hard** enough to make you breathe heavily and make your heart beat fast? (eg. Walking or slow bicycling)
 1 2 3 4 5 6 7
 3. During a normal week how many hours a day do you watch television and videos or play computer or video games before or after school.
 1 2 3 4 5 6 7
 4. During the past 12 months, how many team or individual sports or activities did you participate in on a competitive level?
 1 2 3 4 5 6 7
- a. What activities did you compete in?

APPENDIX B



UNIVERSITY OF THE WESTERN CAPE

Private Bag X 17, Bellville 7535, South Africa
Tel: +27 21-959, Fax: 27 21-959
E-mail:

REQUEST LETTER TO THE PRINCIPAL

Date:

The Principal

School

Dear Madam

Re: Impact of a lifestyle physical activity intervention on school going children's physical activity participation research project

We would like to request permission to conduct a research project on the impact of a lifestyle physical activity intervention programme on school going children's physical activity participation, at your school.

The aim of the study is to measure the effect of an intervention programme on the physical activity participation patterns among school going children and adolescents. The learners will be asked to fill in a questionnaire asking questions about how often they participate in physical activity and what activities they participate in. We will also weigh and measure their height, and waist. We will then start an activity programme which will teach them different kinds of fun games and exercise. All the steps will be explained clearly to the learners and the teachers. I will be present if anyone has any questions.

The results may help to learn more about factors associated with learners participation in physical activity and if the intervention programme is effective.

All the learners personal information will be kept confidential. To further protect their confidentiality, only the researcher will have access to your information. Their participation in this research is completely voluntary.

We look forward to your reply.

Yours sincerely,

Tamara Figaji.

Supervisor,

Prof. Julie Phillips

I.....hereby accept/decline that the research may be conducted at my school.

Signature.....

Date.....

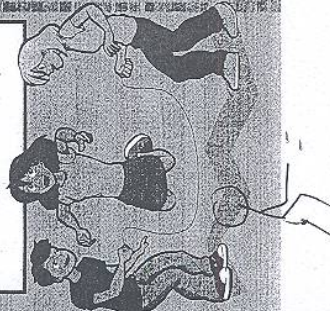


A New Focus

Focus of the Promoting Lifetime Activity for Youth Program

Regular activity in childhood increases the probability of an active lifestyle in adulthood. The Promoting Lifetime Activity for Youth program moves away from fitness to regular activity. We know that children who are not necessarily active and vice versa. Fitness performance is generally encouraged (Bousharden, 1991). In some cases as much as 70% of fitness gains in pre-adolescence are given in activities.

The focus of this program is to encourage the accumulation of at least 60 minutes of moderate physical activity throughout a child's day. By adding a 15-minute activity break to the school day, the program provides a natural learning environment about lifetime activity. The activity book teaches a wide variety of ways to accumulate activity in and out of school. The emphasis is on having student experience fun and positive feelings about activity. Accumulating activity is important as doing the activity. Recording activity is integrated into the program to help students keep track of their activity. The program book and activity book participate in our Active Lifestyle Award to move toward a well-directed, active lifestyle.



Guiding Principles for Physical Activity for Youth

- * Activity, ability and endurance are not required to participate.
- * It is for all children.
- * Students can personalize activity to meet their needs.
- * Students are encouraged to be active in their community and with their family.

Talking Points for Teachers. Please see this points as a guide for discussions with your students. Ask the questions and let the students reply before giving them answers.

Benefits of Physical Activity

- * Not being active can lead to heart problems, diabetes, high blood pressure and some kinds of cancer.
- * Physical activity can increase energy.
- * Being active helps us feel and look good.
- * Physical activity is fun.

What are some ways to be physically active?

- * Taking a walk
- * Taking a bike
- * Playing on the playground
- * Playing football
- * Riding a bike
- * Cleaning the house
- * Jumping rope
- * Dancing
- * Skating
- * Swimming
- * Taking the steps rather than the elevator/staircase
- * Pushing at the far end of the parking lot and walking

What are the best activities to do?

- * Anything you enjoy and keep you moving

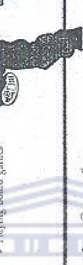
TV, Computer Games and Other Sedentary Activities

- Why should we limit this amount of TV we watch and video games we play?
 - * There are sedentary activities.
 - * Your body does not get enough exercise when you watch TV or play video games to do more than 1-2 hours each day so you have plenty of time to be active.

It is okay to watch TV and play video games but you should limit the number of hours you watch TV or play video games to no more than 1-2 hours each day so you have plenty of time to be active.

Why are some sedentary activities better than others?

- * Watching TV
- * Playing on the computer
- * Riding in a car
- * Taking the elevator
- * Playing board games



Step One (one week)

Talk about the Promoting Lifetime Activity for Youth program and the importance of being physically active with your students.

- * Discuss the importance of having fun while you are active.
- * Discuss the importance of being active in your physical activity.
- * Prompt all students in your class to name.
- * Allow students to move at a pace that is acceptable to them.

Step Two (at least three weeks)

- Introduce Teacher-Directed Activities
- During Step 2
 - * Direct a 15-minute activity break most days of the week and each week have a different activity that are fun for the students.
 - * Teach students that any activity is good activity.
 - * Demonstrate that the school values participation in regular activity.

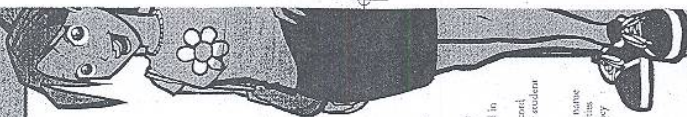
Step Three (at least eight weeks)

- Introduce logging and explain that it will help students to reach their physical activity goals.
- Encourage students to be aware of the physical activity choices they make.
- Present the Active Lifestyle Award.
- If the students have accumulated at least 60 minutes of activity for at least five days, for 6 weeks, they will earn a President's Active Lifestyle Award.

During Step 3

- * 60 minutes or spend at least 60 minutes a day at least 5 days a week being active.
- * Gradually encourage students to take the responsibility to develop regular activity habits at school, at home and in their community.
- * Encourage students to record their previous day's activities on their student log sheets.

- * Place the classroom wall chart in a prominent place with each student's name listed. If they have logged their activities for five days in a row, they will earn a President's Active Lifestyle Award.
- * Present all students in your class to receive it, with a President's Active Lifestyle Award.



Handwritten initials: ILLI

PROMOTING LIFETIME ACTIVITY FOR YOUTH

Parent Physical Activity Log

Week 5	Activity	# of Minutes	Activity	# of Minutes
Monday				
Tuesday				
Wednesday				
Thursday				
Friday				
Saturday				
Sunday				
Week 6	Activity	# of Minutes	Activity	# of Minutes
Monday				
Tuesday				
Wednesday				
Thursday				
Friday				
Saturday				
Sunday				
Week 7	Activity	# of Minutes	Activity	# of Minutes
Monday				
Tuesday				
Wednesday				
Thursday				
Friday				
Saturday				
Sunday				



PROMOTING LIFETIME ACTIVITY FOR YOUTH

News for Parents

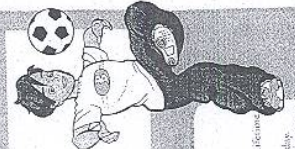
Promoting Lifetime Activity for Youth

Brittney B. Wall presents the **News for Parents** for **Promoting Lifetime Activity for Youth**.

The Arizona Department of Health Services and West Valley Community Health Department are offering a new social activity program called Promoting Lifetime Activity for Youth, a teacher-directed program for 4th-5th grade students provided in schools at no cost.

Physical activity builds a great foundation for a healthy life.

- To stay healthy, children need at least 60 minutes of moderate to vigorous physical activity near daily of the week.
- By participating in the program, students learn the importance of daily physical activity and associated health benefits, and play simple games that show how activity can be fun for everyone.



What teachers are saying about promoting lifetime activity for youth

"Students learn social skills and are more refreshed after Promoting Lifetime Activity for Youth lessons."

"Students spend a great deal of time sitting in high chairs in school days. The program allows them the chance to help students sit, stand and increase their energy levels."

"The program increases positive classroom interactions and team-building."

"The program increases students' behavior in class and that helps with their concentration."

Inside This Issue:

- Physical activity is a family affair!
- Did you know that physical activity can....
- Prevent physical activity lag
- Active Family Fun

UNIVERSITY of the WESTERN CAPE

This program is funded by the Department of Health Services, West Valley Community Health Department, and the University of the Western Cape. The program is a part of the Promoting Lifetime Activity for Youth program. For more information, contact Brittney B. Wall, Department of Health Services, West Valley Community Health Department, 1000 West Valley Blvd., Phoenix, AZ 85015. © 2012.

You can reap the benefits by participating in physical activity. Adults need at least 30 minutes of activity most days of the week. Keep track and keep up with your kids! Log your activity below.



PARENT PHYSICAL ACTIVITY LOG



Week 1	Week 2	Week 3	Week 4
Monday	Monday	Monday	Monday
Tuesday	Tuesday	Tuesday	Tuesday
Wednesday	Wednesday	Wednesday	Wednesday
Thursday	Thursday	Thursday	Thursday
Friday	Friday	Friday	Friday
Saturday	Saturday	Saturday	Saturday
Sunday	Sunday	Sunday	Sunday
Activity	Activity	Activity	Activity
# of Minutes	# of Minutes	# of Minutes	# of Minutes

Did you know that physical activity can:

- Help children be more alert and ready to learn.
- Increase self-esteem.
- Help kids battle stress, anxiety and depression.
- Build and maintain healthy bones, muscles and joints.
- Reduce anxiety and depression.
- Help control weight.

YOUR CHILD CAN EARN A PRESIDENTIAL AWARD

Your child can earn the Presidential Award for Youth Fitness by participating in the program for at least one week. Each student will be kept a record of their physical activity. If they participate in at least one activity for at least one week, they can earn the Presidential Award. You can help your child achieve the award by encouraging them to be active every day.

Make Your Move and Eat Right

1. Use an exercise pass, but remember all ingredients count!
2. Eat and drink regularly throughout the day.
3. Choose a variety of fruits and vegetables.
4. Be diligent when an eating opportunity arises.

Physical activity is a family affair!

- When parents are active, children are more likely to be active and stay active after they become adults.
- Encourage your family members to take part in physical activity programs as a family.
- Reward your children when they are active.
- Limit TV time. Make sure your kids watch no more than 1-2 hours of TV a day.
- Create fun and active opportunities. At least once a week look for a new way to make activity fun. Try having a dance party, TV game nights, or creating a family challenge. Search for fun activities together!

Active Family Fun

- **Walk and Talk:** Instead of sitting at home, take a walk and talk about your child. Make sure to have a walk with your child at least once a week.
- **Play a Family Activity Game:** By taking an active role in the game, you can help your child learn to play and have fun. Try playing board games, card games, or other family activities.
- **Read and Act:** Encourage your family to read together. You can act out the story and make a game of the story.
- **Learn a New Skill:** Make a game of learning a new skill together. You can learn to dance, play an instrument, or learn a new sport.



UNIVERSITY OF THE WESTERN CAPE

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Tel: +27 21-959, Fax: 27 21-959

E-mail:

REQUEST LETTER TO THE PRINCIPAL

Date:

The Principal

School

Dear Madam

Re: Impact of a lifestyle physical activity intervention on school going children's physical activity participation research project



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The aim of the study is to measure the effect of an intervention programme on the physical activity participation patterns among school going children and adolescents. The learners will be asked to fill in a questionnaire asking questions about how often they participate in physical activity and what activities they participate in. We will also weigh and measure their height, and waist. We will then start an activity programme which will teach them different kinds of fun games and exercise. All the steps will be explained clearly to the learners and the teachers. I will be present if anyone has any questions.

The results may help to learn more about factors associated with learners participation in physical activity and if the intervention programme is effective.

All the learners personal information will be kept confidential. To further protect their confidentiality, only the researcher will have access to your information. Their participation in this research is completely voluntary.

We look forward to your reply.

Yours sincerely,

Tamara Figaji.

Supervisor,

Prof. Julie Phillips



I.....hereby accept/decline that the research may be conducted at my school. Signature....., Date.....



UNIVERSITY OF THE WESTERN CAPE

Private Bag X 17, Bellville 7535, South Africa
Tel: +27 21-959, Fax: 27 21-959
E-mail:

PARENTS INFORMATION SHEET

Project Title: Impact of a lifestyle physical activity intervention on school going children's physical activity participation

What is this study about?

This is a research project being conducted by Tamara Figaji at the University of the Western Cape. We are inviting your child to participate in this research project because he/she are a school going child. The purpose of this research project is to find out what factors influence your child's participation in physical activity. Furthermore we want to find out if our intervention programme will make a difference to his/her physical activity participation.

What will I be asked to do if I agree to participate?

Your child will be asked to fill in a questionnaire asking questions about how often he/she participates in physical activity and what activities he/she participates in. We will also weigh and measure your child's height, and waist. We will then start an activity programme which will teach your child different kinds of fun games and exercise. All the steps will be explained clearly to him/her and the teacher. I will be present if they have any questions.

Would my participation in this study be kept confidential?

All his/her personal information will be kept confidential. To further protect his/her confidentiality, only the researcher will have access to his/her information. I will collect the questionnaires personally and will be responsible of ensuring their storage in a locked and secure place. If I write a report or article about this research project, your child's identity will be protected to the maximum extent. There are no known risks associated with participating in this research project.

This research is not designed to help your child personally, but the results may help the investigator learn more about factors associated with his/her participation in physical activity and if the intervention programme is effective.

Your child's participation in this research is completely voluntary. Your child may choose not to take part at all. If he/she decides to participate in this research, he/she may stop participating at any time. If your child decides not to participate in this study or if participation is stopped at any time, he/she will not be penalized.

What are the risks of this research?

There are no known risks associated with participating in this research project.

This research is being conducted by **TAMARA FIGAJI** from the University of the Western Cape. If you have any questions about the research study itself, please contact:

TAMARA FIGAJI
Department of Physiotherapy
University of the Western Cape
Tel: 021-959 3661
Fax: 021-959 1217
e-mail: tamifig@hotmail.com

Should you have any questions regarding this study and your rights as a research participant or if you wish to report any problems you have experienced related to the study, please contact:

Head of Department: Professor José Frantz
Dean of the Faculty of Community and Health Sciences: Professor MPOFU
University of the Western Cape
Private Bag X17
Bellville 7535

This research has been approved by the University of the Western Cape's Senate Research Committee and Ethics Committee.





UNIVERSITY OF THE WESTERN CAPE

Private Bag X 17, Bellville 7535, South Africa

Tel: +27 21-959, Fax: 27 21-959

E-mail:

PARTICIPANT INFORMATION SHEET

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Your participation in this research is completely voluntary. You may choose not to take part at all. If you decide to participate in this research, you may stop participating at any time. If you decide not to participate in this study or if participation is stopped at any time, you will not be penalized.

What are the risks of this research?

There are no known risks associated with participating in this research project.

This research is being conducted by **TAMARA FIGAJI** from the University of the Western Cape. If you have any questions about the research study itself, please contact:

TAMARA FIGAJI
Department of Physiotherapy
University of the Western Cape
Tel: 021-959 3661
Fax: 021-959 1217
e-mail: tamifig@hotmail.com

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UNIVERSITY OF THE WESTERN CAPE

Private Bag X 17, Bellville 7535, South Africa

Tel: +27 21-959, Fax: 27 21-959

E-mail:

PARENT CONSENT FORM

Title of Research Project: Impact of a lifestyle physical activity intervention on school going children's physical activity participation

The study has been described to me in language that I understand and I freely and voluntarily agree to give consent for my child to take part. My questions about the study have been answered. I understand that my child's identity will not be disclosed and that my child may withdraw from the study without giving a reason at any time and this will not negatively affect him/her in any way.

Parent's name.....

Parent's signature.....

Date.....



Should you have any questions regarding this study or wish to report any problems you have experienced related to the study, please contact the study coordinator:

Study Coordinator's Name: Tamara Figaji

University of the Western Cape

Private Bag X17, Belville 7535

Telephone: (021)959-2542

Cell: 0822006707

Fax: (021)975-5141

Email: tamifig@hotmail.com



UNIVERSITY OF THE WESTERN CAPE

Private Bag X 17, Bellville 7535, South Africa

Tel: +27 21-959, Fax: 27 21-959

E-mail:

PARTICIPANT CONSENT FORM

Title of Research Project: Impact of a lifestyle physical activity intervention on school going children's physical activity participation

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Participants's name.....

Participant's signature.....

Witness.....

Date.....



Should you have any questions regarding this study or wish to report any problems you have experienced related to the study, please contact the study coordinator:

Study Coordinator's Name: Tamara Figaji

University of the Western Cape

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