

**PERCEIVED CONSTRAINTS TO PHYSICAL ACTIVITY AMONG
PARAMEDICAL INSTITUTION STUDENTS IN UGANDA**

BY



**A mini-thesis submitted to the faculty of community and health sciences of the
University of the Western Cape, in partial fulfillment of the requirements for
Master of Science degree in Physiotherapy**

November 2005

Supervisor: Dr. Julie Phillips

ABSTRACT

Research has clearly shown that all individuals will benefit from regular physical activity. Unfortunately, young adults including college and university students are not physically active on a regular basis worldwide. In the developing world particularly in Sub-Saharan Africa, physical inactivity along with tobacco use, poor diet and nutrition are increasingly parts of today's lifestyle. Physical activity declines with age and the most important decline appear to be during the transition period from high school to university and during university years. The aim of this study was to assess the level of physical activity, to investigate the perceived constraints to physical activity and to determine whether socio-demographic characteristics have an influence on participation in physical activity and perceived constraints to physical activity among paramedical institution students in Uganda. A cross-sectional study with descriptive quantitative design was conducted. Four hundred (400) paramedical institution students were selected using a stratified random sampling technique. A self-administered questionnaire adopted from the literature was used to collect the data. A response rate of 90% was obtained. Descriptive and inferential statistics using the statistical package for social sciences were used to analyze the data. The relationships and associations between different variables were determined by carrying out significant tests using chi-square tests. Alpha level was set at 0.05. The mean age of the sample was 22.44 years (SD = 2.03). Males constituted 73.9% and females constituted 26.1% of the sample. Students from eight (8) health professional courses participated in the study. Over half (59%) of participants were classified as physically

active and 41% were classified as inactive or sedentary. For male participants, lack of the right equipment to exercise and wanting to do other things in their free time were perceived as the major constraints to physical activity. For female participants, lack of motivation and tiredness after exercise were perceived as the major constraints to physical activity. The findings of this study demonstrate that there is an influence of socio-demographic characteristics such as gender, year of the study and different departments/schools on participation in physical activity and perceived constraints to physical activity. They also indicate the need of health promotion intervention aiming at promoting physical activity among paramedical institution students in Uganda.



KEYWORDS: *Physical activity, exercise, students, young adults, perceived benefits, perceived constraints, health promotion, chronic diseases, sedentary lifestyle, Uganda*

DECLARATION

I hereby declare that “*Perceived constraints to physical activity among paramedical institution students in Uganda*”, is my own work, that it has not been submitted for any degree or examination in any other university, and that all the sources I have used or quoted have been indicated and acknowledged by complete references.

Eugene Nizeyimana



Signature

.....

November 2005

Witness: Dr. Julie Phillips

.....

DEDICATION

To my parents, Edward Niyibizi and Bernadette Nyirabagenzi

AND

My spiritual Father/Mentor Mrs. Theo Groot

Thank you for your parenting care and helping me to become who I am.



ACKNOWLEDGEMENTS

1. Most of all, thanks to God for strength, wisdom and ability.
2. My sincere gratitude to my supervisor Dr. Julie Phillips for courage, critics, sacrifices and guidance.
3. I am grateful to all those paramedical institution students who voluntarily participated in this study.
4. My sincere thanks to all my friends who supported me in all angles (Morally, Spiritually, and financially).
5. To all my classmates whom we shared the happiness and stressful times during our stay at UWC.
6. To all my brothers and sisters for support and encouragement.



TABLE OF CONTENTS

TITLE PAGE	i
ABSTRACT	ii
KEYWORDS	iii
DECLARATION	iv
DEDICATION	v
ACKNOWLEDGEMENTS	vi
TABLE OF CONTENTS	vii
LIST OF APPENDICES	xi
LIST OF FIGURES	xi
LIST IF TABLES	xii
ABBREVIATIONS	xiii
CHAPTER ONE: INTRODUCTION	1
1.1 INTRODUCTION	1
1.2 BACKGROUND OF THE STUDY	1
1.3 STATEMENT OF THE PROBLEM	4
1.4 AIM OF THE STUDY	4
1.5 SPECIFIC OBJECTIVES	5
1.6 SIGNIFICANCE OF THE STUDY	5
1.7 DEFINITION OF KEY TERMS	6



CHAPTER TWO: LITERATURE REVIEW	7
2.1 INTRODUCTION	7
2.2 HEALTH BENEFITS OF PHYSICAL ACTIVITY	7
2.2.1 Muscular-skeletal benefits	8
2.2.2 Cardiovascular and Cardio- Respiratory Benefits	9
2.2.3 Psychological and Mental Benefits	10
2.2.4 The Effect of Physical Activity on Weight Control	10
2.2.5 Social Benefits	11
2.2.6 Economic Benefits	12
2.3 RECOMMENDED QUALITY AND QUANTITY OF PHYSICAL ACTIVITY FOR HEALTH	12
2.4 FACTORS INFLUENCING PHYSICAL ACTIVITY	13
2.4.1 Factors that facilitate/ motivate physical activity	13
2.4.2 Constraints to physical activity	15
2.5 PHYSICAL ACTIVITY AND HEALTH PROMOTION	16
2.5.1. The role of the physiotherapist in health promotion	17
CHAPTER THREE: METHODOLOGY	19
3.1 INTRODUCTION	19
3.2 RESEARCH SETTING	19
3.3 STUDY DESIGN	20

3.4 STUDY POPULATION AND SAMPLE	20
3.5 INSTRUMENT	21
3.6 PILOT STUDY	24
3.7 PROCEDURE	25
3.8 DATA ANALYSIS	26
3.9 ETHICAL CONSIDERATION	27
CHAPTER FOUR: RESULTS	28
4.1 INTRODUCTION	28
4.2 RESPONSE RATE	28
4.3 SOCIO-DEMOGRAPHIC CHARACTERISTICS OF THE STUDY SAMPLE	28
4.4 PHYSICAL BACKGROUND CHARACTERISTICS OF THE PARTICIPANTS	30
4.4.1 Current participation in physical activity	30
4.4.2 Trend and adherence in physical activity participation along the educational levels	30
4.5 LEVEL OF PARTICIPATION IN PHYSICAL ACTIVITY	32
4.6 PARTICIPANTS' PERCEIVED CONSTRAINTS TO PHYSICAL ACTIVITY	33
4.6.1 Gender differences on perceived constraints to physical activity	35
4.7 INFLUNCE OF SOCIO-DEMOGRAPHIC CHARACTERISTICS ON CURRENT PARTICIPATION IN PHYSICAL ACTIVITY AND PERCEIVED CONSTRAINTS TO PHYSICAL ACTIVITY	37
4.7.1 Relationship between gender and current participation in physical activity	37

4.7.2 Relationship between current year of the study and participation in physical activity	38
4.7.3 Relationship between different schools/ departments and current participation in physical activity	39
4.7.4 Relationship between peer/family motivation and current participation in physical activity	40
4.7.5 Relationship between gender and perceived constraints to physical activity	41
4.7.6 Relationship between current year of the study and perceived constraints to physical activity	43
4.7.7 Relationship between different schools/departments with perceived constraints to physical activity	45
CHAPTER FIVE: DISCUSSION	47
5.1 INTRODUCTION	47
5.2 LEVEL OF PARTICIPATION IN PHYSICAL ACTIVITY	47
5.3 PARTICIPANTS' PERCEIVED CONSTRAINTS TO PHYSICAL ACTIVITY	48
5.4 INFLUENCE OF SOCIO-DEMOGRAPHIC CHARACTERISTICS ON PARTICIPATION IN PHYSICAL ACTIVITY AND PERCEIVED CONSTRAINTS TO PHYSICAL ACTIVITY	51
5.4.1 Influence of gender on participation in physical activity and perceived constraints to physical activity	51



5.4.2 Influence of current year of the study on participation in physical activity and perceived constraints to physical activity	53
5.4.3 Influence of professional study courses on participation in physical activity and perceived constraints to physical activity	54
5.5 LIMITATIONS AND STRENGTH OF THE STUDY	56
CHAPTER SIX: SUMMARY, AND RECOMMENDATIONS	58
6.1 INTRODUCTION	58
6.2 SUMMARY	58
6.3 RECOMMENDATIONS	61
REFERENCES	64



APPENDIX A	A request letter to the director of the paramedical institutions to include the students in the study
APPENDIX B	A request letter to the registrar of paramedical institutions to include the students in the study
APPENDIX C	A request letter to the Principal of Mbale School of clinical officers.
APPENDIX D	Questionnaire

LIST OF FIGURES

FIGURE 4.1 ADHERENCE IN PHYSICAL ACTIVITY PARTICIPATION ALONG EDUCATIONAL LEVELS	31
FIGURE 4.2 LEVEL OF PARTICIPATION IN PHYSICAL ACTIVITY	32
FIGURE 4.3 GENDER VERSUS PARTICIPATION IN PHYSICAL ACTIVITY	37
FIGURE 4.4 CURRENT YEAR OF THE STUDY VERSUS PARTICIPATION IN PHYSICAL ACTIVITY	38
FIGURE 4.5 SCHOOLS/ DEPARTMENTS VERSUS PARTICIPATION IN PHYSICAL ACTIVITY	39
 <p>LIST OF TABLES UNIVERSITY of the WESTERN CAPE</p>	
TABLE 3.1 CATEGORIES OF ACTIVITIES	24
TABLE 4.1 SOCIO-DEMOGRAPHIC CHARACTERISTICS OF THE SAMPLE	29
TABLE 4.2 PERCEIVED CONSTRAINTS TO PHYSICAL ACTIVITY OF THE SAMPLE	34
TABLE 4.3 MALES' PERCEIVED CONSTRAINTS TO PHYSICAL ACTIVITY	35
TABLE 4.4 FEMALES' PERCEIVED CONSTRAINTS TO PHYSICAL ACTIVITY	36
TABLE 4.5 RELATIONSHIPS BETWEEN PEER/FAMILY MOTIVATION AND CURRENT PARTICIPATION IN PHYSICAL ACTIVITY	40

TABLE 4.6 RELATIONSHIPS BETWEEN GENDER AND PERCEIVED CONSTRAINTS TO PHYSICAL ACTIVITY	42
TABLE 4.7 RELATIONSHIPS BETWEEN CURRENT YEAR OF THE STUDY AND PERCEIVED CONSTRAINTS TO PHYSICAL ACTIVITY	44
TABLE 4.8 RELATIONSHIPS BETWEEN DIFFERENT SCHOOLS/DEPARTMENTS AND PERCEIVED CONSTRAINTS TO PHYSICAL ACTIVITY	46

ABBREVIATIONS

BMD	Bone Mineral Density
BMI	Body Masse Index
CDC	Centre for Disease Control
SPSS	Statistical Package for Social Sciences
SSAQ	Sub- Saharan African Questionnaire
USA	United State of America
UWC	University of the Western Cape
WHO	World Health Organization

CHAPTER ONE

INTRODUCTION

1.1 INTRODUCTION

In this chapter, the background of the study is given and the effect of a sedentary lifestyle or physical inactivity on health across the world is highlighted.

1.2 BACKGROUND OF THE STUDY

Sedentary life style or physical inactivity is a major underlying cause of death, disease, and disability (World Health Organisation, 2002). Preliminary findings from the World Health Organisation's study on risk factors suggest that sedentary life style is one of the ten leading causes of death and disability in the world. Approximately 2 million deaths every year are attributable to physical inactivity (WHO, 2003a). According to a survey conducted by the United States of America's Centre for Disease Control and Prevention (CDC) only 40% of the US population are active enough to gain the physical and mental benefits of regular physical activity (Karch, 2000).

Research has clearly shown that all individuals will benefit from regular physical activity. The US surgeon general's report on physical activity and health concluded that moderate physical activity could considerably reduce the risk of developing or dying from heart diseases, diabetes, colon cancer and high blood pressure (US Department of Health and Human Services 2002) It can also reduce health care costs, prevent numerous diseases and disabilities and improve quality of life

(Healthy people 2010; Kaplan, 2000). Unfortunately, few individuals engage in regular physical activity despite its documented benefits.

According to Grubbs (2002), health benefits of physical activity depend on being active throughout the life span. However, for most people physical activity declines with age and the most rapid decline appear to occur during late adolescence and early adulthood. Grubbs' finding was in agreement with Sallis, Karen, Nichols, Sarkin, Johnson, Caparosa, Thompson and Alcaraz (1999), who argued that a steep decline of physical activity occurs during the high school and university years. Furthermore, the authors documented that physical activity is altered during the transition period from high school to university. This may have important acute physical and psychological consequences for college and university students. The decline in physical activity during this period may lead to patterns of inactivity that persists throughout one's university year and beyond (Bray and Born, 2004).

The results from the 1995 National College Health Risk Behaviour Survey indicate that 42.2% of American undergraduate students did not participate in moderate or vigorous physical activity during the week preceding the survey (Suminski, Petosa, Utter, and Zhang, 2002). These results are consistent with the finding of Bray and Born (2004), in their survey among Canadian undergraduate students which found that one third of students were active in high school but only 11% became active once at the university.

The developing world is not exempt from this situation. A rise in chronic diseases and mortality has been projected for all developing regions of the world due to an anticipated increase in life expectancy and changes in diet and lifestyle associated with industrialization and urbanization (Torun, Stein, Schroeder, Grajed, Conlisk, Rodriguez, Mendez and Martorell, 2002). Physical inactivity, along with tobacco use, poor diet and nutrition are increasingly today's lifestyle in Sub-Saharan Africa (WHO, 2004).

Although there is no specific information about physical activity participation among young adults including paramedical institution students in Uganda, there is evidence of physical inactivity among adolescent students. In 2003 a global school-based student health survey was conducted in rural Uganda to measure the dietary behaviour, hygiene, unintentional injury and violence, mental health, tobacco use, alcohol and other drug use, sexual behaviour as well as physical activity level among adolescents. The study found that only 11.4% of students were physically active for a total of at least 60 minutes per day during the past seven days (Twa-Twa, 2003). Based on the above findings that were in agreement with Sallis et al., (1999) and Bray and Born (2004), it was hypothesised that the physical activity level in paramedical institutions in Uganda may be too low to meet various health benefits identified by several researchers.

1.3 STATEMENT OF PROBLEM

Despite the multiple benefits of physical activity, at least 60% of the world population fails to achieve the minimum recommendation of 30 minutes moderate intensity physical activity daily. Physical activity declines with age and the most rapid decline appears to occur during adolescence and early adulthood. Recent data also showed a steep decline during high school, the transition period from high school to college, and during university years. The decline in physical activity during the transition from high school to university may lead to patterns of inactivity that persists throughout one's university years and adult life. Therefore, it is not known to what extent paramedical institution students in Uganda participate in physical activity/exercise and what their perceptions to constraints to physical activity/ exercise could be.



UNIVERSITY of the
WESTERN CAPE

1.4 AIM OF THE STUDY

The aim of this study was to identify the level of physical activity, investigate the perceived constraints to physical activity and determine whether socio-demographic characteristics have an influence on participation in physical activity and perceived constraints to physical activity among paramedical institution students in Uganda.

1.5 SPECIFIC OBJECTIVES

- To establish the levels of physical activity among paramedical students.
- To identify perceived constraints to physical activity among paramedical students.
- To determine whether socio-demographic characteristics influence participation in physical activity and perceived constraints to physical activity among paramedical students.
- To inform a health promotion program in relation to physical activity among paramedical students.

1.6 SIGNIFICANCE OF THE STUDY

Globally the practice of health and health care are changing dramatically (Higgs, Refshauge, and Ellis, 2001). Health promotion, including health education has become an increasingly important part of health and medical care, from a disease-oriented, professional- centred medical systems towards a system based on health and client participation. Physiotherapists along with other health professionals are being called upon to take up their role as health educators (Department of Caring Science, Orebro University, 2000). It is hoped that identifying constraints to physical activity and promoting physical activity among paramedical students who will soon be leaving school and entering the field of work will influence them to encourage the clients to become more physically active. The results of this study may be helpful as baseline information to developing physical activity promotion programme among paramedical students and other Ugandan young adults by paramedical institutions together with ministry of health, education, and sports.

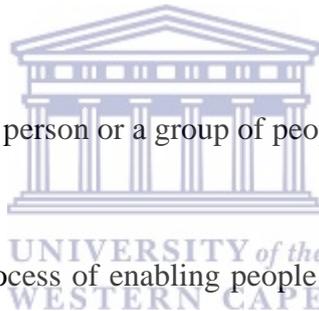
1.7 DEFINITION OF KEY TERMS

Physical activity: any bodily movement produced by skeletal muscles that result in energy expenditure (Centre for Disease Control and Prevention, 2002).

Perceived constraints: factors that are assumed by researchers and perceived or experienced by individuals to limit the formation of leisure preferences and to inhibit or prohibit participation in leisure activities (Konstantinos, 2003).

Sedentary: this is work or activities in which an individual spends a lot of time sitting down or not moving (Hornby, 2000).

Life style: the way in which a person or a group of people live(s) (Hornby, 2000).



Health promotion: it is a process of enabling people to increase control over and improve their health. To reach a state of complete physical, mental, and social well being (Coulson, Goldstein& Ntuli, 2002).

Paramedical: supplementing the work of medical personnel in related fields i.e. Physiotherapy, Occupational Therapy, Speech Therapy, Social Work, Dental Assistant, Medical Laboratory Technology etc (Thomas, 1997).

Paramedical personnel: health care workers who are not physicians or nurses. These include medical technicians, physician's assistants and allied health professionals such as physical therapists, occupational therapists, speech therapists, dental assistants, medical laboratory technologists etc (Thomas, 1997).

CHAPTER TWO

LITERATURE REVIEW

2.1 INTRODUCTION

In this chapter, various benefits of physical activity including musculoskeletal, cardiovascular and cardio-respiratory benefits are described. Recommended quality and quantity of physical activity for health and factors influencing physical activity are discussed. Finally, physical activity and health promotion, as well as the role of physiotherapist in health promotion are described.

2.2 HEALTH BENEFITS OF PHYSICAL ACTIVITY

Physical activity can improve quality of life in many ways for people of all ages. Regular physical activity provides young people with important physical, mental, and social health benefits (WHO, 2002). Research has clearly shown that people who are physically active live longer than those who are sedentary. In addition to living longer, those who engage in regular physical activity may be better able to perform activities of daily living and enjoy many aspects of life (Kaplan, 2000). Regular physical activity reduces the risk of premature mortality, coronary heart disease, hypertension, colon, breast, prostate, and lung cancers, reduces the feeling of depression and anxiety, as well as obesity and diabetes mellitus. Physical activity helps to build and maintain healthy bones, muscles and joints. Physical activity also promotes psychological well being (The Surgeon General 1996, Bahr, 2001). According to Summerfield (2000), physical activity can prevent or delay the development of hypertension in children and adolescents; it can reduce blood

pressure in those young people who already have hypertension. It can also increase bone density, reduces anxiety, and improves body image and mood, develops physical fitness and promotes weight control through caloric expenditure. In the study conducted by Micheal (1998), supported by Tergerson and King (2002), perceived benefits among female high school students were to stay in shape, lose weight and increase energy levels while for males the perceived benefits were to become strong, stay in shape and also to be competitive. Physical activity benefits are not limited to young people only, it has been documented that physical activity promotes independence; improve muscle strength and endurance prevents osteoarthritis as well as falls and injuries in older people (Bailey, 2001).

2.2.1 Muscular-skeletal benefits

Regular physical activity is important for maintaining muscle strength, joint structures, joint functioning and bone health. Weight bearing physical activity is essential for normal skeletal development during childhood and adolescence, and for achieving and maintaining peak bone mass in young adults (US Department of Health and Human Services, 2002). Physical activity can also greatly help prevent and manage osteoarthritis. Osteoarthritis is a disease in which bones become fragile and more likely to break. Physical activity is a means to control joint swelling and joint pain in arthritis, thus reducing the consequences of disease for everyday well being (WHO, 2005d). In the study done by Yannakoulia, Keramopoulos and Matalas (2004) evaluating the combined effect of several environmental factors on bone mineral density (BMD) in a group of highly active young women dancers, the results showed that long- term and intensive physical activity is beneficial to BMD. Regular physical activity also has been found to improve muscle function, prevent

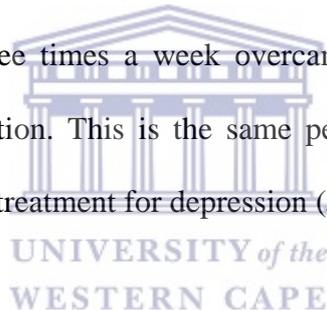
soft tissue injuries and improve physical performance (Healthy People, 2010., Bahr and Loald, 2001).

2.2.2 Cardiovascular and Cardio- Respiratory Benefits

Physical inactivity is recognized as a risk factor for coronary artery disease. Regular aerobic physical activity increases exercise capacity and plays a big role in both primary and secondary prevention of cardiovascular disease (Fletcher, Balady, Blair, Blumententhal, Gaspersen, Caitman, Epstein, Froelicher, Pain and Pollock, 1996). Physical activity and exercise as part of cardiac rehabilitation after an acute coronary event improves exercise capacity and quality of life in most patients. It has been proved in several studies over the years that elderly patients benefit from cardiac rehabilitation programmes to the same extent as younger patients when exercise capacity and quality of life are measured (Hage, Mattsson and Stahle, 2003). Cross- sectional studies showed lower blood pressure in active and fit persons, compared to their unfit and sedentary peers. The magnitude of differences in blood pressure across activity or fitness groups is modest, typically less than 10mmhg for systolic pressure and 5 mm Hg for diastolic pressure (Blair, Kohl and Gordon 1992). The study done by Sobngwi, Mbanya, Unwin, Aspray and Alberti (2002), to evaluate and compare physical activity patterns and its relationship with obesity, diabetes and hypertension in urban and rural dwellers in Cameroon, found that the prevalence of obesity, diabetes and hypertension was higher in urban compare to rural dwellers and this was significantly associated with low level of physical activity among urban dwellers.

2.2.3 Psychological and Mental Benefits

There is growing research evidence of links between physical activity and mental health benefits, including mood elevation, better cognitive functioning, improved self perception, self esteem and self efficacy. Physical activity has also been shown to enhance the effectiveness of psychological therapies and to have a role in improving quality of life and symptoms management for people with a wide range of mental health problems (Jones, Martin, O'Beney and Caro, 2004). It has been documented that taking regular exercise was a frequent means of coping with work stress by 30% of employees (Sale, Guppy and Sayed 2000). Research at Duke University on people suffering from depression found that 60% of participants who exercised for 30 minutes three times a week overcame their depression without using anti-depressant medication. This is the same percentage rate as those who only used medication in their treatment for depression (Jennifer, 2000).



2.2.4 The Effect of Physical Activity on Weight Control

Numerous studies have suggested that higher levels of physical activity are associated with lower body weight, or body fat, and more favourable patterns of body fat distribution (Ball, Owen, Salmon, Bauman and Gore, 2001). Obesity and overweight are complexes that contribute to many chronic diseases. Their treatment should include a dietary regimen, physical activity, and behaviour therapy (Barry, Virginia, Andy and Clay, 2001). Recent studies show that regular physical activity lowers many of the health risks associated with overweight and obesity.

Furthermore, obese people who are active have a lower mortality and morbidity than people whose weigh is normal but who are sedentary. This means that for the

overweight or obese patient, starting and maintaining a regular exercise programme yields important health benefits, even in the absence of substantial weight loss. This is encouraging, as maintaining regular physical activity of moderate intensity may be perceived as more attainable than reducing body weight (Bahr and Loald, 2001). A study by Ball et al (2001) examining an association of physical activity with body weight and fat in men and women found that higher level of leisure physical activity were positively associated with the likelihood of being in normal body mass index (BMI) and lower body fat range for women.

2.2.5 Social Benefits

Research has clearly shown that the significance of physical activity for a society is not only limited to health. By providing opportunities for social interaction, physical activity can help enhance a community to identify and promote community integration (WHO, 2005f). During sports and recreation activities, individuals learn and share community values and attitudes and gain a better understanding of other groups in the society. Participation in physical activity can also have a deterrent effect on anti-social behaviour, including vandalism and petty crime. Physical activity reduces sense of isolation and loneliness, it encourages community network, it prolongs independence in old people and helps build social skills in children (WHO, 2005g). The study by Savage and Michael (1998), reported that the most reasons encouraging university students to participate in physical activity was having fun with their friends and establishing interpersonal relationships.

2.2.6 Economic Benefits

There is more and more evidence that physical activity also has importance in the economy, working life, socialization and education (Telama, 1999). According to 1998 world health organisation's data, physically active individuals save an estimated \$ 500 per year in health care costs. In addition, workplace physical activity programmes in the USA can reduce short- term sick leave (by 6-32%), reduce health care costs (by 2- 52%). In Canada, companies with employee physical activity programmes/ initiatives can reach the benefits of \$ 513 per worker per year (from changes in productivity, absenteeism, turnover and injury) (WHO, 2003b).

2.3 RECOMMENDED QUALITY AND QUANTITY OF PHYSICAL ACTIVITY FOR HEALTH

Physical activity needs not to be strenuous to be beneficial. For an average sedentary adult, engaging in at least 30 minutes of physical activity of moderate intensity everyday or on most days of the week will be sufficient to obtain health benefits. Moreover, those 30 minutes can be accumulated through the day in the small bouts of activity or exercise. Therefore, it is not necessary to practice vigorous sports, join costly fitness clubs, or purchase special equipment to achieve health benefits (WHO, 2000h, Bahr and Loald, 2001). The American College of Sports Medicine, Centre for Disease Control, and Prevention together with Surgeon General Report on physical activity and health recommended accumulating at least 30 minutes of moderate physical activity that burns around 150 calories per day or at least 1,000 calories per week (WHO, 2005e). Duration is dependant on intensity of the activity; this means that lower- intensity activity should be conducted over a longer period of time (30minutes or more), and, conversely individuals training at

higher levels of intensity should train at least 20 minutes or longer. Because of the importance of “total fitness” that is more readily attained with exercise session of longer duration and because of potential hazards and adherence problems associated with high-intensity activity, moderate-intensity activity is recommended for adults not training for athletic competition (Pollock, 1998).

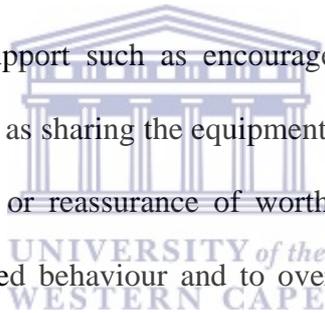
2.4 FACTORS INFLUENCING PHYSICAL ACTIVITY

The extensive documentation of the numerous important health benefits of physical activity has created a need to understand the factors that influence physical activity behaviour Sallis et al., (1997). An understanding of the factors that influence physical activity behaviours is necessary for health promoters and behavioural specialists interested in influencing sedentary population groups to become more physically active (Bauman, Marshall, Mohsin, and Westley- Wise, 2002). Factors that influence physical activity have been divided into those that promote physical activity or reduce sedentary lifestyle behaviour (facilitators) and those that are perceived as constraints discouraging behaviour change (Markus, Goldfine and Collins, 2003).

2.4.1 Factors that Facilitate/Motivate Physical Activity

Perceived cues are considered as helpful and motivational factors to action adherence (Glanz, 1998). According to the literature family members, peers, mass media, school programs and organizational activities have all been identified as common helpful cues to engaging in physical activity. Several studies found that support from family members, friends, sociability, perceived importance of sport

and of health improvement and satisfaction with mandatory gym classes in school were the factors motivating adolescents to participate in physical activity (Vilhajalmsson and Tomlinson, 1998; Tergerson and King, 2002; Tumusiime, 2004). Recently, a study on sources and types of social support in youth physical activity found that having friends who support and watch youth engaging in physical activity were significantly and positively related to youth physical activity (Duncan and Strycker, 2005). Families and peers support are potentially important source of social support for adolescent physical activity and for efficacy beliefs regarding physical activity (Pender, Sallis, Long and Galfas, 1994). The support of peers may serve a number of different functions such as social integration or companionship, emotional support such as encouragement, information support, and instrumental support such as sharing the equipment or transportation. Peers also may provide esteem support or reassurance of worth, which might bolster self-efficacy to perform the desired behaviour and to overcome perceived constraints (Duncan and Strycker, 2005). Environments rich in resources relevant to physical activity, such as sidewalks, parks, exercise classes and health clubs may also make it easier for the people to be physically active. Other researchers documented that availability of good facilities and individual's confidences in the performance of the specific activities are the facilitators of physical activity Markus et al, (2003); Sallis et al, (1997) and King et al, (1992). Furthermore, Kagwiza, (2003) reported that urban design features, including the availability of footpaths, traffic control measures, walking paths, and access to local shops and aesthetic features of the physical activity environment, had an influence to walking. In a Finnish study, Telama, Yang, Leino and Viikari (1999), found that early physical activity and



current social and health related behaviours were significantly related to the level of adult physical activity. Education, social support index, self-regulation and trying to lose weight were found to be the factors encouraging physical activity among young adults (Dowda 2003, Rovniak, Angerson and Vinett, 2002).

2.4.2 Constraints to Physical Activity

Identifying constraints to physical activity remains an important goal in health promotion planning programme (Tai- Seale, 2003). A great variety of physical activity constraints have been identified as lack of time, inconvenience, lack of self-motivation, the belief that exercise is boring or unenjoyable, low self-efficacy, fear of injury, poor self-management skills, lack of social support, and insufficient access to safe places to exercise (King, Blair, Bild, Bishaman, Dubbert, Marcus, Oldridge and Paffenbarger, 1992; Tappe and Tergerson, 2002; WHO, 2002; WHO, 2003; Tai-Seale, 2003). The study done by Valois, Zulling, Huebner, Drace (2004) revealed that relative declines in physical activity were associated with low life satisfaction, social isolation, and depression.

Although there has been no specific research to identify what could be the constraints to physical activity among paramedical students some constraints were identified among adolescent's college students and young adults, which may not be different from those in paramedical schools. Tappe, Duda and Ehrwald (1989), identified barriers to exercise among adolescent students as lack of time, unsuitable weather, school and school work, lack of place and needed equipment to exercise, lack of interest, use of alcohol or other drugs, boyfriends or girlfriends that kept one

from exercising and job responsibility. Distance to facilities, and cost of supervised programmes were also an example of perceived barriers to physical activity among adolescents, young adults, and collage students (Buckworth and Nigg, 2004).

2.5 PHYSICAL ACTIVITY AND HEALTH PROMOTION

“The Ottawa charter defines health promotion as the process of enabling people to increase control over and to improve their health, to reach a state of complete physical, mental, and social well being” (Coulson, Goldstein, Ntuli, 2002). Health promotion is strongly associated with personal lifestyles and involves two main processes: stopping negative (unhealthy) behaviours such as smoking, alcohol consumption or sedentary and starting positive behaviours such as exercise, good dietary practices, or sunscreen use (Markus et al., 2003). Physical activity may be a tool in the prevention of sedentary behaviour; overweight, obesity, and obesity related diseases and it plays a fundamental role in health promotion. It helps to educate, to develop tolerance and respect for others, to increase interindividual and international exchange, plays a role in social integration, and contributes to an increase in individual sustainable development. The aim of physical activity is to promote a long health and autonomous life, in conformity with the physical and social environment and economic needs (Ewa and Marika, 2003). Despite the multiple benefits of physical activity, at least 60% of the world population fails to achieve the minimum recommendation of 30 minutes moderate intensity physical activity daily (WHO 2005a). It is clear that physical inactivity is a major public health problem that affects huge number of population in all regions of the world. Effective public health measures are urgently needed to promote physical activity

and improve public health around the world (WHO, 2005b). Health sectors in collaboration with other policy makers are hereby called to provide a nation- wide evidence advocacy on the health, social and economic benefits of physical activity, develop action- oriented networks with other relevant sectors and stakeholders on physical activity, preparing health professionals, especially on physical activity counselling and programme development, promoting physical activity programme in community, schools and families, securing seed investment and mobilizing resources for physical activity, participating in global actions to promote physical activity (WHO, 2005c).

2.5.1 THE ROLE OF THE PHYSIOTHERAPIST IN HEALTH PROMOTION

Globally the practice of health and health care are changing dramatically (Higgs et al., 2001). Health promotion, including health education has become an increasingly important part of health and medical care, from a disease-oriented, professional- centred medical systems towards a system based on health and client participation. As a profession integral to health promotion, prevention, acute care and rehabilitation physiotherapy plays an essential role in the health care system. (Department of Caring Science, Orebro University, 2000). Physiotherapists, along with other health professionals are being called upon to take up their role as health educators. Physiotherapists are experts in body mechanics, anatomy, and physiology; they are also experts in prescribing appropriate and safe exercise for person who requires specific fitness and injury prevention advice (Wilson, 2002). The physiotherapist uses appropriate techniques, perform with adequate initial assessment to identify the main problem and its course in the case of an injured

person, and also undertake with ongoing reassessment and modification to provide appropriate treatment (Australian Physiotherapy Association, 2002). The role of physiotherapist in health promotion is to step in and work with individuals, groups, and whole population to promote health, to prevent disease and disability in schools, factories and community facilities (Raphael, Steinmetz, Renwick, Rootman, Brown, Sehdev, Phillips and Simith, 1999; Higgs et al., 2001).



CHAPTER THREE

METHODOLOGY

3.1 INTRODUCTION

This chapter discusses the method used in the study. Research setting, study design, study population, sampling technique, data collection methods and procedures followed are discussed. Included in the chapter is a description of the pilot study, data analysis and finally, the ethical consideration regarding the study is reported.

3.2 RESEARCH SETTING

The study was carried out in two paramedical institutions in Uganda. Uganda is a landlocked country bordered by Sudan in the North, Democratic Republic of Congo in the West, Rwanda and Tanzania in the South, and Kenya in the East. It lies astride the equator between latitudes 4 degrees 0' North and 1 degree 30' South of equator, and longitude 30 degrees 0' North, and 1 degree 30' South of equator.

Uganda covers an area of 242.554 square km; it has a population of approximately 24.5 million people spread out in 54 districts. The capital city of Uganda is Kampala.

There are 4 paramedical institutions in the country that train undergraduate students who are between 18-35 years which was the target population for this study. Due to limited resources and time, only two of these institutions were contacted for participation in the study. The biggest institution namely Mulago paramedical training school participated in the study. The second institution to participate was

Mbale Paramedical School, which is situated in the Eastern part of Uganda. These institutions were chosen because they are the biggest among all paramedical institutions in Uganda. The total number of all paramedical institution students in Uganda was approximately one thousand two hundred (1200) and the two institutions that participated in the study counted $\frac{3}{4}$ of the total number. (Approximately nine hundred students were studying in these two institutions that participated). Due to lack of time and insufficient funds, the two institutions that are situated in the Western and Northern Uganda were not contacted for participation in the study.

3.3 STUDY DESIGN

The study was a descriptive quantitative design with a cross-sectional survey. According to Mouton (2001), this is probably the best design available for social scientists interested in collecting original data for describing a population too large to observe directly.

3.4 STUDY POPULATION AND SAMPLE

The study was carried out in two different paramedical institutions in Uganda. All students registered for full time study for the 2004/2005 academic year in these two paramedical institutions were contacted for participation in the study. Participants were both residents and non-residents at the institutions but the majority of participants were residing at the institutions. Inclusion criteria were both males and females who accepted to participate voluntarily.

Four hundred (400) students were selected for participation in the current study. This sample size was decided upon by calculating proportionally and statistically, basing on the number of students in each institution which participated in the study. The total number of students in these institutions was approximately one thousand two hundred (1200) thus four hundred participants (30%) was a representative number of the study population.

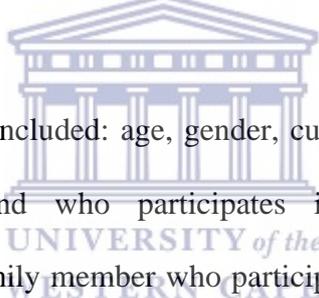
A stratified random sampling technique was used to select the participants in this study. De Vos, (2001) documented that this type of sampling is suitable for heterogeneous population because the inclusion of small subgroups percentage wise can be ensured. The year of the study and different departments were used as individual strata. Therefore, this sampling technique allowed the researcher to make sure that all different departments and year classes in each institution selected were represented in the sample. Four hundred (400) structured self-administered questionnaires were distributed among the 8 different schools at the institutions that participated in the study. These schools include: Physiotherapy, Occupational Therapy, Dentistry, Orthopaedic Officers, Orthopaedic Technology, Medical Laboratory Technology, Pharmacy and School of Clinical Officers.

3.5 INSTRUMENT

A structured self-administered questionnaire with closed – ended questions was used to collect the data. The questionnaire consisted of three sections. The first section requested for socio-demographic information while the second and third sections assessed the physical activity levels and perceived constraints to physical

activity among the student participants. At the beginning of each section instructions and how to fill in the questionnaire were provided.

Section A. this section comprised of ten questions which covered socio-demographic characteristics. These questions were adopted from the questionnaire developed by Tergerson and King, (2002) in which they assessed physical activity perception among high school adolescent learners. These authors had the instrument tested for the stability and reliability. The Pearson-r correlation coefficients for the section on constraints were .770. To ensure internal consistency of the instrument Cronbach alphas were determined: .900 for constraints.



The variables in this section included: age, gender, current year of study, name of the school, having a friend who participates in any form of physical activity/exercise, having a family member who participates in any kind of physical activity/exercise, having a friend who encourages exercising, having a family member who encourages to exercise and current participation in any form of physical activity. The educational level at which students participated in physical activity/exercise were also assessed.

Section B. Questions in this section were adapted from the Sub-Saharan African questionnaire (SSAQ) developed by Sobngwi et al (2001). As Uganda is a sub-Saharan country this questionnaire was probably the most practical and appropriate to use. However, the questionnaire was modified to fit the paramedical institution students. For example household activities were included and physical

activities that are not frequently practiced by Ugandan students such as fishing, hunting, and horse riding were eliminated. This section measured frequency, intensity, duration and type of physical activity practiced by paramedical students involved in this study.

This section assessed physical activity in three categories.

The first part assessed physical activities student did in their leisure or spare time, the second part assessed physical activities students did while at home (Household activity) and the third part evaluated walking to and from school.

Questions in this section categorised physical activity as vigorous, moderate and sitting activities. Responses to these questions were *YES* or *NO* however, those who answered *YES* were asked to state the number of days per week and average duration of session (in minutes) each time they participated in any kind of physical activity/exercise. Those who answered *NO* the next two questions that asked about frequency, intensity and duration were not applicable to them.

Table 3.1 CATEGORIES OF ACTIVITIES

ACTIVITY CATEGORY	EXAMPLE OF ACTIVITIES
Vigorous Activities	Running, Jogging, Basketball, Soccer, Volleyball, Aerobic dancing, vigorous traditional dance, chopping wood, digging, carrying water, heavy lifting
Moderate Activities	Brisk walking, Swimming, Classic dance, Moderate Gymnastic, Table tennis, cleaning house, washing clothes with hands, gardening, sweeping pavement, washing windows
Light and sitting activities	Light walking, driving a car, watching TV, listening to the radio, playing table games, plaiting hair, chatting with people, washing dishes, doing school homework, preparing food.

Section C: This section comprised of sixteen variables that measured paramedical perceived constraints to physical activity. These variables were also adopted from the questionnaire developed by Tergerson and King (2002). These variables were given in the form of statements and students were asked to put a tick in the box of their choice against the responses given. The responses were: *Strongly Agree*, *Agree*, *Disagree*, and *Strongly Disagree*. These variables have been described in the literature as factors contributing to sedentary life style.

3.6 PILOT STUDY

The questionnaire was pre-tested at the University of the Western Cape (UWC) among undergraduate students who had the same characteristics as those in the main study. (i.e. same age range, gender , university undergraduate students from

different departments and different year of studies). The participants in the pilot study were five males and five females who volunteered to participate. During the pilot study, questionnaires were distributed to the participants individually and explanations regarding how to fill them in were provided. Participants were allowed to contact the researcher for any question for clarification and were told to take their time while filling the questionnaire. The aim of the pilot study was to assess the clarity, understanding of the questionnaire and to determine how long it may take to complete it. The results of the pilot study indicated that the questionnaire was clear and understandable. All participants reported that it took approximately 15 minutes to complete the questionnaire.

3.7 PROCEDURE

Permission was obtained from the senate committee of University of the Western Cape and research grant committee to conduct the study. The procedure began with distributing these letters seeking the permission to include paramedical institution students in the study. The first letter was distributed to the director of paramedical institutions in Uganda. After his verbal approval more letters were distributed to different authorities such as the registrar and principal tutors of respective schools/ departments. Included in the letter was the purpose and importance of the study. After the verbal approval of all authorities the director of paramedical institutions requested for the research proposal to be given to individual schools/ departments. Having produced the research proposals to each school/ department permission to conduct the study was given. Most of the questionnaires were filled in during class time. Prior to questionnaire administration the researcher introduced himself to the student participants. The purpose and importance of the study was clearly

explained, participants were informed that participation was voluntary and anonymity was guaranteed by asking participants not to put their names on the questionnaire. Having finished the introduction and explanation regarding the study, questionnaires were distributed to volunteer participants, the researcher read the questionnaire while the participants were filling it in at the same time. The procedure took about ten minutes. However, participants were given five more minutes to verify their answers. Most of the questionnaires were collected immediately.

3.8 DATA ANALYSIS

The statistical package for social sciences (SPSS) version 12.0 was used to analyse the data. Descriptive statistical analysis was used to obtain the demographic profile, physical activity background characteristics and perceived constraints to physical activity of the participants. Demographic characteristics were presented using frequency tables. Inferential statistical analysis was used to determine the association between socio-demographic characteristics, participation in physical activity and perceived constraints to physical activity. This was done in the form of cross-tabulations using chi-square to determine the associations between various variables. Inferential statistics were reported as chi-square, degree of freedom (df) and p values. Alpha level was set at 0.05.

3.9 ETHICAL CONSIDERATION

After the approval of the research proposal by the senate committee, research grant and ethic committee of University of the Western Cape, further permission was sought from the director of the paramedical institutions in Uganda to include the students in the study. The purpose and importance of the study was clearly explained to the authorities and students. It was explained that the study was anonymous and voluntary and that all information obtained would be confidential. The right to withdraw in the study at anytime was guaranteed and the data was collected from only those who accepted to participate voluntarily in the study. The feedback of information was also guaranteed.



CHAPTER FOUR

RESULTS

4.1 INTRODUCTION

This chapter contains the results of the statistical analysis that attempts to answer the objectives of this study stated in chapter one.

4.2 RESPONSE RATE

A total of four hundred (400) students were randomly selected to participate in the study. Three hundred and sixty (360) students completed and returned the questionnaires, thus the overall response rate was 90%.

4.3 SOCIO- DEMOGRAPHIC CHARACTERISTICS OF THE STUDY SAMPLE

The overall study sample consisted of 360 students ranging from 19- 30 years old with a mean age of 22.44 years (SD= 2.03) of which 266 (73.9%) were males and 94 (26.1%) were females. The highest number of participants were from second year of study 144 (40.0%) and the smallest number were in their third year 89 (24.7%). Most of the student participants were from the clinical officers department 59 (16.4%), followed by the physiotherapy department 50 (13.9% as illustrated in table 4.1.

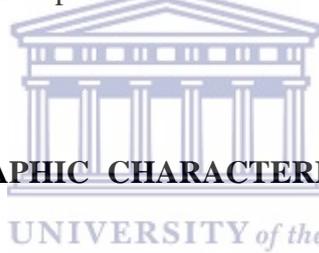


TABLE 4.1 Socio-Demographic Characteristics of the Study Sample (n= 360)

Variables		Number	Percentages
Gender	Males	266	73.9
	Females	94	26.1
Year of Study	1st year	127	35.3
	2nd year	144	40.0
	3rd year	89	24.7
Departments/ Courses	Clinical Officers	59	16.4
	Physiotherapy	50	13.9
	Medical lab Technology	48	13.3
	Orthopaedic Officers	48	13.3
	Orthopaedic Technology	43	11.9
	Dental	40	11.1
	Pharmacy	37	10.3
	Occupational therapy	35	9.7

4.4.PHYSICAL ACTIVITY BACKGROUND CHARACTERISTICS OF PARTICIPANTS

4.4.1 Current Participation in Physical Activity

The majority (61.4%) were currently participating in physical activity and 38.6% were not participating in physical activity. Of those who currently participated in physical activity, 66.9% were males and 33.1% were females. Of those who were not currently participating in physical activity, 54.3% were females and 45.7% were males.

4.4.2 Trend and Adherence in Physical Activity Participation Along the Educational Levels.

As illustrated in the figure 4.1, the majority of the participants (33.1%) had initiated physical activity only at tertiary level. A total of 2.8% of the participants did not participate in physical activity at any educational level.



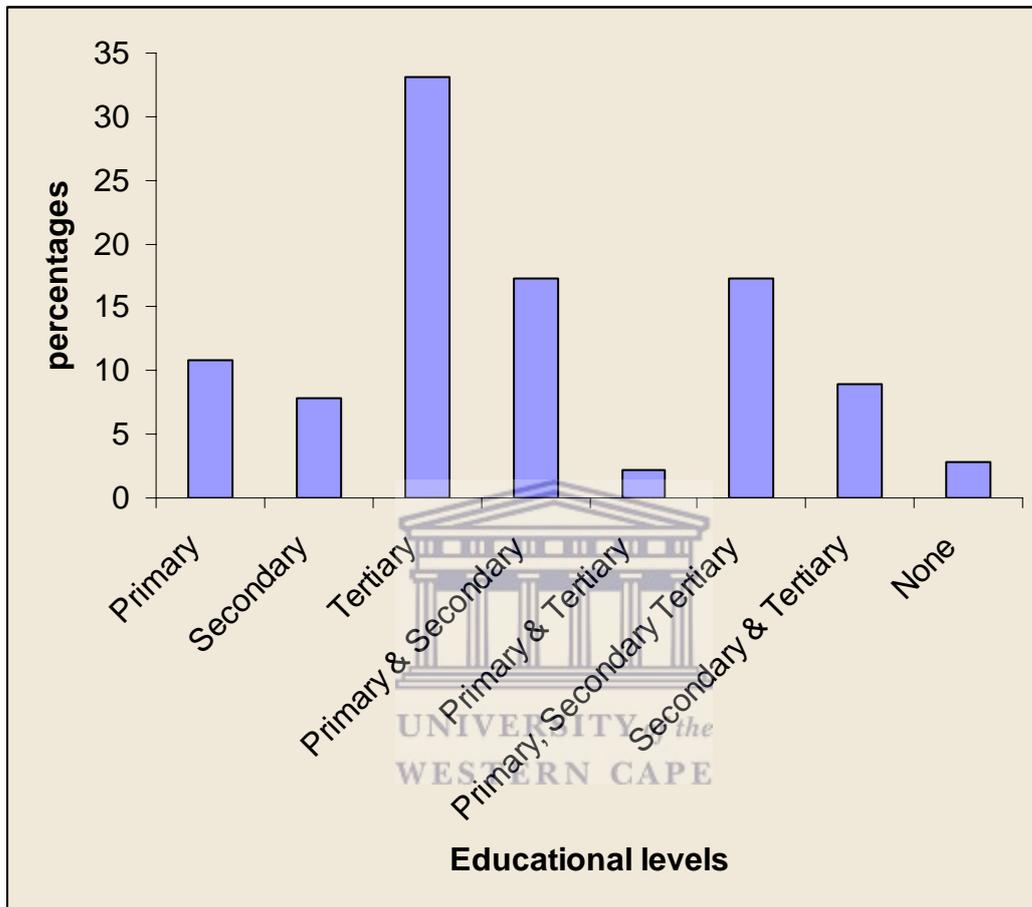


FIGURE 4.1 Adherence to Physical Activity Participation along Educational Levels

4.5 LEVEL OF PARTICIPATION IN PHYSICAL ACTIVITY

The World Health Organisation recommended that, for an average adult engaging in at least 30 minutes of physical activity of moderate intensity every day or most days of the week would be sufficient to gain health benefits. Moreover, those 30 minutes can be accumulated throughout the day in small bouts of activity (WHO 2005h). Therefore, applying the above criteria to the sample, 213 (59%) participants were classified as physically active and 147 (41%) participants were classified as physically inactive or sedentary as illustrated in figure 4.2

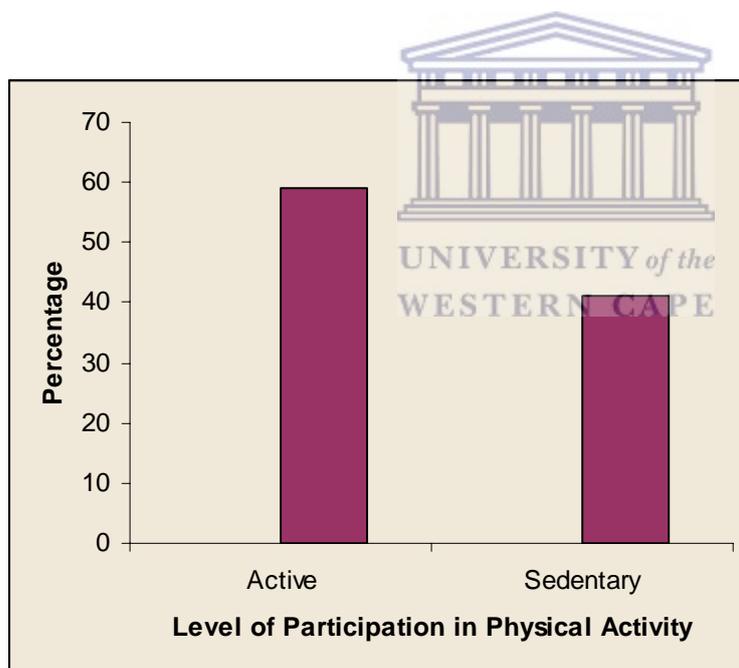


FIGURE 4.2 Level of Participation in Physical Activity

4.6 PARTICIPANTS' PERCEIVED CONSTRAINTS TO PHYSICAL ACTIVITY

Perceived constraints to physical activity among paramedical students were assessed using a four-point Likert scale (1= strongly disagree, 2= disagree, 3= agree, 4= strongly disagree). The four most likely constraints for the participants were identified as: lack of right equipment to exercise (Mean score =2.64), wanting to do other things in one's free time (Mean score = 2.58), lack of motivation to exercise (Mean score = 2.45) and tiredness after exercising (Mean score= 2.42). The least constraints were identified as: I think exercise is not important (Mean score = 1.61), I do not know how to exercise (Mean score = 1.82), and I am not interested in exercising (Mean score= 1.86). Table 4.2 presents the results on constraints in descending order with regards to the mean score value of four- point scale measurements of each response.

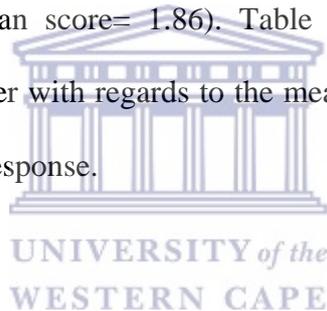


TABLE 4.2 Perceived Constraints to Physical Activity of the Sample (n= 360)

Variable statements	N	Mean Score	Strongly Disagree %	Disagree %	Agree %	Strongly Agree %
I do not have right equipment to exercise	360	2.64	15	26.9	36.7	21.4
I do want to do other things in my free time	360	2.58	11.7	33.9	39.2	15.3
I am not motivated to exercise	360	2.45	16.4	35.8	33.1	13.9
Exercise makes me tired	360	2.42	15.8	35.6	39.2	9.4
I do not have a good place to and exercise	360	2.38	18.6	37.2	31.7	12.5
I do not have transport to facility	360	2.36	17.2	41.9	28.1	12.8
I do have too much homework	360	2.36	13.6	45.8	31.1	9.4
I do not have a family support	360	2.33	19.7	39.4	28.6	12.2
I do not have a good environment to exercise	360	2.33	21.4	36.9	28.6	13.1
I do not have time to exercise	360	2.13	21.1	50.8	21.7	6.4
I do not have someone to exercise with	360	2.08	24.4	49.2	20.3	6.1
I think exercise was too hard	360	1.90	28.9	55.3	12.8	3.1
I do not enjoy exercising	360	1.88	35	47.2	12.5	5.3
I am not interested to exercise	360	1.86	35	49.4	9.7	5.8
I do not know how to exercise	360	1.82	38.9	45	11.7	4.4
I think exercise is not important	360	1.61	50.6	40.3	6.9	2.2

4.6.1 Gender Differences on Perceived Constraints to Physical Activity

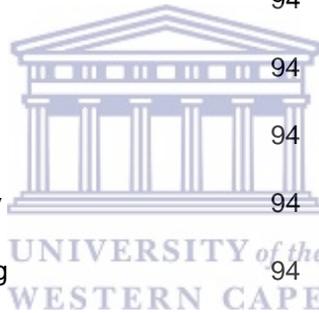
As illustrated in tables 4.3 and 4.4 the differences between gender on perceived constraints were descriptively obtained. For convenience, the results are presented in descending order with regard to mean score and standard deviations. This indicates which perception had the highest and lowest score in the sample.

TABLE 4.3 Male's Perceived Constraints to Physical Activity (n=266)

Variable statements	N	Mean	Std. Deviation
I do not have right equipment to exercise	266	2.70	0.96
I do want to do other things	266	2.59	0.89
I do not have transport to facility	266	2.44	0.91
I am not motivated	266	2.39	0.91
Exercise makes me tired	266	2.37	0.85
I do not have a good place to exercise	266	2.36	0.92
I do not have family support	266	2.36	0.90
I do have too much homework	266	2.35	0.84
I do not have a good environment to exercise	266	2.33	0.96
I do not have time to exercise	266	2.10	0.79
I do not have a company to exercise with	266	2.12	0.84
I think exercise is too hard	266	1.87	0.69
I am not interested in exercising	266	1.79	0.75
I do not enjoy exercising	266	1.78	0.76
I do not know how to exercise	266	1.74	0.76
I think exercise is not important	266	1.62	0.72

TABLE 4.4 Females' Perceived Constraints to Physical Activity (n= 94)

Variable statements	N	Mean	Std. Deviation
I am not motivated	94	2.62	0.96
Exercise makes me tired	94	2.56	0.90
I do want to do other things	94	2.54	0.88
I do not have right equipment to exercise	94	2.48	1.01
I do not have a good place to exercise	94	2.41	0.97
I do have too much homework	94	2.39	0.81
I do not have a good environment to exercise	94	2.33	0.94
I do not have family support	94	2.24	1.01
I do not enjoy exercising	94	2.16	0.92
I do not have time to exercise	94	2.13	0.89
I do not have transport to facility	94	2.13	0.88
I am not interested in exercising	94	2.07	0.95
I do not know how to exercise	94	2.03	0.90
I think exercise is too hard	94	1.98	0.82
I do not have a company to exercise with	94	1.96	0.77
I think exercise is not important	94	1.57	0.71



4.7 INFLUENCE OF SOCIO- DEMOGRAPHIC CHARACTERISTICS ON CURRENT PARTICIPATION IN PHYSICAL ACTIVITY AND PERCEIVED CONSTRAINTS TO PHYSICAL ACTIVITY

4.7.1 Relationship Between Gender and Current Participation in Physical Activity

As illustrated in the figure 4.3 below, male students were significantly more active (66.9%) compare to their female count parts (45.7%), $X^2 = 13.136$ ($p < 0.05$)

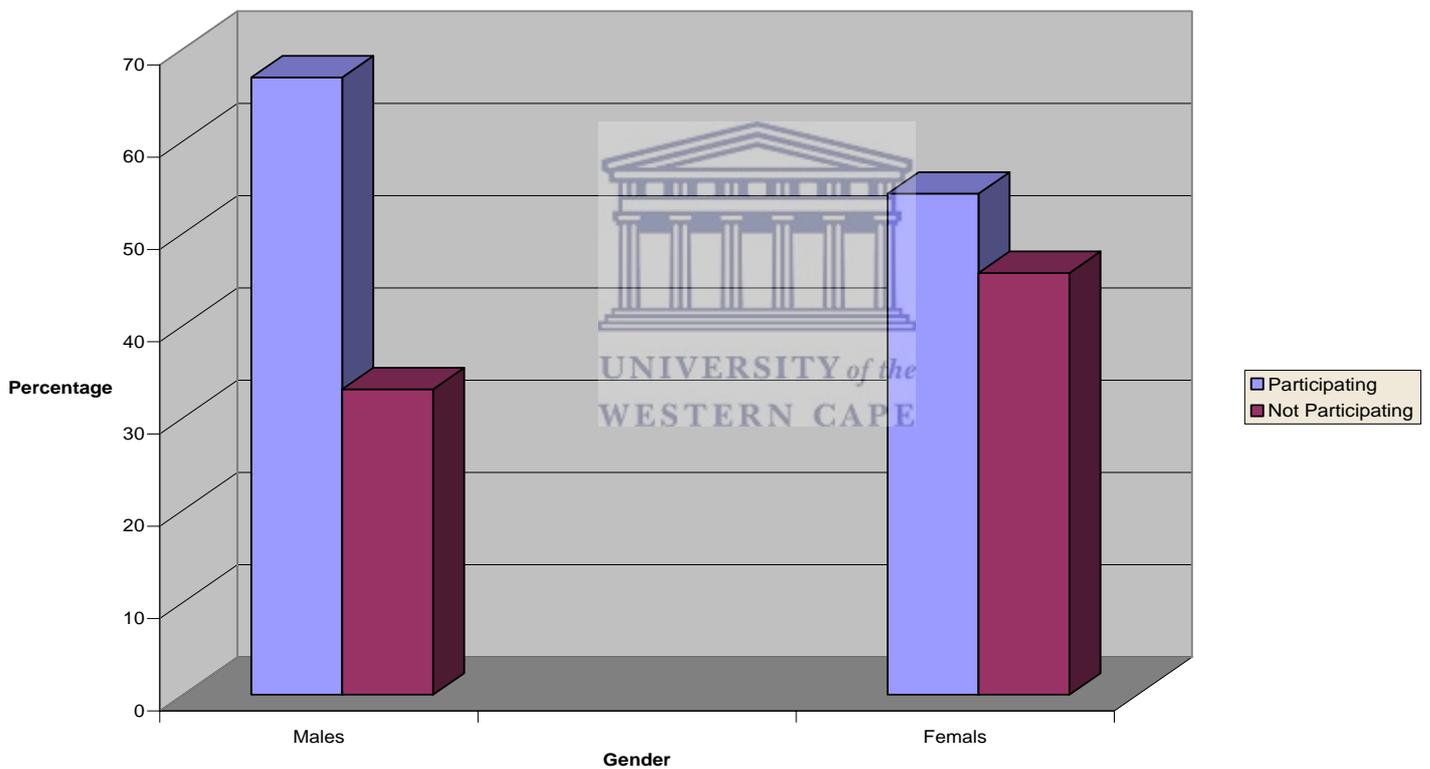


FIGURE 4.3 Gender Versus Participation in Physical Activity

4.7.2 Relationship Between Current Year of Study and Current Participation in Physical Activity

No significant difference was found between current year of study and current participation in physical activity as indicated in the figure 4.4 below.

$$\chi^2 = 0.353 \quad (p > 0.05)$$

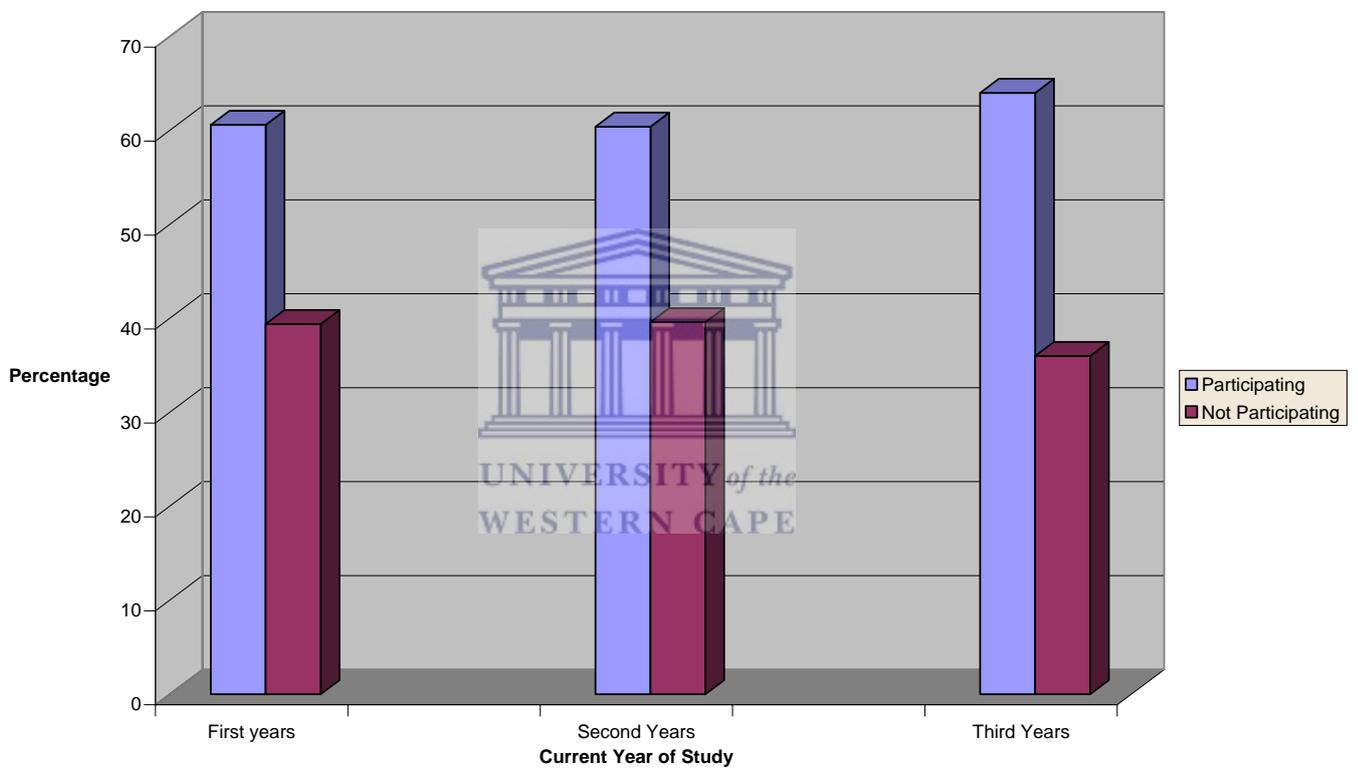


FIGURE 4.4 Current Year of Study Versus Participation in Physical Activity

4.7.3 Relationship Between Different Schools/ Departments and Current Participation in Physical Activity

Figure 4.5 below indicates that clinical officers were significantly more active while physiotherapists were classified as more sedentary. $X^2 = 14.998$ ($p < 0.05$).

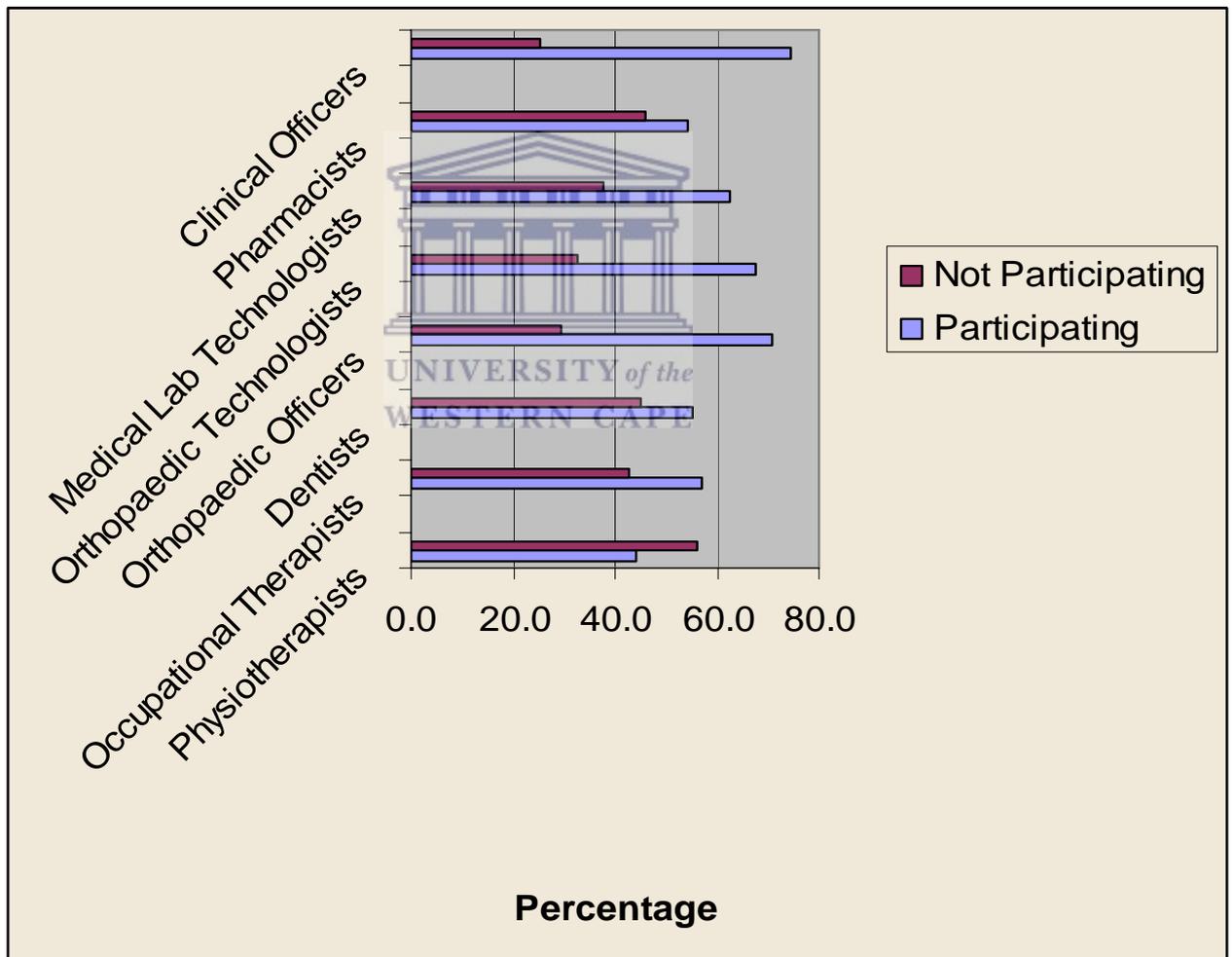


FIGURE 4.5 Schools/ Departments Versus Participation in Physical Activity

4.7.4 Relationship Between Peer/Family Motivation and Current Participation in Physical Activity

As illustrated in the table 4.5 below there was a significant relationship between peer/ family motivation and respondents' current participation to physical activity ($P < 0.05$).

Table 4.5 Relationship between peer/Family motivation and current participation in physical activity

Variable questions	Responses	Frequency	Current Participation in physical Activity	X ²	P value
<i>Do you have a friend who participates in physical activity?</i>	YES	212	Participating	14.983	< 0.05
	NO	9			
	YES	117	Not Participating		
	NO	22			
<i>Do you have a family member who participates in physical activity?</i>	YES	197	Participating	12.770	< 0.05
	NO	24			
	YES	104	Not Participating		
	NO	35			
<i>Do you have a friend encouraging you to participate in physical activity?</i>	YES	188	Participating	23.904	< 0.05
	NO	33			
	YES	87	Not Participating		
	NO	52			
<i>Do you have a family member encouraging you to participate in physical activity?</i>	YES	159	Participating	19.419	< 0.05
	NO	62			
	YES	68	Not participating		
	NO	71			

4.7.5 Relationship Between Gender and Perceived Constraints to Physical Activity

Table 4.6 illustrates the association between gender and perceived constraints to physical activity. Those that were statistically significant were:

I do not enjoy exercising $\chi^2=15.516$ ($p<0.05$), I am not interested in exercising $\chi^2=14.260$ ($p<0.05$), I do not know how to exercise $\chi^2= 9.466$ ($p<0.05$), and I do not have transport to the facility $\chi^2= 9.198$ ($p<0.05$).



TABLE 4.6 Relationships Between Gender and Perceived Constraints to Physical Activity

Variable statements	N	Mean Score	P value	Strongly Disagree %	Disagree %	Agree %	Strongly Agree %
I do not have a right equipment to Exercise	360	2.64	0.249	15.0	26.9	36.7	21.4
I do want to do other things in my free time	360	2.58	0.834	11.7	33.9	39.2	15.3
I am not motivated to Exercise	360	2.45	0.099	16.4	35.8	33.1	13.9
Exercise makes me tired	360	2.42	0.172	15.8	35.6	39.2	9.4
I do not have a good place to and exercise	360	2.38	0.589	18.6	37.2	31.7	12.5
I do not have transport to facility§	360	2.36	0.027	17.2	41.9	28.1	12.8
I do have too much homework	360	2.36	0.487	13.6	45.8	31.1	9.4
I do not have a family support	360	2.33	0.096	19.7	39.4	28.6	12.2
I do not have a good environment to exercise	360	2.33	0.111	21.4	36.9	28.6	13.1
I do not have time to exercise	360	2.13	0.387	21.1	50.8	21.7	6.4
I do not have someone to exercise with	360	2.08	0.322	24.4	49.2	20.3	6.1
I think exercise was too hard	360	1.9	0.286	28.9	55.3	12.8	3.1
I do not enjoy exercising§	360	1.88	0.001	35	47.2	12.5	5.3
I am not interested in exercising§	360	1.86	0.003	35	49.4	9.7	5.8
I do not know how to exercise§	360	1.82	0.024	38.9	45	11.7	4.4
I think exercise is not important	360	1.61	0.358	50.6	40.3	6.9	2.2

§= Observed perceptions which are statistically significant across gender.

4.7.6 Relationship Between Current Year of Study and Perceived Constrains to Physical Activity

Table 4.7 illustrates relationship between current years of the study with perceived constraints to physical activity. Significance tests using chi-square revealed no relationship between the current year of the study and perceived constraints except lack of right equipment to exercise” $\chi^2=12.340$ ($p<0.05$).



TABLE 4.7 Relationship Between Current Year of Study and Perceived Constraints to Physical Activity

Variable statements	N	Mean Score	P value	Strongly Disagree %	Disagree %	Agree %	Strongly Agree %
I do not have a right equipment to exercise§	360	2.64	0.046	15.0	26.9	36.7	21.4
I do want to do other things in my free time	360	2.58	0.796	11.7	33.9	39.2	15.3
I am not motivated to exercise	360	2.45	0.900	16.4	35.8	33.1	13.9
Exercise makes me tired	360	2.42	0.310	15.8	35.6	39.2	9.4
I do not have a good place to and exercise	360	2.38	0.202	18.6	37.2	31.7	12.5
I do not have transport to facility	360	2.36	0.315	17.2	41.9	28.1	12.8
I do have too much homework	360	2.36	0.684	13.6	45.8	31.1	9.4
I do not have a family support	360	2.33	0.352	19.7	39.4	28.6	12.2
I do not have a good environment to exercise	360	2.33	0.202	21.4	36.9	28.6	13.1
I do not have time to exercise	360	2.13	0.821	21.1	50.8	21.7	6.4
I do not have someone to exercise with	360	2.08	0.132	24.4	49.2	20.3	6.1
I think exercise is too hard	360	1.9	0.392	28.9	55.3	12.8	3.1
I do not enjoy exercising	360	1.88	0.387	35	47.2	12.5	5.3
I am not interested in exercising	360	1.86	0.588	35	49.4	9.7	5.8
I do not know how to exercise	360	1.82	0.569	38.9	45	11.7	4.4
I think exercise is not important	360	1.61	0.355	50.6	40.3	6.9	2.2

§= Observed perceptions which are statistically significant across current year of study.

4.7.7 Relationship Between Different Schools/ Departments and Perceived Constraints to Physical Activity

Table 4.8 illustrates the relationship between different schools/ departments and perceived constraints to physical activity. Significance tests using chi-square revealed the significant relationship between the different schools/ departments with the following constraints: “I do not have a good environment to exercise”

$X^2= 45.160$ ($p< 0.05$), “I do not have right equipment to exercise” $x^2= 36.711$

($p<0.05$), “I do not have transport to facility” $x^2= 35.006$ ($p<0.05$).



TABLE 4.8 Relationship Between Different Schools/Departments and Perceived Constraints to Physical Activity

Variable statements	N	Mean Score	P value	Strongly Disagree %	Disagree %	Agree %	Strongly Agree %
I do not have a right equipment to exercise§	360	2.64	0.018	15.0	26.9	36.7	21.4
I do want to do other things in my free time	360	2.58	0.284	11.7	33.9	39.2	15.3
I am not motivated to exercise	360	2.45	0.738	16.4	35.8	33.1	13.9
Exercise makes me tired	360	2.42	0.170	15.8	35.6	39.2	9.4
I do not have a good place to and exercise	360	2.38	0.200	18.6	37.2	31.7	12.5
I do not have transport to facility§	360	2.36	0.028	17.2	41.9	28.1	12.8
I do have too much homework	360	2.36	0.694	13.6	45.8	31.1	9.4
I do not have a family support	360	2.33	0.917	19.7	39.4	28.6	12.2
I do not have a good environment to exercise§	360	2.33	0.002	21.4	36.9	28.6	13.1
I do not have time to exercise	360	2.13	0.994	21.1	50.8	21.7	6.4
I do not have someone to exercise with	360	2.08	0.050	24.4	49.2	20.3	6.1
I think exercise was too hard	360	1.9	0.722	28.9	55.3	12.8	3.1
I do not enjoy exercising	360	1.88	0.206	35	47.2	12.5	5.3
I am not interested in exercising	360	1.86	0.985	35	49.4	9.7	5.8
I do not know how to exercise	360	1.82	0.408	38.9	45	11.7	4.4
I think exercise is not important	360	1.61	0.368	50.6	40.3	6.9	2.2

§= Observed perceptions which are statistically significant across different departments.

CHAPTER FIVE

DISCUSSION

5.1 INTRODUCTION

This chapter discusses the findings of the current study, and compares them with the relevant literature. Finally, the limitations and strengths of the study are highlighted.

5.2 LEVEL OF PARTICIPATION IN PHYSICAL ACTIVITY

The respondents' level of physical activity was determined according to the World Health Organization guidelines on recommended quality and quantity of physical activity. The World Health Organization and Centre for Disease Control and Prevention recommended that for an average adult engaging in at least 30 minutes of physical activity of moderate intensity everyday or most days of the week would be sufficient to gain health benefits. Moreover those 30 minutes can be accumulated throughout the day in small bouts of activity (WHO, 2005g). This level of activity can be reached through a broad range of appropriate and enjoyable physical activities including walking, leisure sports, gardening, dancing, swimming, cleaning the house, washing clothes, etc (Blair et al, 1992).

All these types of activities (leisure time, house hold, activities, walking to and from school) were assessed in the current study. Fifty nine percent (59%) of the respondents were classified as physically active and forty one percent (41%) were classified as inactive or sedentary. The results of the current study are consistent with the findings from the 1995 National College Health Risk

Behaviour Survey among undergraduate students in the United States of America, which found that 42.2% of students did not participate in physical activity during the week before the survey. However, the current findings differ from a similar study recently conducted by Tumusiime (2004), among tertiary institution students in Rwanda, which found that only 28.38% of the participants were physically active. The discrepancy between the present study and that of Tumusiime (2004) could be attributed to household activities assessed in the present study that were not included in Tumusiime's study. For example when leisure time physical activity were analysed alone such as: running, jogging, basketball, soccer, aerobic dancing, vigorous traditional dance, swimming, brisk walking, moderate gymnastic, and table tennis (these would be the activities of students who live at the institution) it was found that only 28% would be classified as physically active. This may mean that those who live at the institutions were more likely not to participate in household activities hence, they may not be active enough to meet the recommend health benefits of physical activity yet the longer period of the year is spent at school (3/4 of year period). It would thus be interesting to carry out another study in the same institutions but only involving students living at the institutions and excluding household activities to conform this hypothesis.

5.3 PARTICIPANTS' PERCEIVED CONSTRAINTS TO PHYSICAL ACTIVITY

Identifying constraints to physical activity remains an important goal in a health promotion-planning programme. It was reported that a person's perceived constraints to exercise are an important determinant of how active he or she becomes. Therefore, understanding those constraints is the first step in removing them (Jones, 2003; Nahas et al, 2003; Tai-Seale, 2003). Several studies have

identified constraints to physical activity as lack of time, inconvenience, lack of self- motivation, the belief that exercise is boring or not enjoyable, low self efficacy, fear of injuries poor self- management skills, lack of social support and insufficient access to safe places to exercise and lack of right equipment (Tumusiime, 2004; Tappe et al, 2003; Tai-Seale, 2003; WHO, 2002; Tappe and Tergerson, 2002; and King et al, 1992). However, it should be noted that these factors may differ from one research setting to another (Sallis et al, 1997). Constraints to physical activity among paramedical institution students in Uganda were slightly different from those in the studies conducted in United States of America and some European countries. However, these constraints were similar to those recently identified by tertiary institutions in Rwanda (Tumusiime, 2004). This support Sallis' argument that constraints to physical activity may be similar or different depending on research settings. In the current study, student participants identified lack of right equipment to exercise and wanting to do other things in their free time as the most important constraints to physical activity. Tertiary institutions students in Rwanda recently identified the same constraints (Tumusiime, 2004).

Constraints to physical activity identified in the current study show the need for a health promotion programme among paramedical students in Uganda. Jones (2003) reported that understanding constraints to physical activity is a first step in removing them. Therefore, it is very important for health promoters interested in promoting physical activity among paramedical institution students in Uganda to convince students that it is not necessary to practice vigorous sports, join costly fitness clubs, or purchase special equipment to achieve health benefits. Students should be helped to understand that there are a variety of physical activities that do

not need special equipments. For example if one does not have special shoes for football or basketball he or she can still engage in other activities like fast walking, running, gardening cleaning the house and playing table tennis as these activities do not really need special equipments.

The constraints least likely to be identified by student participants were “I think exercise is not important”, “I do not know how to exercise”, and “I am not interested in exercising”. There was significant relationship between gender and above constraints meaning that both male and female participants felt that not knowing how to exercise and lack of interest in exercising were not the constraints to physical activity. This gives hope that student participants know the importance of physical activity/exercise, knows how to exercise and interested in staying physically active. However, wanting to do other things in their free time was identified to be the second important constraint to physical activity. This could have been the reason why some of them were not participating in physical activity. Nigg and Buckworth (2004) commented that, *“Although college students have specific time constraints related to their academic schedules, they also have considerable discretionary time. It is the choices they make about how to spend this time which influences their level of physical activity and various factors influence these choices”*. In the current study, time was not a constraint to physical activity, but the choices made by participants on how to spend their free time must have influenced their level of physical activity.

5.4 INFLUENCE OF SOCIO-DEMOGRAPHIC CHARACTERISTICS ON PARTICIPATION IN PHYSICAL ACTIVITY AND PERCEIVED CONSTRAINTS TO PHYSICAL ACTIVITY

An understanding of factors that influence physical activity behaviours is necessary for health promoters and behavioural specialists interested in influencing sedentary population groups to become more physically active (Bauman et al, 2002). Demographic characteristics along with other factors are important determinants of physical activity. Thus, the identification of these determinants should be the first step taken in the promotion of physical activity behaviour (Nahas et al, 2003).

5.4.1 Influence of Gender on Participation in Physical Activity and Perceived Constraints to Physical Activity

Gender difference on levels of participation in physical activity and perceived constraints to physical activity has been extensively discussed. According to the literature, males are generally more active than females (Bronson, Backer, Houseman, Brennan and Back 2001). The difference observed between males and females' levels of physical activity are likely because of each gender group's perceptions of the reasons for participation in physical activity (Huddleston, Mertesdorf and Araki, 2002). Taiwanese adolescent girls reported lower physical activity, less perceived benefits and more perceived constraints to physical activity yet they had more peer and social support compare to their male counterparts (Tsu-Yin, Nola and Samar, 2003). Similarly, the current study found that male participants were significantly more active compare to female participants. However, female participants in this study reported lack of peer/family support (motivation) that could have contributed to their state of inactivity.

While males identified lack of right equipment as their most likely constraint to physical activity, females put an emphasis on lack of motivation as their most likely constraint to physical activity. Tergerson and King (2002) found that peer motivation especially from friends and family members were one of the most common cues to action for adolescent physical activity. Similarly, the present study highlighted a significant relationship between peer/family motivation and the sample's current participation to physical activity. However, lack or little motivation identified by female participants might have been the reason why they were found to be more sedentary compare to their male counter parts.

The second most likely constraint identified by female participants was that exercises make them tired. It is documented in the literature that, usually males report greater levels of total and vigorous activity, whereas females tend to report participating in low- to moderate physical activity (Martin, Morrow, Jackson, Dunn and Andrea, 2000). The above statement may indicate the reason why female participants identified “exercise makes me tired” as one of the likely constraints to physical activity.

According to Whaley and Ebbeck (1997), constraints to physical activity should be viewed in a social-psychological manner to indicate internal (intrapersonal) psychological states and external (interpersonal) circumstances. Consequently, lack of motivation, and tiredness while exercising identified as dominant constraints to physical activity among female participants in this study may be intrapersonal rather than interpersonal factors. These may suggest that the major constraints to physical activity among female participants may be within individual rather than in

the environment or as a result of external factors. Therefore, it is very important for health promoters interested to promote physical activity among paramedical institution female students to put more emphasis on individual change of behaviour before tackling environmental factors as constraints to physical activity.

Various studies identified wanting to do other things with one's free time as constraint to physical activity/exercise (Tumusiime 2004;Tergerson and King 2002). Similarly, the current study particularly male participants identified wanting to do other thing in their free time as one of their main constraints to participation in physical activity. This indicates that there is a need for health promoters to convince students about the benefits of being physically active and design physical activity basing on students' interests rather than health promoters' interests. This may help them to make choices on how to spend their free time in helpful activities such as physical activity.



5.4.2 Influence of Current Year of the Study on Participation in Physical Activity and Perceived Constraints to Physical Activity

Although the current study found that third year students were more active compared to first and second year students, there was no significant relationship between current year of the study and current participation in physical activity. Therefore, this study regards the influence of current year of study on current participation in physical activity as not being significant. However, lack of right equipment was significantly identified as the main constraint to all different years of study (first, second and third years). The findings in the current study are contrary to those in the previous study by Tumusiime (2004) which found that third

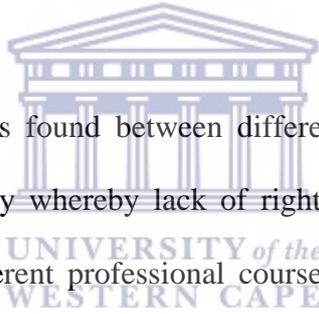
year tertiary institution students in Rwanda were more likely to be identified as physically inactive or sedentary compare to their first and second year counterparts.

5.4.3 Influence of Professional Study Course on Participation in Physical Activity and Perceived Constraints to Physical Activity

According to Huddleston et al (2002), the professional study course can influence the behaviour of individuals towards physical activity. In their study that investigated physical activity behaviour among pre-professional students majoring in different courses such as physical education, health professional courses and leisure services, they found that students majoring in physical education reported significantly higher exercise intensity than did health pre-professional students. The current study composed of only health professional courses but majoring in 8 different fields (Clinical Officers, Physiotherapy, Medical Laboratory Technology, Orthopaedic Officers, Orthopaedic Technology, Dentistry, Pharmacy and Occupational Therapy). Students who were majoring in Clinical Officers as a professional course were significantly more active compare to other professional courses and students who were majoring in physiotherapy as a professional course were found more sedentary.

Normally, physiotherapists are supposed to be experts in prescribing appropriate and safe exercises for persons who require specific fitness and injury prevention advice (Wilson, 2002). This means that the role of a physiotherapist in health promotion should be to work with individuals, groups, and whole population to promote healthy lifestyle such as physical activity in schools, factories and

community facilities. However, one needs to be active him- or herself in order to promote an active life style for others. If Physiotherapy students are found to be living sedentary lifestyle then it gives little hope that they would promote physical activity once they leave school and enter the field of work. The above statements are supported by Mc Dowell et al (1997) who found that nurses who engaged in regular exercise were more likely to encourage physical activity as treatment compared with nurses who were not regular exercisers. It is thus, very important for health promoters to encourage health professional students especially physiotherapists to adopt active lifestyle of their own first in order to be able to encourage active lifestyle for others.



A significant relationship was found between different professional courses and constraints to physical activity whereby lack of right equipment to exercise was equally identified by all different professional courses as one of the most likely constraints to physical activity. Therefore, as it was discussed earlier in this chapter, it is very important for health promoters to convince students that one does really not need special equipment in order to engage in physical activity/ exercise for health benefits. It is also important for school authorities to provide students with necessary sport facilities such as sports uniforms all depending on student interest and choices of physical activity/ exercise. This would minimize the impact of lack of right equipment to exercise as constraint to physical activity /exercise.

5.5 LIMITATIONS AND STRENGTHS OF THE STUDY

The limitations of this study should be noted:

Most of paramedical schools are situated in Kampala (the capital city of Uganda). Consequently, the majority of student participants were studying in the city. The constraints to physical activity among students in the urban areas may differ from those in rural areas. Therefore, the results of this study cannot be generalised to all paramedical institution students in Uganda.

The questionnaire assessed the household activities such as: (digging, chopping woods, carrying water, cleaning the house, gardening, sweeping the pavement etc). Most students were likely to report participation in one or two if not all of above-mentioned activities while they are at home. However, most of the students were living at the institution residences. This may mean that students were most likely to report participation in these activities while at home (during school holidays) yet, the school holidays count for only one fourth of the year period (3 months in year). Therefore, this might have caused bias in assessing the level of participation in physical activity as it was the first objective of this study.

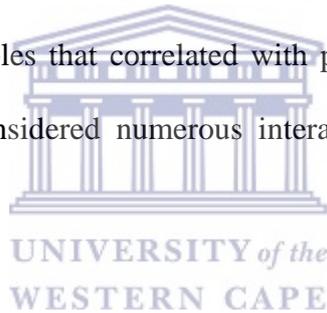
A cross-sectional study may limit the ability to make causal inferences. An individual currently engaging in a form of risk-taking behaviour will not necessarily continue to do so. Therefore, caution should be exercised in interpreting the results of cross-sectional study in the absence of longitudinal data.

Despite limitations, some strengths of the study should also be noted:

The questionnaire used was adapted from ones in the literature that were developed and validated to measure the level of participation in physical activity and perceptions to physical activities. Furthermore, a pilot study was done prior to the main study to test the clarity and understanding of the questionnaire. Therefore, the questionnaire was valid to measure the level of participation in physical activity and perceived constraints to physical activity.

The sample was randomly selected using a stratified random sampling technique.

The response rate was high- meaning that the response bias was unlikely, the questionnaire included variables that correlated with physical activity in previous studies, and the analysis considered numerous interactive relationships between variables.



Comparisons and contrasts of the current study's findings with the previous similar studies are illustrated in the chapter five of this study, and finally, the limitations and strengths of the study are highlighted.

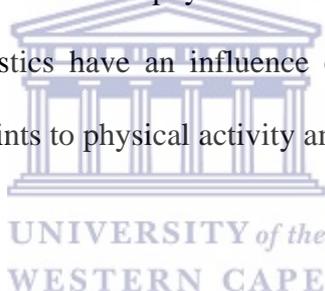
CHAPTER 6: SUMMARY AND RECOMENDATIONS

6.1 INTRODUCTION

This final chapter provides the summary of the study. The relevant points of the study are outlined. Recommendations for future actions including the developments of physical activity promotion programmes are made.

6.2 SUMMARY

The overall aim of the current study was to assess the level of physical activity, to investigate the perceived constraints to physical activity and determine whether socio-demographic characteristics have an influence on participation in physical activity and perceived constraints to physical activity among paramedical institution students in Uganda.



The motivation was that according to the literature, regular moderate to vigorous physical activity can provide young people with important physical, mental and social benefits. It can reduce health care costs, prevents numerous diseases, disabilities and improve quality of life. Unfortunately, the evidence also exists that few individuals engage in regular physical activity despite its documented benefits. It has also been documented that those who engage in physical activity, the level of participation tend to decline with age particularly during high school, the transition period from high school to university and during university years. Therefore,

it was not known to what extent paramedical institution students in Uganda engage in physical activity/ exercise and what could their perceptions be on constraints to physical activity/ exercise.

The study was a descriptive quantitative design with a cross-sectional survey. An inclusion criterion was both male and female students registered for full time 2004/2005 academic year who accepted to participate voluntarily. Four hundred (400) students were selected using a stratified random sampling technique. A self-administered closed-ended questionnaire was used to collect the data. Both descriptive and inferential statistical analyses were used to analyse the data.

Fifty nine percent (59%) of participants were classified as physically active and forty one percent (41%) were classified as physically inactive or sedentary. Among the students who were currently participating in physical activity, the majority of them (33.1%) had initiated physical activity at the tertiary level, 17.2% had initiated physical activity in primary school and were able to maintain up to tertiary level. The total of 2.8% had not participated in physical activity on any educational level.

Male participants were found to be significantly more active and females were found to be more sedentary. Students majoring in clinical officers as a professional course were significantly more active while students majoring in physiotherapy as a professional course were found to be more sedentary compared to students majoring in other professional courses. However, no significant difference was found between current year of study and current participation in physical activity.

The four most likely constraints to physical activity identified by student participants were: lack of right equipment to exercise, wanting to do other things in one's free time, lack of motivation and tiredness while exercising.

The four least likely constraints identified with the participants were: "I think exercise is not important", "I do not know how to exercise", "I do not enjoy exercising "and" I think exercise is too hard".

While males identified lack of right equipment to exercise and wanting to do other things in their free time as the two top constraints to physical activity, females put emphasis on lack of motivation and tiredness while exercising as the two top constraints to physical activity.



UNIVERSITY of the
WESTERN CAPE

Although female participants identified lack or little motivation as a constraint to physical activity, there was a significant relationship between peer/family motivation and the entire sample's current participation in physical activity.

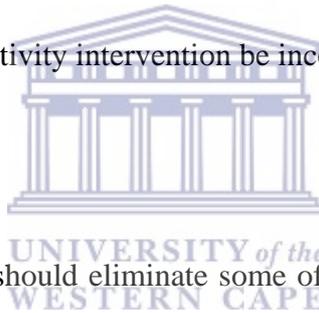
All different professional courses and all different current years of study felt that lack of a right equipment to exercise was the top constraint to physical activity.

Both male and female participants strongly felt that lack of enjoyment during exercise, lack of interest in exercising and not knowing how to exercise were not constraints to physical activity/exercise.

6.3 RECOMMENDATIONS

The following recommendations are offered to paramedical institution authorities, parents, and ministry of health, education, and sports together with other health promoters interested in increasing physical activity levels among paramedical institution students.

1. Paramedical institutions appear to be one of the rational places for physical activity promotion. If health pre-professional students who will soon be leaving school and entering the field of work are helped to become physically active they can easily influence their clients to become more physically active. It is therefore, recommended that physical activity intervention be incorporated as health education in paramedical institutions.



2. The institution authorities should eliminate some of the perceived constraints to physical activity such as providing sport uniforms in order to encourage students to participate in different sport activities. This would eliminate lack of right equipment as a constraint to physical activity.

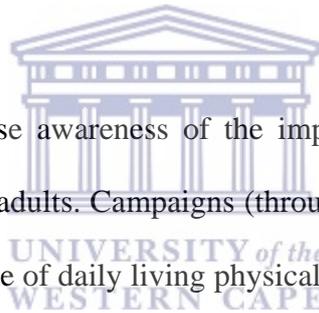
3. Through a health promotion programme, students should be educated on how to make use of their free time in a healthy way by encouraging physical activity participation during this time. This would eliminate wanting to do other things in their free time as a constraint to physical activity.

4. In order to increase physical activity participation depending on gender differences, strategies which focus on activities that help each gender to overcome their constraints to physical activity should be developed.

5. Health promotion programmes particularly using physical activity should be developed and implemented in schools right from primary schools. This would help learners and their teachers to know more about the health benefits of physical activity. Knowing the benefits will minimize the constraints to physical activity and encourage an active lifestyle. Consequently, this will reduce the burden of chronic diseases caused by sedentary lifestyle.

6. It is also important to raise awareness of the importance of physical activity among other Ugandan young adults. Campaigns (through media) about leisure time physical activity and other type of daily living physical activity such as walking and household activity would be valuable.

7. Social support especially family support should be given more emphasis while aiming at promoting lifelong physical activity. Parents should play an important role in encouraging their children particularly girls to become more physically active because physical activity behaviour started at early childhood can carry on through youth and adulthood.



Further studies

8. Levels of participation and perceived constraints to physical activity of students studying in urban areas may differ from those of students studying in rural areas. As the majority of the students in the current study were studying in Kampala (an urban area), more studies involving a bigger number of students in rural areas are required to obtain adequate information about Ugandan paramedical students' level of participation and their perceived constraints to physical activity.

9. Participation and constraints to physical activity of paramedical students may also differ from those of other tertiary institutions and other Ugandan young adults in general. Therefore, more studies are required among these groups to obtain their level of participation and constraints to physical activity.

10. A triangulation study (A combination of quantitative and qualitative) could be best to obtain deeper understanding of participants' constraints to physical activity.

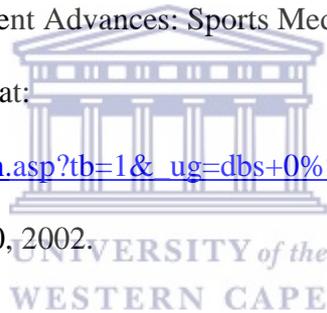
11. The present study assessed household activities students did while at home. As the majority of the students were living at the institutions, it may mean that those who were living at the institutions were likely to report participation in household activity during school holidays, yet this is the shortest period of the academic year (3 months in year). This may have caused some bias in assessing the level of participation in physical activity. Therefore, another study involving only students living at the institutions and which excludes household activities is recommended to obtain the adequate information about students' level of participation in physical activity.

REFERENCES

Australian Physiotherapy Association (2002). Physiotherapy and Exercise prescription. Available at: <http://www.physiotherapyandexerciseprescription.html>. Accessed on May 7th 2005.

Ball K, Owen N, Salmon J, Bauman A and Gore CJ (2001). Association of physical Activity and body Weight, Fat in Men and Women. *International Journal of Obesity*. 25: 914-919.

Bahr and Loald, (2001). Recent Advances: Sports Medicine. *British Medical Journal*. 323: 7308. Available at: <http://web4.epnet.com/citation.asp?tb=1& ug=dbs+0%2c2+ln+en%2Dus+sid+52C ECA>. Accessed on October 10, 2002.



Bailey S (2001). Physical activity and Ageing. *Multidisciplinary series of physical education and sports science*. 2: 18.

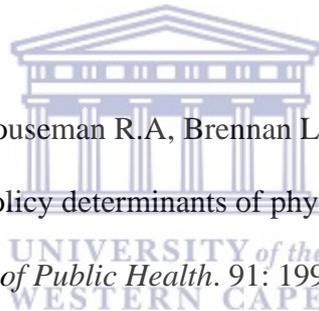
Barry P.H, Virginia B, Andy G and Clay B (2001). Weight loss 101: A healthy Weight loss program for collage students. *American Journal of health studies*. 17: 26-31

Bauman A.L, Marshall M, Mohsin V and Westley- Wise B.L.M (2002). Perception on physical environment, stage of change for physical activity, and walking among Australian adults. *Research Quarterly for exercise and sport*. 73: 146-156.

Blair S.N, Kohl H.W and Gordon N.F (1992). How much Physical Activity is good for Health? *Annual Reviews for Public Health*. 13: 99-126.

Bray R. S and Heidi A.B (2004). Transition to University and Vigorous Physical Activity: Implication for Health and Psychological Well-Being. *Journal of American College Health*. 52: 182-187.

Brownson R.C, Baker E.A, Houseman R.A, Brennan L.K and Bacak S.J (2001). Environmental and policy determinants of physical activity in the United States. *The American Journal of Public Health*. 91: 1995-2003.



Buckworth J, Nigg C (2004). Physical activity, Exercise, and Sedentary Behaviour in College students. *Journal of American college Health*. 53: 28-34.

Centre for Disease control and Prevention (2002). Get students thinking about how Physical activity fits into their lives. *Curriculum Review*. 42: 9-11.

Coulson N, Goldstein, Ntuli A (2002). Promoting health in South Africa. An action Manual. Heinemann Higher and Further Education (pty) Ltd, Cape Town South Africa. 9.

Department of Caring science, Orebo University, Orebo, Sweden (2000).

Adherence to Healthy Physical Activity: A comparison of occupational therapy students with nurses and physiotherapy students. *Scandinavian Journal of Occupational Therapy*.7: 156-164.

De Vos A.S (2001). Research at Grass Roots: A Premier for the Caring Professionals 3rd Edition, 197.

Dowda M, Addy L.C, Ainsworth E.B, Sounders R, Riner W (2003). Correlates of Physical activity Among U.S Young Adults, 18 to 30 years of age, from NHANESIII. *Annals of Behavioural medicine* 26: 15-23.

Duncan S.C, Duncan T.C and Strycker A.L (2005). Sources and Types of Social Support in Youth Physical Activity. *Health Psychology Journal*. 24: 3-10.

Fletcher G.F, Balady G, Blair N.S, Blumententhal J, Caspersen C, Chaitman B, Epstein S, Froelicher S.S.E, Froelicher F.V, Pina L.I and Pollock L.M (1996). A statement for health professionals by the committee on exercise and cardiac rehabilitation of the council on clinical cardiology. American Heart association. *Circulation* 94: 857-862.

Ewa M and Marika M.B (2003). Role of physical activity in health promotion and (Individual) sustainable development. *International Journal of Sustainable development and world ecology*. 10: 221-225.

Glanz K (1998). Theory at glance: A guide to health promotion practice. Available at: <http://www.in.nih.gov>. Accessed on August 12, 2004.

Grubbs L and Carter J (2002). The relationship of perceived benefits and barriers to reported exercise behaviour in collage undergraduates: *Family and Community Health*, 25: 76-85.

Hage C, Mattsson E and Stahle A (2003). Long-term effects of exercise training on physical activity level and quality of life in elderly coronary patients. *Physiotherapy Research International*. 8: 13-22.

Healthy People 2010. Physical activity and Fitness. Available at: <http://www.healthpeople.gov/document/HTML/volume2/22physical.htm>. Accessed on July 26, 2004



Higgs J, Refshauge K, Ellis E (2001). Portrait of the Physiotherapy Profession. *Journal of Interprofessional Care* 15:80-88.

Hornby A.S (2000). *Oxford advanced learner's Dictionary*. 6th Ed, Oxford University press, UK.

Huddleston S, Mertesdorf J and Araki K (2002). Physical Activity Behaviour and Attitudes toward Involvement among Physical Education, health and leisure services pre-professionals. *College student Journal* 36: 555-573.

Jennifer C.P (2000). Mental health benefits of Exercise. Available at:

<http://www.therapistfinder.net/journal/health-fitness>. Accessed on April 28th 2005.

Jones, Martin, O'beney and Caro (2004). Promoting mental health through Physical Activity: Examples from practice. *Journal of mental health promotion*. Available at:

http://www.findarticles.com/p/articles/mi_qa4122/is_2004o3/ai_n9465303.

Accessed on April 28th 2005.

Jones K. W (2003). Understanding barriers to physical activity is a first step to removing them. *American Journal of Preventive Medicines*. 25: 2-4.

Kagwiza J.N (2003). Health risk behaviour among adult women in Kigali Rwanda. Unpublished theses. University of the Western Cape.



Kaplan M.R (2000). Two Pathways to Prevention. *American psychologist*. 55: 382-396.

Karch R, Kirsten W, O'Donnell P.M (2000). A case for physical activity in health promotion. Available at:

<File://A:/Bob%20karch%20physical%20activity%20health%20promotion.htm>.

Accessed on April 11, 2003.

King A.C, Blair S.A, Bild D.E, Dishman R.K, Dubbert P.M, Marcus B.H, Oldridge N.B and Paffenbarger R.S (1992). Determinants of physical activity and interventions in adults. *Medicine and science in Sports and Exercise*. 24: 222-232

Konstantinos A, Vasilis B, Haralambos T and Grouios G (2003). A study of perceived constraints on community-based physical activity program for the elderly in Greece. *Journal of Ageing and Physical activity*. 11: 305- 318.

Markus V. N, Goldfine B and Collins M. A (2003). Determinants of physical activity in adolescents and young adults: The Basis for High school and college physical education to promote active lifestyles. *Physical Educator; Late Winter* 23: 42.

Martin S.B, Morrow J.R, Jackson A.W, Dunn and Andrea L (2000). Variables related to meeting the CDC/ACSM physical activity guidelines. *Medicine and Science in Sports Exercise*. 32: 2087-2092.

Mc Dowell N, Mc Kenna J, Naylor P.J (1997). Factors that Influence Practice Nurses to Promote Physical Activity. *British journal of Sports Medicine* 31: 308-313.

Michael P.S (1998). University Students' motivation for Participation in a Basic Instructions Program. *College students Journal*. 32: 58.

Mouton E.B.J (2001). *The Practice of Social Research* 1st Edition pp 232

Nahas M, Goldfine, B and Mitchell A (2003). Determinants of physical activity in adolescents and young adults: The basis for school and college physical education to promote active lifestyle. *Physical educator*. 60: 42-57.

Pender N. L, Sallis J. F, Long B J and Calfas K. J (1994). Health care provider counselling to promote physical activity. IN.R. Dishman (Ed). *Advances in exercise adherence* 213-235.

Pollock M.L, Gaesser G.A, Butcher J.D, Despres J.P, Dishman R.D, Franklin B.A and Garber C.E (1998). The recommended quantity and quality of exercise for developing cardio respiratory and muscular fitness, and flexibility in healthy adults. *Medicine and science in sports and Exercise*. 30: 975-991.

Raphael D, Steinmetz B, Renwick R, Rootman I, Brown I, Sehdev H, Phillips S and Simith T (1999). The community Quality of life project: A health promotion approach to understanding communities. *Health promotion international*. 14: 197-209.



Rovniak S.L, Angerson S.E, Winett A.R (2002). Social Cognitive of Physical Activity in Young Adults: A Prospective Structural Equation Analysis. *Annals of Behaviour Medicine* 24: 149-156.

Sale C, Guppy A and Sayed E.M (2000). Individual differences, exercise and leisure activity in predicting affective well-being in young adults. *Ergonomics* 43:1689-1697.

Sallis F.J, Marilyn F.J, Karen J.C, Caparosa S, Jeanne F (1997). Assessing physical environmental variables that may influence physical activity. *Research Quarterly for Exercise and sport*.68: 345-347.

Sallis F.J, Karen J.C, Nichols F.J, Sarkin A.J, Johnson F.M, Caparosa S, Thompson S and Alcaraz E.J (1999). Evaluation of a university course to promote physical activity: Project GRAD. *Research Quarterly for Exercise and sport*. 70: 1-10.

Savage S and Michael P (1998). University students' motivation for participation in a basic instruction program. *Collage student Journal*. 32: 58-66.

Sobngwi E, Mbanya J.C.N, Unwin N.C, Aspray T.J, Alberti K (2001).

Development and validation of a questionnaire for the assessment of physical activity in epidemiological studies in sub-Saharan Africa. *International epidemiological association*. 30: 1361-1368.

Sobngwi E, Mbaya J.C.N, Unwin N.C, Kengne A.P, Fezeu L, Minkoulou E and Aspray T.J (2002). Physical activity and its Relationship with Obesity, Hypertension, and Diabetes in Urban and Rural Cameroon. *International Journal of Obesity*. 26: 1009-1016.

Suminski R.R, Petosa, Utter C.A and Zhang J.J (2002). Physical Activity among Ethnically Diverse College students. *Journal of American College Health* 51: 4.

Summerfield (2000). Promoting Physical activity and Exercise among Children. Available, <http://www.kidsource.com/kidsource/content4/promote.physed.html>.

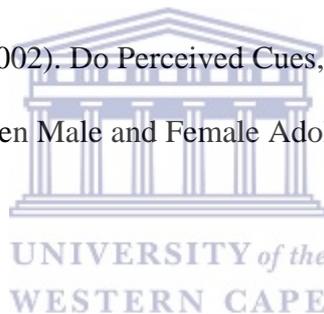
Accessed on August 5, 2004.

Tai-Seale T (2003). Stage of change Specific Triggers and Barriers to Moderate Physical activity. *American journal of Health Behaviour*. 27: 219-227.

Tappe K.M, Duda L.J and Ehrnwald M.P (1989). Perceived Barriers to Exercise among Adolescents. *Journal of School health*. 59: 153-155.

Telama R, Yang X, Leino M and Viikari J (1999). Factors explaining the physical Activity of Young Adults: The importance of early Socialisation. *Scandinavian Journal of medicine science and Sports*. 9: 120-127.

Tergerson J and King K. A (2002). Do Perceived Cues, Benefits, and Barriers to Physical Activity differ between Male and Female Adolescents? *Journal of School Health* 72: 374-377.



The General surgeon report (1996). Physical activity and Health at A- Glance. Available at: http://www.penpages.psu.edu/penpages_refernce/12101/12101281-html. Accessed on April 30th 2005.

Thomas L (1997). *Taber's Cyclopaedic Medical Dictionary* .18th Ed, 1408.

Torun B, Stein D.A, Schroeder D, Grajeda R, Conlisk A, Rodriguez M, Mendez H and Martorell R (2002). Rural- to- urban migration and Cardiovascular Disease Risk Factors in Young Guatemalan Adults. *International Journal of Epidemiology*. 31: 218- 226.

Tsu-Yin W, Nola N and Samer N (2003). Gender difference in the psychosocial and cognitive correlates of physical activity among Taiwanese adolescents: A structural equation modelling approach. *International journal of behavioural medicine*. 10: 93-105.

Tumusiime D.K (2004). Perceived benefits of, barriers and helpful cues to physical activity among tertiary institutions in Rwanda. Unpublished theses. University of the Western Cape.

Twa-Twa (2003). Global School- based Health survey Uganda Rural. Ministry of Health, Kampala, Uganda. Available at:

http://www.who.int/school_youth_health/media/en/gshs_national.pdf. Accessed on August 10, 2004.



U.S Department of Health and Human Services (2002). Physical activity fundamental to preventing disease Available at:

<http://aspe.hhs.gov/health/reports/physicalactivity/physicalactivity.pdf>. Accessed on April 30th 2005.

Vilhjalmsson and Thorlindsson (1998). Factors related to physical activity: A study of Adolescents. *Social Science Medicine* 47: 665-675.

Valois F.R, Zulling J. k, Huebner E.S and Drane J.W (2004). Physical activity Behaviour and Perceived life Satisfaction among Public High School Adolescents. *Journal of School Health*. 74:59-65.

Whaley D.E. and Ebbeck V. (1997). Older adults constraints to participation in structured Exercise classes. *Journal of Ageing and Physical Activity*. 5: 190-212.

WHO, (2002). World Health Day 2002: Physical Activity and Youth. Available at: <http://www.who.int/archives/world-health-day/factsheets2.en.shtml>. Accessed on August 10, 2004.

WHO, (2003a). Sedentary lifestyle: A Global Public Problem: physical Activity, Non-Communicable Disease Prevention and Health Promotion. Available at: <http://www.who.int/hpr/physactiv/sedentary.lifestyle1.shtml>. Accessed on April 24, 2003.

WHO, (2003b). Economic benefits of physical activity: Non-communicable disease prevention and health promotion. Available at: <http://www.who.int/hpr/physactiv/economic.benefits.shtml>. Accessed on 9th, July 2004.

WHO, (2004). Physical inactivity a leading cause of disease and disability, Worn who. Available at: <http://www.who.int/mediacentre/releases/release23/en/>. Accessed on August 7, 2004.

WHO, (2005a). Why Move for Health. Available at: <http://www.who.int/moveforhealth/introduction/en/index.html>. Accessed on May 6th 2005.



WHO, (2005b). Sedentary lifestyle: A global Public Health Problem. Available at:
http://www.who.int/moveforhealth/advocacyinformation_sheets/sedentary/en/index.html . Accessed on May 6th 2005.

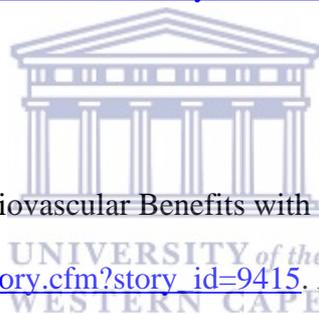
WHO, (2005c). Policy Related to Physical Activity. Available at:
http://www.who.int/moveforhealth/advocacyinformation_sheets/policy/en/index.html . Accessed on May 6th 2005.

WHO, (2005d). World health day. Move for Health. Available at:
http://www.who.int/docstore/world-health-day/2002/fact_sheets5.en.shtml.
Accessed on May 9th 2005.

WHO, (2005e). Maintain cardiovascular Benefits with few Miles. Available at:
http://www.who.active.com/story.cfm?story_id=9415. Accessed on May 9th 2005.

WHO, (2005f). Benefits of Sports and Recreation. Available at:
<http://www.development.tas.gov.au/sportrec/participationbenefits.htm> . Accessed
on May 11th 2005.

WHO, (2005g). Walk away from Heart Disease, Diabetes and Cancer. Available at:
http://www.patf.dpc.wa.gov.au/publications/fact_sheets_2002.pdf. Accessed on
May 11th 2005.



WHO, (2005h). Physical activity: How much is needed? Available at:

<http://www.paho.org/english/HPP/HPN/whd2002-factsheet2.pdf>. Accessed on May 5th 2005.

Wilson M (2002). Obesity and Diabetes: The new Epidemics. *Physical Therapy*.

82: S10-11

Yannakoulia M, Keramopoulos A and Leda Matalas A (2004). Bone Mineral

Density in Young Active Females. The Case of Dancers. *International journal of sports Nutrition and Exercise Metabolism*. 14: 285-297



The Director,
Paramedical training
Schools
Box 34025

Appendix A

December, 8th 2004.

Dear Madam/Sir,

RE: Request to Conduct a Research Study in Paramedical Training Schools, Uganda.

My name is Eugene Nizeyimana, I am currently doing a masters degree program in Physiotherapy at the University of the Western Cape in South Africa.

I am expected to carry out a research project as a partial fulfilment of the requirements for master science (MSC) degree in Physiotherapy.

The title of my research is: *“Perceived Constraints to Physical Activity/Exercise Among Paramedical Institutions Students in Uganda”*

I kindly request permission to carry out this research study based in your institutions. It is hoped that the results of the study would be helpful in developing physical activity promotion among paramedical students and young adult Ugandans by paramedical institutions together with Ministry of Education, Health and Sports.

The participation in this study will be anonymous and voluntary, the information gathered will be treated with confidentiality and the feedback of the results will be provided to stakeholders.

Looking forward to your assistance,

Yours Faithfully

Eugene Nizeyimana.

Dr. Julie Phillips

Thesis Supervisor.

Appendix B

The Registrar
Mulago Paramedical Training schools

December, 8th 2004

Dear Madam/Sir,

RE: Request to Conduct a Research Study in Paramedical Training Schools, Uganda.

My name is Eugene Nizeyimana, I am currently doing a masters degree program in Physiotherapy at the University of the Western Cape in South Africa.

I am expected to carry out a research project as a partial fulfilment of the requirements for master science (MSC) degree in Physiotherapy.

The title of my research is: *“Perceived Constraints to Physical Activity/Exercise among Paramedical Institutions Students in Uganda”*

I kindly request permission to carry out this research study based in your Schools. It is hoped that the results of the study would be helpful in developing physical activity promotion among paramedical students and young adult Ugandans by paramedical institutions together with Ministry of Education, Health and Sports.

The participation in this study will be anonymous and voluntary, the information gathered will be treated with confidentiality and the feedback of the results will be provided to stakeholders.

Looking forward to your assistance,

Yours Faithfully
Eugene Nizeyimana.

Dr. Julie Phillips
Thesis Supervisor.

Appendix C

The principal
School of Mbale Clinical Officers

December, 8th 2004

Dear Madam/Sir,

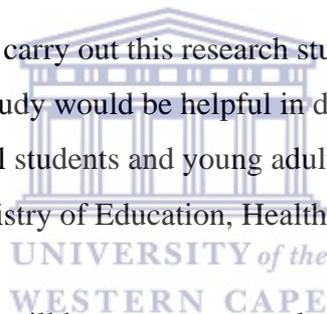
RE: Request to Conduct a Research Study in Mbale School of Clinical Officers.

My name is Eugene Nizeyimana, I am currently doing a masters degree program in Physiotherapy at the University of the Western Cape in South Africa.

I am expected to carry out a research project as a partial fulfilment of the requirements for master science (MSC) degree in Physiotherapy.

The title of my research is: *“Perceived Constraints to Physical Activity/Exercise Among Paramedical Institutions Students in Uganda”*

I kindly request permission to carry out this research study based in your school. It is hoped that the results of the study would be helpful in developing physical activity promotion among paramedical students and young adult Ugandans by paramedical institutions together with Ministry of Education, Health and Sports.



The participation in this study will be anonymous and voluntary, the information gathered will be treated with confidentiality and the feedback of the results will be provided to stakeholders.

Looking forward to your assistance,

Yours Faithfully
Eugene Nizeyimana.

Dr. Julie Phillips
Thesis Supervisor.

Dear student,

My name is Eugene Nizeyimana a post graduate student enrolled in physiotherapy masters program at the University of the Western Cape (UWC) in South Africa. I am conducting a research survey as part of the requirements for master's degree in physiotherapy. The title of my study is "*perceived constraints to physical activity among paramedical institution students in Uganda*".

Physical activity means any bodily movement produced by skeletal muscles that results in energy expenditure and is positively correlated with physical fitness,

(Examples of physical activity include: fast walking, jogging, house work, gym/aerobic exercises, sports activities like playing football, volley ball, bicycling, athletics, swimming and many other games).



I kindly request for your participation in this study by completing the questionnaire with your views, according to the statements given in the questionnaire. The participation is voluntarily and the information given will be confidential.

Please do not write your name on this questionnaire.

Section B:

Paramedical institution students' levels of physical activity

Instructions.

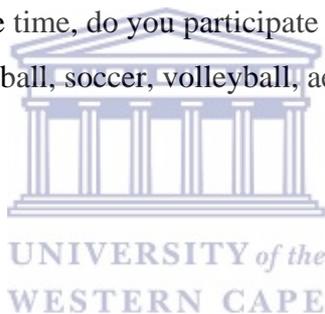
This section asks about the time you spend doing different type of physical activity. These include walking to and from school, activities you do at home and during your leisure or spare time. You are requested to answer all questions.

Part1. Leisure or spare time physical activity

The following questions ask about activities you do in your leisure or spare time. Please while answering, think back and consider a usual/typical week.

1. In your leisure time or spare time, do you participate in vigorous physical activities like (Running, jogging, basketball, soccer, volleyball, aerobic dancing, vigorous traditional dance etc)?

Yes



No

1a. If yes state the number of days per week.....

1b. The average duration of the session.....Minutes/session

2. In your leisure or spare time, do you participate in moderate activities like (brisk walking, swimming, classic dance, moderate gymnastic, table tennis etc)?

Yes

No

2a. If yes state the number of days per week.....

2b. The average duration of the session.....Minutes/Session

3. In your leisure time or spare time, do you participate mostly in sitting activities like (watching TV, listening to radio, playing table game such as cards, scrabble etc) or in light activities like driving a car, light walking etc) ?

Yes

No

3a. If yes state the number of days per week.....

3b. The average duration of sessionMinutes/Session

Part 2. House hold activities

The following questions ask about activities you do at home. When answering, please think back and consider a usual/ typical week.

1. Usually while you are at home, do you participate in vigorous activities like (chopping wood, digging, carrying water etc)?

Yes

No



1a. If yes state the number of days per week.....

1b. the average duration of the sessionMinutes/ Session

2. Usually while you are at home, do you participate in moderate activities like (Cleaning the house, washing clothes with hands, gardening, sweeping pavement etc).

Yes

No

2a. If yes state the number of days per week.....

2b. The average duration of the sessionMinutes/Session

3. Usually when you are at home, do you participate mostly in sitting activities like (chatting with people, doing school home work, reading/studying, helping children with homework etc) or in light activities like dish washing, preparing food, ironing, care for children, personal care etc)?

Yes

No

3a. If yes state the number of days per week.....

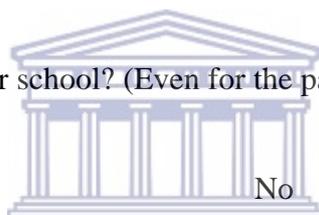
3b. The average duration of session.....Minutes/session

Part 3. Walking to and from school

1. Do you usually walk to your school? (Even for the part of your way)

Yes

No



UNIVERSITY of the
WESTERN CAPE

1a. If yes how many minutes do you take to walk?

2b. How do you normally walk?

Slow pace

Normal or Usual pace

Brisk pace

2. Do you usually walk from school to your home? (Even for a part of the way)

Yes

No

2a. If yes how many minutes do you take to walk?

2b. How do you normally walk?

Slow pace

Normal or Usual pace

Brisk pace

Section C:

Paramedical institution students' perceived constraints to physical activity.

Instructions: please put a tick in the box on one of the responses given, which reflects how you strongly agree or disagree, that each of the following is a reason to why you do not participate in any kind of physical activity/ Exercise

1. I do not have time to exercise

Strongly agree Agree Disagree Strongly disagree

2. I do want to do other things with my free time

Strongly agree Agree Disagree Strongly disagree

3. I do not have a good place to go and exercise

Strongly agree Agree Disagree Strongly disagree

4. I do not know how to exercise

Strongly agree Agree Disagree Strongly disagree

5. I do not have a safe environment to go and exercise

Strongly agree Agree Disagree Strongly disagree

6. I do not have the right equipment to exercise

Strongly agree Agree Disagree Strongly disagree

7. Exercise makes me tired

Strongly agree Agree Disagree Strongly disagree

8. I am not motivated to exercise

Strongly agree Agree Disagree Strongly disagree

9. I do not enjoy exercising

Strongly agree Agree Disagree Strongly disagree

10. I am not interested in exercising

Strongly agree Agree Disagree Strongly disagree

11. I think that exercise is too hard

Strongly agree Agree Disagree Strongly disagree

12. I do not think that exercise is important

Strongly agree Agree Disagree Strongly disagree

13. I do not have anyone to exercise with

Strongly agree Agree Disagree Strongly disagree

14. I have too much home work to do

Strongly agree Agree Disagree Strongly disagree

15. I do not have family support

Strongly agree Agree Disagree Strongly disagree

16. Cost of transport to the facility

Strongly agree Agree Disagree Strongly disagree

Thank you for your participation