KNOWLEDGE, ATTITUDES AND PRACTICES OF SECONDARY SCHOOL STUDENTS OF KAKAMEGA COUNTY IN PHYSICAL ACTIVITY PARTICIPATION.

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A Thesis Submitted in Partial Fulfillment of the Requirements for the Award of the Degree of Master of Science in Health Promotion and Sport Science of Masinde Muliro University of Science and Technology

SEPTEMBER, 2025

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DEDICATION

This research study is dedicated to my entire family for always believing in me and encouraging me throughout the study period.

ACKNOWLEDGEMENTS

I would wish to thank my entire family for their support during the study and also thank the Almighty God for enabling me to achieve this milestone and a great achievement of my lifetime. I am extremely grateful to my supervisors Prof. Edwin K. Wamukoya and Dr. Roselyne Odiango, for their extensive support, persistence and golden experience which contributed wholesomely to achieving the final product of this thesis. I would also wish to express my sincere gratitude to lecturers at the Department of Health Promotion and Sport Science in a special way to the Dr Elizabeth Mse for her constant encouragement. Lastly, I would also wish to thank my supportive course mates' lead by Evans Walubengo and in a special way thank Zadok Maingi and Victor Ochieng for their immense inputs. To my colleagues thank you for your encouragement and support.

ABSTRACT

Physical activity is a key component in human development and growth, in absence one is exposed to lifestyle conditions. Secondary school students are among the affected group where 81% of children aged 5-18 years do not meet the recommendations hence there is a need to establish why students do not meet those recommendations. The study purpose was to determine the knowledge level and assess the attitude and participation level of physical activity among secondary school students within Kakamega County. Data was collected January 2024 using a questionnaire with a cross-sectional study design. The study employed a multi-stage sampling method combining both non-probability and probability sampling techniques. The targeted population was public secondary school students with a sample size of 422. However, only 412 students participated giving 97% turnover rate. 194 (47.1%) were males, while 218 (52.9%) were female, with majority 110 (26.75) of them being 17 years of age. Highest number of students were from Kakamega High school 128 (31.0%), Ikonyero Secondary School was the least represented with 63 (14.3%). The study findings revealed that majority of the students had fair knowledge and a positive attitude toward physical activity. The results also showed that majority (53%) of the students participated in physical activity. The study also looked at the relationship between knowledge, attitude and practice of physical activity, where a moderately positive correlation was found between the two variables ($r=.159$, $p<0.001$) and ($r=.178$, $p<0.001$) respectively. Independent t-test was also done to determine the difference between socio-demographic characteristics and knowledge and attitude toward physical activity participation. However, the results were insignificant ($t(438) = -0.738$, $p=0.434$) in scores for Male ($M=2.07$, $SD=0.690$) and Female ($M=2.13$, $SD=0.738$) for knowledge and ($t(438) = -0.373$, $p=0.709$) in scores for Male ($M=2.76$, $SD=0.691$) and Female ($M=2.73$, $SD=0.687$) for attitude. To conclude, the study found that most students had fair knowledge and positive attitude toward physical activity as well as participation. However, more emphasis should be put on educating the students about health impacts of engaging in physical activity in both school and home. The study recommends for more sensitization on health impacts of regular physical activity, indoor games as well as behavioral change on physical activity participation.

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LIST OF ACRONYMS AND ABBREVIATIONS

GAPPA:	Global Action Plan on Physical Activity
HBM:	Health Belief Model
ISERC:	Institutional Scientific Ethical and Review Committee
KAP:	Knowledge, Attitudes, and Practices
KNBS:	Kenya National Bureau of Statistics
MMUST:	Masinde Muliro University of Science and Technology
MOE:	Ministry of Education
MOH:	Ministry of Health
MVPA:	Moderate Vigorous Physical Activity
NACOSTI:	National Council of Science, Technology and Innovation
NCD:	Non- Communicable diseases
NPAAP:	National Physical Activity Action Plan
PA:	Physical Activity
PAP:	Physical Activity Participation
PE:	Physical Education
SDGs:	Sustainable Development Goals
SPSS:	Statistical Package for Social Sciences
UHC:	Universal Health Coverage
UNICEF:	United Nations International Children's Education Fund
WHO:	World Health Organization

OPERATIONAL DEFINITION OF TERMS

Terms as operationalized and used in the study

Attitude : Will refer to the norms, position, or belief that students have towards physical activity.

Knowledge : It will refer to information, ideas and or set of facts regarding the physical activity that a student acquires through learning from interaction with the environment.

Level of physical activity: This will refer to expression of student physical activity daily or weekly as a number in estimation of energy expenditure.

Participation : This will refer to the action of actively taking part in physical activity suchas physical education lessons, sports, and recreational activities among others.

Physical Activity: Will refer to the moderate or vigorous bodily movement produced by the skeletal muscles of a student that requires energy expenditure

Physical inactivity: This will refer to the inability of the student to meet the recommended level ofphysical activity; he or she will be classified as physically inactive.

Practices : This will refer to the observable actions, choices and behaviors of physicalactivity.

Sedentary lifestyle: This will refer to a type of behavior where a student does little or no physicalactivity and exercise.

Social- demographics: This will refer to level of study, age, gender and religion of students.

CHAPTER ONE

BACKGROUND OF THE STUDY

1.0 Introduction

Physical Activity (PA) entails a wide range of bodily movements engaging the skeletal muscles resulting in the utilization of energy. There are various activities that lead to such movements namely; working, playing, performing household chores, traveling, and recreational activities (Chang et al., 2020; Guddal et al., 2019). The importance of PA in enhancing a person's health has been well-scripted (Hollis et al., 2017; Mogaka et al., 2017; Akbarali & Kin, 2018), with studies highlighting its relevance in schools and other settings (Piercy et al., 2018; Dawood, 2020)

Moderate-to-vigorous physical activity (MVPA) contributes to an improved quality of life through optimal health and fitness (Anderson & Durstine, 2019). It aids in weight management, muscle building, healthy bones, increased strength, energy and endurance and helps in reducing stress and anxiety (Mandolesi et al., 2018; Biddle et al., 2019). Comprehensive reports from the Centers for Disease Control and Prevention and the World Health Organization underscore the pivotal role of PA in maintaining and enhancing health among various demographic groups, including secondary school students (World Health Organization, 2020).

Research suggests that low to high-intensity PA among secondary school students may significantly influence their health outcomes (Almutairi et al., 2022). Encouraging these students to adopt and maintain healthy lifestyle habits helps them maintain body weight and may positively influence their overall health and PA participation throughout their lives (Biddle et al., 2019). The WHO, (2022)

recommends that for teenagers to accrue health benefits, they need to utilize at least sixty minutes daily of moderate to vigorous exercise. Despite these recommendations, a significant number of students are not engaging in adequate PA levels both in and out of school (Bushman, 2017; Hughes et al., 2020).

Globally, physical inactivity is attributed to over two million deaths annually (Bull et al., 2020). The United National International Children's Education Fund reports that 18% of individuals aged 14-18 years are overweight, a report by the Africa health profile database (2020) documented that 81% of teenagers are not physically active (WHO, 2022). This inactivity was more pronounced in girls than boys at 22mwimo% compared to girls at 78% are. Additionally, longitudinal researches show a reduction in PA participation as children grow older, reinforcing the need for targeted interventions (Adhikari, 2020; Mwimo et al., 2021).

In Kenya, PA is linked to an estimated 28,400 deaths per year (World Health Organization, 2020). Among teenagers, physical inactivity rates are alarmingly high, reaching 85% in boys and 89% in girls (WHO, 2022). These rates of inactivity are largely attributed to a decline in habitual physical activity and a rise in sedentary behaviors among teenagers (Guddal et al., 2019; Dawood, 2020). Another study by (Kariuki, 2017) in Kiambu County revealed that 104 (54.2%) primary school pupils had negative attitude towards physical activity while 88 (45.8%) had positive attitude towards physical activity. This could translate to low level of physical activity participation hence increase in sedentary lifestyle which is a major contributor to obesity among school going children.

In Kakamega County, physical inactivity is a significant contributor to obesity in

school-aged children, with an obesity prevalence rate of 26.6%, higher in boys (27%) than girls (26%) (Olutende et al., 2021) this signifies physical activity levels among school-aged children. Implementing effective PA programs can potentially improve life expectancy and health outcomes (Olutende et al., 2021). Despite governmental efforts to integrate PA programs in schools and initiatives to make PE an examinable subject in the curriculum (Republic of Kenya, 2013), PA participation among secondary school students remains low (Jedida, 2019).

There are clear gaps in the comprehension of influences on teenagers' PA participation, particularly regarding students' knowledge level on physical activity, students' attitude towards physical activity, and student's practices of physical activity. Therefore, this study aimed to fill these study gaps by exploring these dimensions among secondary school students within Kakamega County.

1.2 Problem Statement of the Study

The World Health Organization, (2020) underlines the need for moderate to vigorous physical activity (MVPA) of 60 minutes daily for children up to 18 years. Notwithstanding, 81% of children fail to meet this standard (Africa Profile, 2020). This issue is particularly acute at the secondary school level, a critical stage when long lasting physical activity behavior is established (Mahindru et al., 2023). This period is marked by profound physiological, psychological, and social transitions, shaping attitudes and habitual patterns that could persist into adulthood. The adverse effects of physical inactivity are well documented. It predisposes students to non-communicable diseases like heart-related ailments and can have detrimental effects on their cognitive functioning and growth in the long term (Ferrara et al., 2022).

Schools offer various platforms that could encourage physical activity among students, such as physical activity programs, games, and inter-house and inter-school competitions. Physical activities lessons, in particular, utilizes physical activity as a means to instill an active lifestyle in children (Kariuki, 2017). Despite these avenues, a considerable percentage of students do not achieve the recommended 60 minutes of MVPA, whether in or outside of school.

In Kenya, most research on physical activity has been centered on primary school pupils, leaving a discernable gap in our understanding of secondary school students' physical activity (Jedida, 2019). While other studies have investigated factors influencing physical activity participation, like inadequate facilities, motivation and equipment, they have largely overlooked the impact of knowledge, attitudes, and practices - a notable gap this study aimed to address (Ziari et al., 2017)

In Kakamega County, research has predominantly examined the determinants of physical activity participation among primary schools with insufficient focus on the role of knowledge and attitude in shaping students' engagement (Mogaka et al., 2017). There is scanty documented evidence on levels of physical activity, knowledge and attitudes towards physical activity participation among secondary school students in this county. This creates an imperative for the current study that explored the knowledge and attitudes of secondary school students in Kakamega County towards physical activity participation. This current study, therefore provided a critical analysis and valuable insights of knowledge, attitude and practices of physical activity among secondary school students for policymakers and stakeholders in implementing effective physical activity programs at the secondary

school level.

1.3 Study Objectives

1.3.1 Broad Objective

To determine the knowledge, attitude and practices of secondary school students towards physical activity participation in Kakamega county.

1.3.2 Specific Objectives

i. To determine the level of knowledge on physical activity among secondary school students in Kakamega county.
ii. To assess the attitude of secondary school students towards physical activity in Kakamega County.
iii. To establish the level of physical activity participation among secondary school students in Kakamega County.
iv. To compare the knowledge and attitude of physical activity participation between male and female secondary school students in Kakamega County.

1.3.3 Research questions

i. What is the level of knowledge on physical activity among secondary school students in Kakamega County?
ii. What is the attitude of secondary school students toward physical activity in Kakamega County?
iii. What is the level of physical activity participation among secondary school students in Kakamega County?
iv. Is there a significant difference in the knowledge and attitude of physical activity participation between male and female secondary school students in

Kakamega County?

1.4 Justification of the study

There is limited information available on knowledge level, attitude and practice of physical activity among high school students in Kakamega. The findings of this study may provide information for this age group that will benefit them in terms of knowledge, attitude, and practices that may influence their physical activity participation. The study may also provide valuable insight to policymakers on physical activity participation at high school level. The study may contribute to the realization of the World Health Organization (WHO) guidelines on physical activity 2020 and Sustainable Development Goals (SDGs) objective three on good health and well-being, WHO recommendation on PA and the Universal Health Coverage (UHC). The study findings may promote the achievement of the Global Action Plan on Physical Activity (GAPPA), endorsed and owned by the WHO agencies to ensure a healthier world with more active people. The study may play an important role towards achieving The Kenya National Physical Activity Action Plan (NPAAP) 2018-2023 on the promotion of physical activity for better health.

1.5 Significance of the study

This study established the knowledge status on physical activity among students in Kakamega County. This was important in knowing if the students in Kakamega County have an adequate understanding of the physical activity guidelines and recommendations. Findings from this study may provide necessary information for the integration of traditional or conventional knowledge and modern health approaches to improve physical activity participation among secondary school students. This

study also addressed the shortcomings of previous studies, by attempting to close the gaps on attitude and knowledge. Also, it may contributed to new ideas that can be used by other researchers, policymakers and stakeholders, in running physical activity programs in both national and regional Governments, through the Ministry/Department of Education/Health in realization of Vision 2030 and sustainable development goals (SDGs). Results from the study may guide physical activity and health promotion professionals and relevant stakeholders to implement PA programs at the school level for secondary school students.

In addition, the study is critical in contributing to the practice, research and theory of health development. This research also provides an important role on the best evidence that can be adopted at the national level. It also gives evidence-based data for organizing interventions and improvement of physical activity among secondary school students in Kakamega County and Kenya at large. Lastly, the study forms a baseline for future studies as data from this study may form the next phase of intervention on PA for secondary school students.

1.6 Scope of the study

This research was conducted in Kakamega County, within Lurambi Sub-County in the selected four wards. The respondents of the study were secondary school students aged 14 to 18 years as this forms the secondary school age and must have stayed at that school for more than six months in order to understand school regimes and operations. The participants shared their physical activity knowledge and attitude.

1.6.1 Limitations of the study

This study relied on self-report and hence may have been subjected to bias, given the nature of respondents. This was addressed through short and clear questions and incorporating pretestingresponses. Respondents were also instructed to be honest and truthful in their responses regarding knowledge, attitude and practices of physical activity.

1.6.2 Delimitation of the study

The study was conducted in four Wards of Lurambi Sub-County. Thus, it was governed by the selected public secondary schools in the selected Wards where the population of interest is located. The data collected was delimited to the study objectives. The study was also restricted to a sample from those students who were in session at the time of data collection, stayed in that school for more than six months and those whose teachers permitted to access parents for consent. The data was collected within seven days involving form one to form four classes.

1.7 Theoretical framework.

Health Belief Model (HBM) helped guide the study. It is among the first models that support the concept of health promotion with a theoretical focus on personal characteristics towards achievinghealthy behavior. Change of behavior is one of the major factors that help in identifying the success of implementing a certain program or policy in the community. HBM was developed to help healthcare practitioners to comprehend the health-related behavioral patterns of their clients towards prevention of health-related behavior (Rosenstock, 1977). Beliefs are individual characteristics which can be out of physical activity knowledge, attitude and practices. These beliefs

can influence behavior either positively or negatively. From previous studies, there is a positive association between health beliefs (knowledge, attitude and practices of physical activity) and health behavior like engaging in physical activity, since people with different health beliefs practice different health behaviors (Akbarali & Kin, 2018; Zhang et al., 2021). The illustrations of Health belief model constructs and possible outcomes is as shown in Figure 1.1

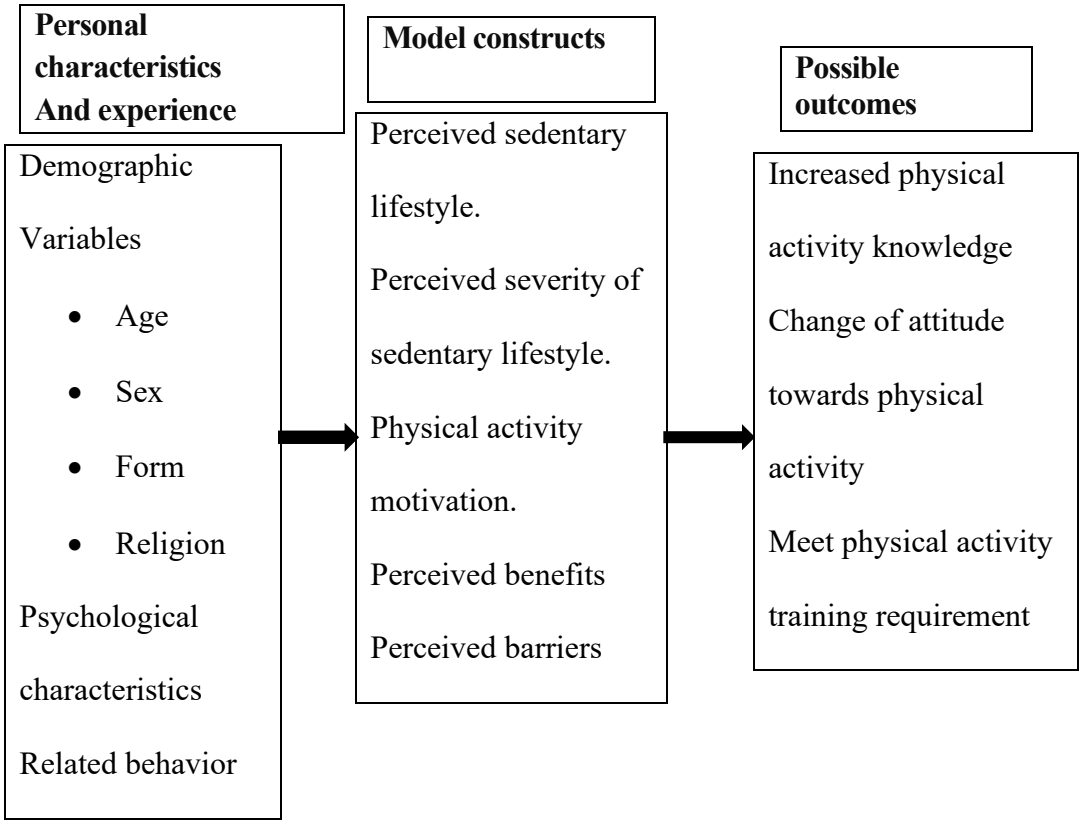

Figure 1.1: A schematic presentation of the health belief model Rosenstock, (1977).

Adopted and modified by the researcher.

Health belief model is also significant in monitoring the outcome of an individual towards a certain physical activity program. It has four different constructs, namely perceived susceptibility, severity, benefits and barriers. In the context of this

research, the HBM model provides framework that expounds how attitude, knowledge and practices of PA are interrelated and are influenced by these components. This explains how the student may respond to a certain health related behavior. These constructs depend on the attitude and knowledge of the student in identifying their possibility of engaging in health-promoting behavior (Akbarali & Kin, 2018).

1.7.1 Knowledge of PA: understanding health risk and benefits

Students' understanding the impacts of PA has a positive effect in shaping student perception towards PA.

1.7.1.1 Perceived Susceptibility and Severity

Some students may realize that they are susceptible to unhealthy conditions such as obesity while others may not. This inquisitive behavior results in action being taken to curb the condition from happening. Students who feel that they are at susceptible to a certain condition will tend to engage in a positive health behavior. For example, student who believes they are susceptible to obesity will participate in physical activity to reduce their vulnerability to obesity. Others may be hesitant to the seriousness of the condition, thus, knowing the negative impacts of developing the condition is not enough for them to react in a way that would reduce its severity. Evaluation of the negative effects of the health problem in question. When students comprehend the negative effects of a condition or illness, they are likely to embrace a positive change I behavior, resulting in reduction of the consequences. Hence, when they learn the chronic impacts of a sedentary lifestyle, it is believed that they will participate in activities that can help get rid of unhealthy behavior. The students ought to be

persuaded and engaged with information for them to understand the seriousness of being inactive.

1.7.1.2 Knowledge and Perceived Benefits

Knowledge of PA benefits namely, improved mental health, relief stress and depression, improve cardiovascular health and boost moods and self-esteem, may contribute to a healthy behavior. When students understand these benefits there is likelihood that they will incorporate a healthy behavior such as physical activity into their daily lives. The knowledge on physical activity can be acquired through peer groups, parental guidance, through social media and through physical education classes.

1.7.2 Attitude towards Physical Activity

Attitude directly influence the participation of students in PA.

1.7.2.1 Perceived benefits and Attitude of Physical Activity

Perceived benefits of PA may often influence PA participation. Students who recognize the importance of PA may perceive physical activity as a form of enjoyment, others will value it for health-related benefits such as weight management and mental well-being, hence these students will have positive attitude towards physical activity. The positive attitude may also be attributed by student personal experience. For instance, students who have experienced improved academic performance or reduction of stress and depression after engaging in physical activity may develop positive attitude towards physical activity. Likewise, students who have witnessed friends or family members benefiting from physical activity such as weight management may also have positive attitude towards it.

1.7.2.2 Perceived barriers and Attitude of Physical Activity

Perceived barriers can lead to negative attitude towards physical activity. The perceived barriers in school set up may include inadequate facilities, safety issues, inadequate time and lack of moral support. The perceived barriers may discourage students from undertaking physical activities, irrespective of students understanding the benefits of PA. For instance, a student who perceives lack of goodwill and moral support from the school swimming instructor or coach may develop negative attitude towards swimming. Similarly, personal insecurities, such as perceived fear of judgment and body image concern can lead to negative attitude towards physical activity.

1.7.3 Practices of Physical Activity

Practices of PA will entail translating knowledge and attitude into action**.**

1.7.3.1 Cues to action

For knowledge and attitude of PA to be put into practice, cues to action are critical to actualize the healthy behavior. These cues can be external such as parental, teachers and peers' encouragement, school physical activity programs, media advocacy and awareness. Cues can also be internal such as recognizing the need to maintain body weight and intrinsic motivation which can serve as effective cues. For example, a school-organized inter house competition can challenge and motivate students to participate in physical activity that may not be typically consider under normal circumstances. Additionally, having a role model such as a teacher championing for physical activity may inspire students to adopt the behavior. These cues to action can be very crucial in starting and maintain health behavior.

1.7.4 Self-efficacy and Practice of Physical Activity

This is a personal belief in one's own abilities to take part in a health behavior successfully, it is the determinant factor as to whether students will put into actual practice their knowledge and attitude or not. High self-efficacy students may prevail over the problems and barriers to undertake a physical activity. For example, a student confident in his or her ability to participate in athletics is likely to join the school athletic team even when faced with the challenge of lack of training gears such as sport shoes. Self-efficacy can be attained through providing avenues for students to experience impacts associated with physical activities. This can be arrived at through school programs such as teacher, parent and peer encouragement, inter-house competition and physical education classes.

1.8 Conceptual Framework

The HBM was adjusted, to illustrate how different factors determine student participation in PA. These factors range from student level of participation in PA, knowledge, and environmental support to their attitudes and barriers to the practices presented in figure 1.1. A conceptual framework showing the association between the independent and dependent variables played a major role in determining the association and methodological approaches in this study.

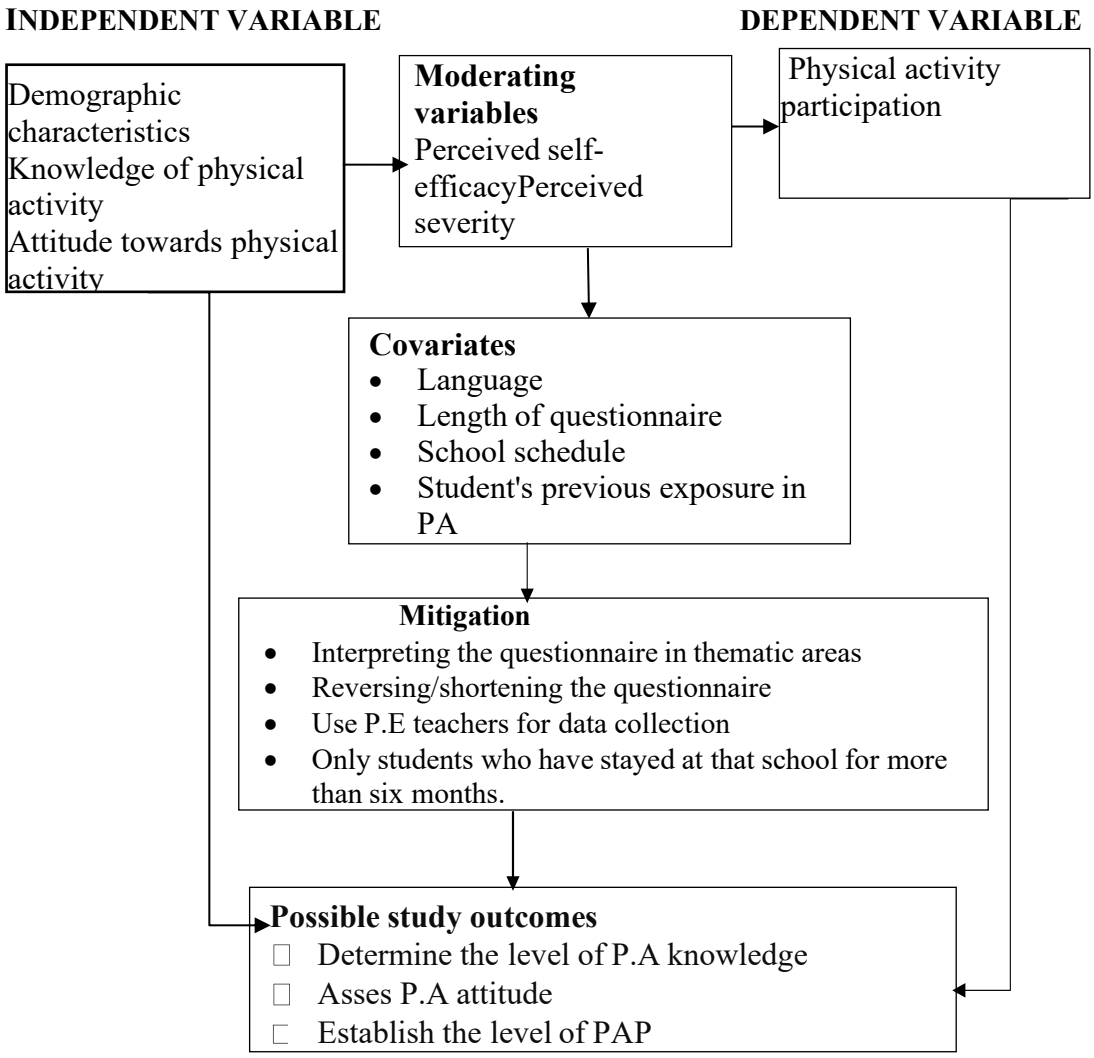

Figure 1.2: Conceptual framework adopted by the researcher with modification from the work of Rosenstock, (1977).

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

In-depth overview of existing literature on physical activity knowledge level, attitude, participation level, gender and research gaps provide a summary of the literatures reviewed.

2.1 The level of Knowledge on Physical Activity among secondary school students

Physical Activity (PA) has been extensively studied for its role in preventing and managing Non-Communicable Diseases (NCDs). For instance, PA can aid in the prevention and management of diabetes by lowering blood sugar levels to normal and improving insulin sensitivity (Mwimo et al., 2021; Kumar et al., 2022). Similar findings have revealed that insulin sensitivity can be improved by aerobic and resistance training (Feroz Ali et al., 2022). However, individualized PA for chronic conditions is crucial, considering the medication, complications level, and objectives of the client (Peleg et al., 2017). Hypertension can also be mitigated through medium to high-intensity PA, which may reduce blood pressure by an average of 11mm Hg lasting up to 10 hours (Ferrara et al., 2022). Other cardiovascular benefits of PA include the prevention or regression of left ventricular hypertrophy and the improvement of vascular function (Kumar et al., 2022). Moreover, PA plays an essential role in weight management and is significantly effective when combined with a dietary plan (Mwimo et al., 2021). In the context of cancer prevention and management, PA can reduce risk factors, counteract the side effects of chemotherapy

drugs, and increase survival rates (Zhang et al., 2021; Sun et al., 2023).

In light of the substantial benefits of PA, research has sought to understand the knowledge and perceptions of individuals regarding PA. Notably, a significant knowledge gap about PA has been found among students. A population study in Nanjing, China, with 1899 participants, found that students lacked adequate knowledge of PA (Xu et al., 2017) however this research was carried out in a first world country. Research on young adults in the USA reported similar results, with low mean scores indicating inadequate knowledge of PA where only 22% had adequate knowledge (Piercy et al., 2018) however this study focused on young adults. Additionally, a cross-sectional study conducted in the UK with 4653 participants revealed that 47% of the respondents were unaware of PA guidelines (Vaezi et al., 2020).

In Africa, a similar study carried in Ethiopia on knowledge of PA among adults in Harar town, indicated a low awareness level on PA guidelines, with only 27% of 590 respondents were aware (Abdeta et al., 2019). This study focused on adults in Eastern Ethiopia indicates reduced comprehension and awareness incidences of physical activity among participants in horn of Africa. In contrast a study in South African, with a sample size of 177 participants found that 67.23% had fair knowledge of PA guidelines (Qwabe., 2023). The research utilized a mixed method study design, with a smaller sample size of 177. Another study in Nigerian on PA and sports engagement among adolescents who were participating in organized sports also showed basic knowledge of PA for health promotion among 54% of male and 46% of female participants (Oja & Piksööt, 2022) this study did not focus on normal sports

and only went for those who were already in different sports. However, these studies from different parts of Africa and world do not provide conclusive results in Africa, indicating a need for additional research.

Finally, in Kenya, a cross-sectional study among adolescents' physical activity sedentary behavior found that only 37.1% were not aware of the benefits and recommended levels of daily PA (Abonie*, 2017).This study only focused on urban area participants. In summary, there seems to be a global knowledge gap regarding the importance and guidelines of PA, particularly among secondary school students. This lack of awareness is even more noticeable in Africa, pointing to a substantial gap that this study aims to fill.

2.2 Student's Attitude towards Physical Activity

Attitude of students towards PA in an educational context significantly affect their learning, skill acquisition, and overall participation of PA (Sansi et al., 2021). Notably, research highlights that students generally acknowledge the importance of PA for health. Nonetheless, variations in attitude do exist across different demographics and contexts (Sansi et al., 2021). In Nepalese, Adhikari, (2020) in their study on female students' attitude towards PA and sports. The findings were analyzed using mixed methods, where they found a largely positive attitude towards PA among secondary school girls with a population size of 158 respondents. Approximately 81% of them engaged in PA for maintaining body shape and enjoyment. Conversely, negative attitudes were more prevalent among obese girls who did not participate in PA. The study suggested that teachers must be accountable to construct professional environment as a motivation for students to participate in

PA. However, this study focused exclusively on girls, leaving unanswered questions about boys' attitudes towards PA, thereby creating a knowledge gap.

A study from Turkey on the effect of PA inclusion program on social skills, motor skills and attitude of autism spectrum disorder (ASD) students and those without. The research comprised of forty-five autistic students and forty-five typically developed students aged 6-11 years. The study, reported that gender did not significantly influence secondary school students' attitudes towards PA, attributing the similar attitudes of boys and girls to shared environments and a uniform physical education syllabus (Sansi et al., 2021). This research concentrated on younger students, aged 6-11 years, indicating a gap in understanding the attitudes of older adolescents.

In Africa, the trend of positive attitudes towards PA in earlier school years followed by more ambiguous attitudes during secondary schooling has been noted. Ndahimana & Kim, (2017) did a qualitative study in rural South Africa and found this shift in attitudes among adolescent girls. Nevertheless, the study only explored PA in a sports context, not considering other forms of PA, and primarily targeted primary school students. Sansi et al., (2021), also identified a research gap concerning the promotion of PA among socially excluded or "at-risk" groups, suggesting a need for a multifaceted or whole-school approach.

In Kenya, a study among public boarding secondary school students in Nairobi, Kenya, demonstrated a positive attitude towards PA (Ngahu, 2021). The main objective was to establish PA levels and determinants of PA. However, this study was limited to urban students, excluding the attitudes of those in peri-urban areas.

The researcher, suggested that if students and teachers were aware of the current minimal PA recommendations, they could help promote PA among students. The attitudes of secondary school students towards PA are largely positive. However, research gaps exist in our understanding of how attitudes vary by gender, age, socioeconomic status, and geographical location. Furthermore, most studies have focused on PA in sports without considering other types. These gaps need addressing to create comprehensive and effective strategies promoting PA among secondary school students.

2.3 Participation in Physical Activity among Secondary School Students

Several studies across diverse geographical regions highlight varying levels of PA participation among secondary school students. While these studies identify key factors influencing PA participation, they also reveal certain gaps in existing research, which this study aimed to address.

Khanom et al., (2020) in their study in South Wales (United Kingdom), looked at recommendations of parents to support PA among families with young children. They emphasized, on the significant role parents and teachers play in shaping children's attitudes, behaviors, and beliefs towards PA. Despite this, many children lead a sedentary lifestyle outside school hours, mostly engaging in screen-time activities. Thus, the study suggested that early sensitization for children on the benefits of engaging in PA could improve their opportunities and access to safe facilities. This finding indicates a gap in physical activity adherence, which necessitates further exploration. In Brazil, Gomes et al., (2022) found that 97% of students engaged in PA, mostly during physical education (PE) classes at school.

However, only 29% of students reached the recommended PA level, despite established guidelines and well-known benefits. This inconsistency calls for further investigations into the effectiveness of PA-promoting policies in schools and beyond. These findings show a gap in practice of PA among secondary school students.

Similarly, Lu et al., (2017) on PA among Chinese children and adolescents reported low compliance with recommended PA on children and adolescents of Chinese origin. The research did not exclusively focus on school-going children, which suggests a need for studies specifically targeting this demographic. This aligns with (Silva et al., 2018), who conducted a multi-country comparison study and found that insufficient numbers of students across 34 countries were meeting recommended PA levels. The study indicated that only 23.8% of boys and 15.4% of girls were reaching the recommended levels, with the least participation in the Philippines and Zambia, and the highest in India. The low prevalence of sufficient PA and high sedentariness across these countries call for immediate interventions and further research on rural setups as well Africa to find out their level of PA activity.

In Kenya, Kariuki, (2017): (Onywera, 2016) found similar trends. Their study among Kenyan children and youths revealed less than 12% children met the daily-recommended 60 minutes of PA. The researchers also noted that active transportation is used by more than seventy two percent of Kenyan youths and children to commute to school. The studies concluded that a good number of children and youths had typical weight. But, they ought to ensure that WHO recommendations on physical were met and maintained. The researchers also suggested further studies across various environments to better represent the Kenyan population, both urban and peri-

urban. These findings indicate a gap in physical activity participation. While the importance of PA is widely recognized and promoted, compliance with recommended PA levels remains worryingly low among secondary school students. Significant gaps exist in our understanding of this issue, particularly regarding the success of school-based PA policies and the influence of geographical and environmental factors. Future research needs to address these gaps to facilitate the design of effective interventions promoting PA among students.

2.4 Knowledge and Attitude of PA Participation between Male and Female Secondary School Students in Kakamega County.

Gender significantly impacts the knowledge, attitudes, and practices of PA among secondary school students globally, many researches have looked at the impact of gender on PA among secondary school students. Bergier et al., (2017), found that boys had 7291.0 min/week which was high compared to girls who had 6200.2 min/week. The study also found that students from Eastern Europe had positive attitudes towards physical activity. However, this study targeted students aged 15-17 years only. However, (Ziari et al., 2017; Kumar et al., 2022) got a significant difference between gender and attitude toward physical activity. Where Females had a higher score in regards to a positive attitude toward PA than males. This is highly attributed to the different sex roles and cultural activities between males and females. However, the research indicated that there was no difference in PA participation levels since both males and females were found to engage in PA. Ziari et al., (2017), reported that male students more positive attitudes than female students have. Among males, physical activity was perceived as a means of socialization and competition,

whereas among females was perceived as barriers such as body image concerns and lack of time. However, this study targeted university students of Semnan University of Medical Sciences.

In Kenya, a study (Kariuki, 2017) in Kiambu County revealed that 54.4% and 51% of boys and girls had a negative attitude respectively, while 45.6% of boys and 49% of girls had a positive attitude towards PA. Kariuki concluded that there were no significant differences between the two genders recommending further research to bridge the gender gap in physical activity participation among students. However, this study was among primary going children. As is evident from the above studies where there were no conclusive findings on differences between male and female students in physical activity knowledge and attitude, some studies cited differences while others were in contrast. It is therefore for this reason that this study was aiming at bridging the gap and provide a conclusive finding on gender and PA knowledge, attitude and practices.

2.5 Summary of literature review

From global perspective (Lu et al., 2017; Xu et al., 2017; Gomes et al., 2022; Khanom et al., 2020); discussed knowledge, and attitude on physical activity participation; however, the researches were carried out in developed countries (UK, USA, Brazil and China). In Africa (Silva et al., 2018; Abdeta et al., 2019; Mwimo et al., 2021; Oja & Piksööt, 2022); have addressed physical activity participation, knowledge and attitude. However, the studies had conflicting results hence building a gap for further exploration to have a more conclusive finding. In Kenya (Muthuri SK et al., 2014; Abonie, 2017; kariuki, 2017), the studies were carried out in Nairobi

and others among primary school pupils hence the researchers recommended further research in a different environmental setup. This created a research gap to be addressed by this study, which illuminates a significant focus on the knowledge and attitude ofsecondary school students towards physical activity participation. It is evident that there is a paucity of literature regarding physical activity training among secondary school students. Furthermore, some studies had contradictory and inconclusive results concerning attitudes toward PA. This research, thus aims at providing an analysis of knowledge, attitude and practices of PA among secondary school students in order to fill these research gaps.

2.5 Research gaps

Table 2:1: Research Gaps

Variable	Author and Year	Findings	Research Gap
Student Knowledge	Xu et al., 2017	Many students lack proper knowledge about the benefits and importance of physical activity.	Requires further exploration into methods of improving knowledge dissemination.
	Piercy et al., 2018	students lacked adequate knowledge of PA	The study was conducted in USA a more developed country
	Abdeta et al., 2019	indicated a low level27% of awareness about PA guidelines, with only 27%	Suggests the need for research into how knowledge influences behavior.
	Vaezi et al. 2020	participants revealed that 47% of the respondents were unaware of PA guidelines	The study was conducted in UK
	Qwabe 2023	found that 67.23% had fair knowledge of PA	Suggests the need for further studies in both urban and rural

			environments
	Abonie 2017	37.1%were not aware of the benefits	This study only focused on urban area participants.
	Oja & Piksööt, 2022	Basic knowledge of PA for health promotion 54% among male and 44% female participants.	The study provide inconclusive results in Africa
Student Attitudes	Sansi et al., 2021	The majority of girls had a positive attitude toward physical activity while few had negative attitudes.	No conclusion as to why some girls had negative attitudes toward physical activity.
	Adhikari, 2020	Secondary school girls had positive attitude towards PA	The findings were analyzed using mixed methods and the sample size was small
	Sansi, 2021	Gender was not a significant determinant factor in defining attitudes towards physical activity.	The age group studied was limited to students aged 11-13 years.
	Ngahu, 2021)	In Nairobi, only 12% of children aged 9-12 years met the recommended daily activity.	Suggests the need for further studies in both urban and rural environments.
	Ra et al., 2022	Identified research gap in promoting physical activity among socially excluded ('at risk') groups.	The study focused only on females, lacking a complete viewpoint.
Participation in PA	Khanom et al., 2020	Parents and teachers play a significant role in shaping children's behaviors towards PA, but adherence is lacking.	Requires further exploration into reasons for low physical activity adherence.
	Gomes et al., 2022	Despite PA guidelines, only 29% of students reached the recommended level of PA.	Calls for further investigation into the effectiveness of policies promoting PA.

	Lu et al., 2017	Low level of compliance with recommended PA among Chinese children and adolescents.	The study did not exclusively target school-going children.
	Silva et al., 2018	Insufficient numbers of students were meeting recommended PA levels across 34 countries.	There is a need for immediate interventions and further research on rural setups.
	Kariuki, 2017; Onywera, 2016	Only less than 12% meet 60 minutes requirement.	The study targeted urban center students.
Knowledge and attitude against Gender	Bergier et al., 2017	Students from Eastern Europe had positive attitudes towards physical activity.	The study only targeted students aged 15-17 years only
	Ziari et al., 2017	Male students more positive attitudes than female students have	Targeted university students of Semnan University of Medical Sciences
	Kariuki, 2017	54.4% of boys had a negative attitude 45.6% had a positive attitude towards physical activity	study was among primary going children

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

Overview of methodology used to assess level of knowledge, attitude, and PA practices among secondary school students. Different angles such as area of study, research design, study participants, procedure use for sampling, instruments for collecting data, procedures, reliability and validity of the tools, analysis of data logistical an ethical contemplation.

3.1 Study Area

The research was done in Kakamega County. Kakamega County has a notable reputation for producing professional players and dominating secondary school games in different sports such as music, drama and ball games. Kakamega was also among 13 counties that had a school selected for rugby, soccer and theatre talent academy (MOE, 2020). Besides that, Kakamega is among few counties selected to have sports academies by sport Kenya (KAS, 2024). Hence, making it an ideal location for examining physical activity participation. Kakamega County is found in Western Kenya, the county borders Siaya County to the West, Nandi and Uasin Gishu Counties to the East, Vihiga County to the South, Bungoma and Trans Nzoia Counties to the North. The County has an estimated area of 3,051.3 Km2. Kakamega County comprises of 12 Sub-counties, 60 wards, 187 village units and 400 community areas (County Government of Kakamega, 2023). By focusing on this area, the study looked at the PA behaviors and attitudes that contribute to the county's sports achievements. Moreover, the study sought to bridge the gap in the literature

by focusing on developing countries like Kenya and also focusing on both urban and peri-urban counties like Kakamega, where limited studies have been conducted on secondary school students.

3.2 Study Design

To determine variables of interest, the researcher adopted a cross-sectional study design. This research design allowed collection of data from a sample size that represented a certain population. It was used to assess characteristics of variables such as attitude, knowledge and practices of secondary school students providing the representation of the current situation and allowing the researcher to analyze the variables. The research used a modified questionnaire and interviews to collect data, respectively. The data obtained helped in the description of secondary school students knowledge levels, attitudes, and PA participation levels, addressing the research questions.

3.3 Study Population

The study targeted public secondary school students within Kakamega County, specifically in Lurambi Sub-County with a total population of 16,527 students (County, 2023). The public secondary schools comprise students from different social economic groups, ethnicity, religion and background. They also have a common procedures and school programs in terms of curriculum and school schedules making it ideal population. This population has been chosen because this is the age range which corresponds to the teenage years, during which students undergo physiological growth, adopt adulthood, and develop their identities. It also a crucial stage where knowledge, attitudes, and practices related to physical activity

are developed and can significantly impact overall sports performance. By focusing on this age range, the study explored the impact of introducing healthy behaviors during adolescence on long-term physical activity engagement.

Table 3.1: *Distribution of secondary school students in the selected secondary schools (source Kakamega county quality assurance office 2023)*

Wards	**No of students**
Shirere	5216
Mahiakalo	4,395
Butsosto Central	4,249
Butsosto East	2,667
Total	16,527

3.3.1 Inclusion Criteria

This comprised of public secondary school students aged 14-18 years, both male and female, who were currently attending school in Kakamega County and have been enrolled for more than six months.

3.3.2 Exclusion Criteria

The study did exclude students whose parents or guardians did not provide consent for their participation. Additionally, students who were not healthy with a history of chronic conditions and those below 14 years or above 18 years were excluded.

3.4 Study variables

The study had both independent and dependent variables.

3.4.1 Dependent variables

Physical activity participation is the dependent variable for this study. PA participation was examined using questionnaires comprising the frequency, type of activity and time.

3.4.2 Independent variables

Knowledge, attitude and practice of PA were the independent variables of the study. This was measured using a knowledge, attitude and practice questionnaire.

3.5 Sampling design

The study used different sampling procedures as follows:

3.5.1 Selection of study site

To ensure representative data collection, a multi-stage sampling was employed for this research. This method combines different probability sampling techniques to account for the wide geographical distribution of the population. Kakamega County was purposively selected as the geographical study area because it has a track record on sports, by dominating national games at secondary schools' level and it is known for its sport culture in different sports and studying this area aligned with the goals and objective of this research. Within Kakamega County, Lurambi Sub-County was chosen purposively out of twelve sub-counties. The decision was made because Lurambi Sub-County acts as both peri-urban and urban comprising students from different social economic levels, different ethnic groups and religion. Thus, represented an ideal study location within Kakamega County for studying the research objectives related to sports. Once the researchers identified Kakamega County and Lurambi Sub-County as the study area, 6 wards within Lurami Sub-County were selected using random sampling techniques. This random selection ensured equal selection of each ward within the Sub-County, thus providing a representative sample of the Sub-County. After selecting the wards, secondary schools were chosen through purposive sampling technique within the wards.

Purposive sampling technique involved selecting one male secondary school and one female secondary school in which Kakamega high schools in Shirere ward and Shikoti girls in Butostso east were selected. Purposive sampling technique was used to selected two mixed secondary schools one within the municipality where Ikonyero secondary school was selected and the other one outside the municipality where Mwiyala secondary school was selected.

The summary of the site selection is as shown below.

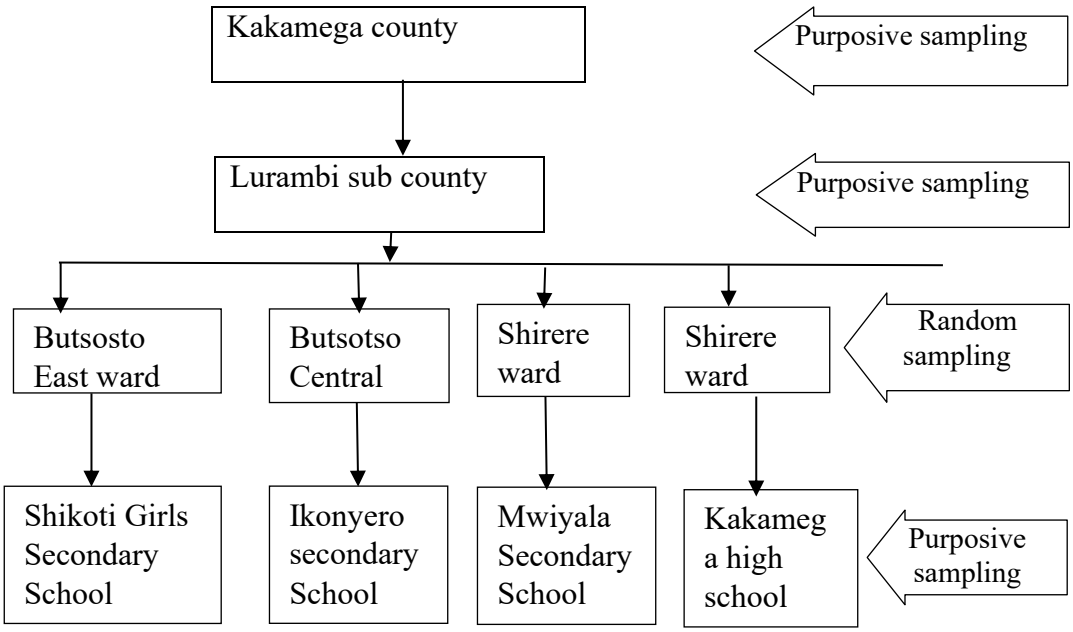

Figure 3.1: Study site sampling procedure

3.5.2 A sampling of study respondents

To select participants' systematic sampling was used. A complete list of students from the selected schools was provided where the sample was drawn from. Sampling interval (K) was determined using the formula: K=N/n

Where: (N) was the total population size and (n) was the sample size.

In each ward the calculation was as follows:

In Shirere ward (Kakamega High school) K=5126/133= 39

In Mahiakalo ward (Mwiyala secondary school) K=4395/112= 39

In Butsotso Central ward (Ikonyero secondary school) K=4249/109= 39

In Butsotso East ward (Shikoti Girls secondary school) K=2667/68= 39

Hence K^{th} =39

From each school list one (1) was selected as a random number. Starting from the randomly selected number (1), every 39th student was chosen until the desired population size was arrived at in that school.

3.6 Sample size determination

Population size at 95% significance level was determined using Fisher's formula. The desired sample size (n) was determined by:

n = (Z^2 * P * Q) / d^2

Where:

N = desired sample size (if the targeted population is greater than 10,000) which is 16,527

Z = is the critical value corresponding to a significance level at 95% which corresponds to 1.96 P = proportion in the target population thought to have a certain feature and in the event that there is no reasonable estimate, then use 50 % (0.5) q=1-p

Q: complementary probability to P (Q = 1 - P)

d = degree of accuracy (set at 5%=0.05) $n=1.96^2 \times p\ (1-p) \div d^2$=sample size requiredn = $1.96^2 \times 0.5\ (1-0.5) \div 0.05^2$

n = 384 students + 10% attrition rate, to cater for the dropout rate.n= 422 Secondary students. After calculating the sample size, a 10% attrition rate was applied to

account for potential dropouts. Thus, a total of 422 secondary students were sampled.

The estimated sample size was then calculated from the total population. Below is the overview of the calculation as shown in the table 3.2 below.

Table 3.2 Number of students sampled per secondary school summary

Wards	**Secondary school**	**Proportional calculations**
Shirere	Kakamega School	$^{422}/16527x5216 = 133$
Mahiakalo	Mwiyala secondary	$^{422}/16527x4395 = 112$
Butsosto Central	Ikonyero secondary	$^{422}/16527x4249 = 109$
Butsosto East	Shikoti girls	$^{422}/16527x2667 = 68$
Total no of students		**422**

3.7 Data and information collection

3.7.1 Data collection procedures

Approval from School of Graduate Studies Board and Institutional Scientific Ethics and Review Committee of Masinde Muliro University of Science and Technology (MMUST) was sought before commencement of the study. Four qualified research assistants, two males and two females, with a minimum diploma qualification, were recruited to assist in the data collection process. They received one day of training on data collection protocols, ethical considerations, and familiarity with the questionnaire. Research assistants also took part in pre-testing questionnaires to gain experience and improve techniques for collecting data. Questionnaires were distributed to participants by both the researcher and research assistants, providing clear instructions on how to complete them. In boarding schools, telephone

interviews were used to acquire consent from parents and demographic information such as age of participants while ensuring participant safety. They then reviewed the questionnaires that were complete, daily to ensure completeness and legibility.

3.7.2 Data collections instruments

Instruments for collecting data consisted of a formal questionnaire (see Appendix II) and interviews among students. The questionnaire, adapted from previous studies, addressed specific objectives and research questions. It would capture socio-demographic information, general physical activity knowledge, attitudes, and practices using closed-ended questions. Both self-administration and personal approaches were utilized to increase the response rate. For data collection and analysis purposes, four sections were divided in the questionnaire which include: demographics characteristics, general knowledge level, attitude and participation section.

3.7.3 Instrument reliability

The major instrument of measure employed in this research was a questionnaire which was administered to the students. Internal consistency techniques were used by the research to reinforce the reliability of the instruments. Which involved relating a score from one thing with scores gotten from another item in the tool. Consistency of the results was graded using Cronbach's Alpha across items inside the test to determine how the items are closely related as a group. It was then regarded as measure of reliability as per the interpretation means of all possible split-half coefficients. Coefficient of 0.70 was determined and was considered acceptable for this study.

3.7.4 Instrument validity

According to Bolarinwa (2015), the meaningfulness and accuracy of inferences is referred to as validity. The content of an instrument needs to have a valid content that is meaningful to the goal or the gap of the study for it to be considered valid. In this research, External validity was applied to assess the generalizability of study findings to populations, settings, or conditions beyond the study location. This method ensured that results obtained from the sample were applied to broader populations or situations. Through this method the questionnaire was assessed through content validation, involving professionals Health promotion and Sports Science Department at MMUST who are experts in the field of sports to ensure that the tool resonate with their experiences and perspectives. Their feedback was incorporated into the questionnaire to ensure the intended variables are measured accurately with correct features and organization of the questionnaire is at par with the variables of the study and clear to all respondents. Construct validity of the tool was ensured through pretesting the questionnaire on secondary school students in Kakamega County and a quick analysis done to measure validity.

3.8 Pretesting Research Tool

3.8.1 Recruitment and training of research assistants

To aid in collection of data 4 research assistants were recruited and trained on research goals, data collection tools, and procedures. They participated in a pre-testing exercise at Ebusakami Secondary school in Vihiga County, a review meeting was held later to review their experience. The research assistants were then deployed one per school for data collection.

3.8.2 Pretesting of data collection tools

A pretest of data collection tool was conducted at Ebusakami Secondary school in Vihiga County to verify the tools validity and reliability. Sample size of 42 participants was engaged. This consisted about 10% of the projected population size for the parent research. This pre-testing helped familiarize research assistants with the questionnaire, identify any ambiguity, clarity of questions and responsiveness of data collection, and validate the questionnaire's reliability and validity. Vihiga County was chosen for pre-testing due to its similarity to the study area and Ebusakami Secondary School chosen to ensure there was not interference with the main study area. The feedback obtained from the pre-test was used to revise the questionnaire and enhance the research assistants' data collection skills before the actual data collection process to ensure accuracy.

3.9 Data analysis

Data collected was then organized, edited, coded, and fed in a computer for analysis using Statistical Package for the Social Sciences (SPSS) software version 25.0. Pearson correlation coefficient and independent t-test were used to establish statistical significance of respective questions at a 95% confidence level ($\alpha = 0.05$). The findings were outlined in tables, charts, and percentages. Descriptive statistics were utilized to interpret and discuss the findings based on the study objectives and thematic areas. The data was analyzed to get the mean of likert scale data and transforming the data into single variables before running the correlations in SPSS.

Table 3.3: Data analysis summary table

S/N	Objective/Research question	Analysis tool andpresentation
1.	To determine knowledge level onphysical activity participation among secondary school students in Kakamega County.	Descriptive statistics including percentages Pearson correlation coefficient
2.	To assess the attitudes of secondary school students towards physical activity in Kakamega county.	Descriptive statistics including percentages Pearson correlation coefficient
3.	To examine the level of physical activity participation among secondary school students within Kakamega county	Descriptive statistics including percentages
4.	To compare the knowledge and attitude of physical activity participation between male and female secondary school students in Kakamega County.	Independent-sample t-test

3.10 Logistical and Ethical consideration

To adhere to logistical requirements, the research proposal was submitted to Masinde Muliro University of Science and Technology Institutional Scientific Ethical and Review Committee (MMUST-ISERC) for ethical review and approval. An introductory letter from the MMUST-ISERC was used to seek permission for research from National Council of Science, Technology and Innovation (NACOSTI). Additionally, approval for the research was obtained from the Ministry of Education (MOE), Kakamega County. Consent was obtained from parents or caregivers of the students and for boarding school consent was sought through phone calls.

Anonymity

The researcher assured respondents that anonymity of the data pertaining the respondents name, age, gender, school and education level was ensured. During data collection process, every participant response was coded to maintain anonymity and the code used for data analysis. This ensured that respondents are protected from any harm.

Voluntarism

To engage in this research was entirely voluntary. Thus, the respondents were assured the freedom to leave the study without any consequences. The consent was elaborated to the participants in a language they can understand. Those who consented to participate, were requested also to consent for their student to participate.

Privacy and confidentiality

The questionnaires did not bear any identity of the participants to ensure privacy and confidentiality. Instead, unique codes assigned to questionnaires that were used in collecting data to conceal their identity. The research involved interviews, which were done in a private section within the school with only the student and the person collecting data this ensured privacy of data collection process.

To ensue data security, the collected data in the questionnaires was handled confidentially and a serial number was used to identify the files and only be assessed by the researcher. Data entered in data analysis software was encrypted with passwords for security purposes.

Beneficence

No rewards were given to the participants at any given point during the research. The research provided generalized data and information that would help stakeholders on current level of physical activity, knowledge, attitudes and participation levels among secondary school students, hence no benefits were accrued by the participants. The analyzed data would be shared with the respondents as feedback, from respective institutions for effective adjustment on their physical activity programs.

Informed consent

Introduction was done and research goals narrated to participants. Thereafter, consent gotten from the participants prior to continuing with data collection without coercion. Respondent's opinion to either assent or not was highly acknowledged. Consent form was signed by those agreed to participate in the study to allow the researcher/research assistant to collect data from them.

Justice

All the respondents who met the selection criteria were sampled and all the data collected was then analyzed. All the respondents were treated equally regardless of the type of school, religion, age or gender during the data collection procedure.

CHAPTER FOUR

RESULTS

4.0 Introduction.

This chapter illustrates the study results and findings. Thus, the study aimed at determining the level of knowledge, participation and attitude of secondary school students in physical activity within Kakamega County. Results under this objective also contains questionnaire response rate, features of secondary schools, and socio-demographic features of the students. Relationship between knowledge of PA and practice of PA. Students' attitude toward PA and the relationship of attitude and participation in PA. Participation level and findings of independent t-test of socio-demographics (gender) and the knowledge of students towards PA.

4.1 Knowledge of secondary school students PA participation in Kakamega County

To determine the knowledge of PA participation of secondary school students within Kakamega County was the first goal of the study. Under this objective also contains questionnaire response rate, features of secondary schools, and socio-demographic features of the secondary school students. Correlation between practice of PA and knowledge of PA.

4.1.1 Questionnaire response rate

The research focused on 422 participants. However, only 412 respondent which is 97% turn out rate. This was considered adequate to provide information for analysis of the data as described by Mugenda and Mugenda, (2003).

4.1.2 Characteristics of the secondary schools

The study assessed the characteristics of secondary schools that took part in the research. Table 4.1 represents a summary of the findings. The researcher selected 4 schools to participate in the study namely Shikoti Girls Secondary School which was represented by 26.5% (n=109), Mwiyala Secondary School, 27.2% (n=112), Ikonyero Secondary School, 15.3% (n=63) and Kakamega High School 31.0% (n=128).

Table 4:1: *Characteristics of secondary schools*

M	Category	N	%
School name	Shikoti Secondary	109	26.5
	Mwiyala Secondary	112	27.2
	Ikonyero Secondary	63	15.3
	Kakamega high	128	31.0
Residence area	Urban	250	60.7
	Rural	162	39.3
Type of school	Day school	175	42.5
	Boarding school	237	57.5

4.1.3 Socio-demographic characteristics of the secondary school students within Kakamega County.

Table 4:2: *Socio-demographic features of students*

Variable	Category	N	%
Level of study	Form one	81	19.7
	Form two	176	42.7
	Form three	112	27.2
	Form four	43	10.4
Age	14 years	45	10.9
	15 years	88	21.4
	16 years	94	22.8
	17 years	110	26.7
	18 years	75	18.2
Gender	Male	194	47.1
	Female	218	52.9
Religion	Christian	299	72.6
	Muslim	104	25.2
	Hindu and others	9	2.2

Table 4.2 above illustrates the summary of the findings for socio-demographic data of the secondary school children was also assessed, and the results indicate that most students who took part in the research were Form Two's 42.7% (n=176), Form 4 was the least represented with only 10.4% (n=43) taking part in the study. The dominant age was 17 years 26.7% (n=110), while female students were the majority with 53.2% (n=234), male students were represented by only 46.8% (n=206). The study also looked at the religion of students who took part in the research, and most of the students were Christians 72.6% (n=299), with Hindus being the least represented at 2.2% (n=9).

Table 4:3: *Knowledge of PA participation among secondary school students*

Variable	Strongly Disagree		Disagree		Not sure		Agree		Strongly Agree	
Variable	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Physical activity increases and maintains strength and endurance	13	3.1	20	4.9	55	13.3	210	50.9	114	27.7
Physical activity can be aerobic and or anaerobic.	29	7.0	44	10.7	195	47.3	103	25.0	41	9.9
Age-predicted heart rate maximum can easily be determined by 220 minus ages	59	14.3	110	26.7	91	22.1	89	21.6	63	15.3
Physical activity maintains blood pressure	37	9.0	50	12.1	97	23.5	121	29.4	107	26.0
Regular physical activity causes increased insulin needs	46	11.1	49	11.9	150	36.4	92	22.3	75	18.2
Physical activity does more harm than good	145	35.2	84	20.3	25	6.1	73	17.7	85	20.6

Table 4.3 above Illustrates summary of the results for objective one which was to examine Knowledge of PA participation among students in secondary schools within Kakamega County. A set of 6 questions were presented on a Likert scale 1-5, 1= Strongly Disagree, 2= Disagree, 3=Not sure, 4=Agree, 5=Strongly Agree to identify students' knowledge on physical activity participation. Thus, asked if PA increases and maintains strength and endurance, the majority of the students agreed with the statement 50.9% (n=210), 27.7% (n=114) strongly agreed with only 4.9% (n=20) disagreeing and 3.1% (n=13) who strongly disagreed. Hence, the implication of the statement indicates that most students are inclined to agree.

Half of the students were unsure of whether PA can be aerobic or anaerobic 47.3% (n=195), with 34.9% (n=144) agreeing. Only 17.7% (n=73) strongly disagreed with the statement. Thus, the statement's implication shows that most students were unsure of the statement. The results on age predicted heart rate, indicates that about a quarter of the students 22.1% (n=91) were unsure of the statement, 41% (n=169) disagreed, and 36.9% (n=152) agreed. The implication of the statement shows that most students are inclined to disagree.

The majority of the students were unsure if PA maintains blood pressure 23.5% (n=97), 29.4% (n=121) agreed while 26.0% (n=107) strongly agreed and 9.0% (n=37) strongly disagreed. The statements implication shows that most students inclined to agree. The findings on insulin levels shows that most students were unsure of the statement 36.4% (n=150), with only 22.3% (n=92) agreeing to the statement. Only 11.1% strongly disagreed with the statement. Thus, the implication of the statements indicates that students are unsure of the statement. Most students strongly disagreed that PA does more good than harm 55.5% (n=229), with only 38.3% (n=158) agreeing. The implication of the statement indicates that the results inclined towards disagree.

4.1.5 Relationship between Knowledge of Physical Activity and Practice of Physical Activity.

Table 4:4: Relationship between knowledge of PA and practice of physical activity.

	Correlation Coefficient (r)	**Significance (p-value)**
Pearson correlation co-efficient	0.159	< 0.001

**. Correlation is significant at the 0.01 level (2-tailed)

Table 4.4 illustrate the Pearson correlation co-efficient findings under the first

objective of knowledge of PA participation among secondary school students within Kakamega County. Pearson's correlation co-efficient was done to find out correlation between knowledge and physical activity participation. Pearson product correlation of knowledge of PA participation and level of practice of PA indicated a moderately positive and significant ($r=.159$, $p<0.001$); the r value of .159 implicate that there is a positive correlation. This shows that a decrease in knowledge of PA will lead to decrease in the level of practice of PA and vice versa. The p-value ($p < 0.001$) indicates a statistical significance of the correlation.

4.2 Attitude toward Physical Activity among secondary school students within Kakamega County

The table 4.5 below presented the findings of the second objective which was to assess secondary school students' attitudes towards physical activity. Likert scale was used to assess their level of attitude.

Table 4:5: *Results of Attitude toward physical activity among secondary school students*.

Variable	Strongly Disagree		Disagree		Not sure		Agree		Strongly Agree	
Variable	**n**	**%**	**n**	**%**	**N**	**%**	**n**	**%**	**n**	**%**
I enjoy participating in physical activity	35	8.5	31	7.5	18	4.4	188	45.6	140	34.0
I feel physical activity influences my mood/ sleep	37	9.0	62	15.0	75	18.2	154	37.4	84	20.4
According to me, physical activity helps me to maintain body weight	27	6.6	49	11.9	33	8.0	155	37.6	148	35.9
Physical activity is important in preventing diseases in both children and adult	23	5.6	31	7.5	32	7.8	172	41.7	154	37.4
Anytime I am free I like engaging myself in a physical activity	25	6.1	35	8.5	15	3.6	192	46.6	145	35.2
I should exercise regularly for my health	22	5.3	31	7.5	17	4.1	161	39.1	181	43.9

Students were asked if they enjoyed engaging in PA, of which the most students agreed 45.6% (n=188), 34.0% (n=140) strongly agreed while 8.5% (n=35) strongly disagreed and 7.5% (n=31) disagreed. The implication of the statement shows that the findings are inclined toward agree. Asked if physical activity influences their mood/sleep, the majority of the students agreed 37.4% (n=154), and 20.4% (n=84) strongly agreed. Only a few students disagreed with the statement 15.0% (n=62), and 9.0% (n=37) strongly disagreed. Thus, the implication of the statement inclined towards agree.

The students were also asked if physical activity helps them maintain their body weight. The findings reveal that the majority 37.6% (n=155), and 35.9% (n=148) agreed and strongly agreed respectively. Those who disagreed were 11.9% (n=49)

and 6.6% (n=27) strongly disagreed. The statement outcome shows that most students inclined towards agree. The importance of physical activity in alienating disease was also assessed and most students agreed to the statement 41.7% (n=172), 37.4% (n=154) strongly agreed. Very few students disagreed with this statement 7.5% (n=31), and 5.6% (n=23) strongly disagreed. The statement outcome shows that the most students are inclined to agree.

The students were also asked if they participate in PA in their free time to check whether they are self-motivated in engaging in physical activity or not. Most of the students agreed 46.6% (n=192), and 35.2% (n=145) strongly agreed. Only 8.5% (n=35) disagreed and 6.1% (n=25) strongly disagreed with the statement. Thus, the implication of the statement is inclined to agree. Most of the students strongly agreed that they should exercise regularly to improve their health 43.9% (n=181), and 39.1% (n=161) agreed while 7.5% (n=31) disagreed, and 5.3% (n=22) strongly disagreed. The outcome of the statement reveals that majority of the students inclined to strongly agree.

4.2.1 Relationship between Attitude towards PA and practice of PA.

Under the objective of attitude toward physical activity among secondary school students within Kakamega County. Correlation co-efficient test was done to find out correlation between PA participation and attitude.

Table 4:6: Correlation analysis between attitude towards physical activity and practice of physical activity.

	Correlation Coefficient (r)	**Significance (p-value)**
Pearson correlation co-efficient	0.178	< 0.001

**. Correlation is significant at the 0.01 level (2-tailed)

Pearson product correlation of attitude towards engaging in PA and level of practice of physical activity was found to be (r=.178, p<0.001).

The r value of .178 represents the direction and strength of the linear correlation between knowledge and physical activity participation positive and significant. This p<0.001 shows a statistically significant correlation hence suggesting a reliable and meaningful correlation as shown in table 4.6

4.3 Physical Activity Participation among secondary school students within Kakamega County

To examine the degree of PA participation among students in secondary schools within Kakamega County, was the third goal of the research. Thus, students were questioned if they engaged in any PA and the findings were as presented in Figure 4.1.

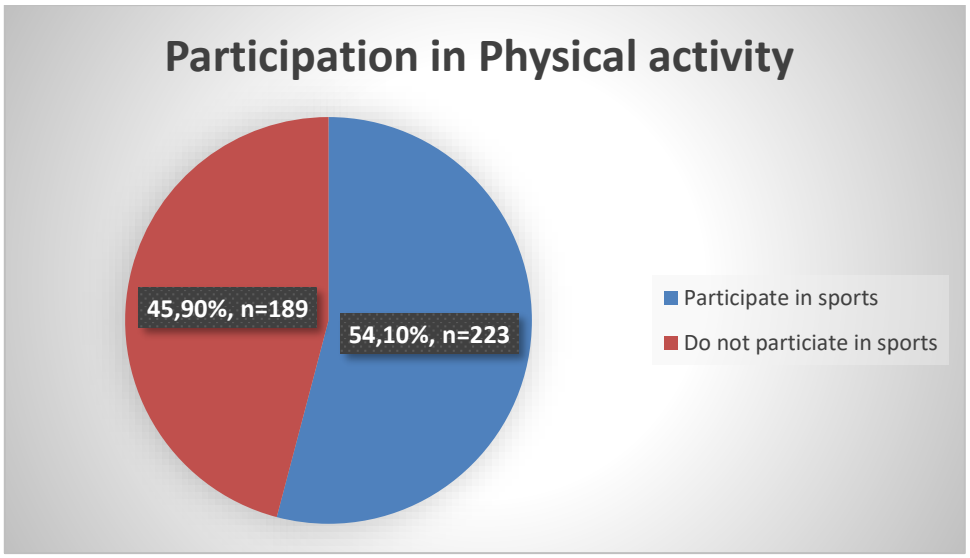

Figure 4.1: Participation in physical activity

The results indicate that majority of the students engaged in physical activity 54.1% (n=223) while 45.9% (n=189) did not engage in PA.

Table 4:7*: Results of PA participation among secondary school students*.

Variable	Category	N	%
Do you participate in physical activity?	Yes	223	54.1
	No	189	45.9
If yes, what physical activity do you participate in?	Ball games	112	27.2
	Athletics	102	24.8
	Indoor games	19	4.6
	None of the above	179	43.4
How would you describe your overall level of physical activity outside school hours?	Sedentary (Little to no physical activity)	131	31.8
	Low (Minimal physical activity)	74	18.0
	Moderate (Engaging in physical activity occasionally)	21	5.1
	Active (Regular participation in physical activities)	113	27.4
	Very active (Engaged in vigorous physical activity regularly)	73	17.7
How often do you participate in the physical activity mentioned?	Daily	88	21.4
	3-4 times per week	104	25.2
	1-2 times per week	31	7.5
	Rarely	57	13.8
	Never	132	32.0
What time do you participate in physical activities?	During break time	119	28.9
	During P.E lessons	88	21.4
	During my free time at home/school	74	17.9
	Rarely	131	31.8
Where do you prefer to engage in physical activities	Outdoor sports field/courts	198	48.1
	Fitness center/gym	85	20.6
	Home	94	22.8
	Community recreation centers	35	8.5

Table 4:7 above represent results of physical activity participation among secondary school students.

Students were questioned on the type of physical activity they engaged in, about

27.2% (n=112, boys 58 and girls 54) participated in ball games, 24.8% (n=102, boys 47 and girls 55) athletics and 4.6% (n=19, boys 6 and girls 13) indoor games.

The results for the level of PA outside school hours by students show that only 5.1% (n=21) engaged moderately, while those who were active and sedentary (Little to no physical activity) were represented by 31.8% (n=131). Those who were very active in physical activity were 17.7% (n=73) while those who engaged in minimal physical activity (low) were 18.0% (n=74).

The researcher also looked at the rate at which the students participated in physical activity and the results show that the majority did not participate 32.0% (n=132), however, for those who participated, the majority participated 3-4 times per week 25.2% (n=104) while 21.4% (n=88) participated in physical activity daily. The study also found that 31.8% (n=131) rarely participated in any physical activity. However, the majority participated in physical activity during break time 28.9% (n=119), 17.9% (n=74) participated during their free time both at home and school while 21.4% (n=88) participated only during P.E. lessons. The majority of the students indicated that they prefer to engage in physical activity in outdoor sports fields/courts 48.1% (n=198), 22.8% (n=85) prefer fitness centers/gyms, 22.8% (n=94) prefer at home while 8.5% (n=35) prefer community recreational centers.

4.3.1 PA practice among secondary school students within Kakamega County

The study also looked at the practice of PA among secondary school students. Three sets of questions were used on a 5-point Likert scale and the findings are as presented in Table 4.8.

Table 4:8**:** *Results of Practice of physical activity among secondary school students.*

	Strongly Disagree		**Disagree**		**Not sure**		**Agree**		**Strongly Agree**	
Variable	**n**	**%**	**n**	**%**	**N**	**%**	**n**	**%**	**n**	**%**
I always exercise for at least 60 minutes per day	50	12.1	90	21.8	61	14.8	109	26.5	102	24.8
I participate in physical activity sessions at least 3 times a week	23	5.6	59	14.3	48	11.7	179	43.4	103	25.0
I always train within my heart rate target zone.	35	8.5	56	13.6	79	19.1	119	28.9	123	29.9

The table above illustrate the findings where students were asked if they always exercise for at least 60 minutes per day, most students agreed 26.5% (n=109), and 24.8% (n=102) strongly agreed. However, 21.8% (n=90) disagreed with the statement and 12.1% (n=50) strongly disagreed. The outcome of the findings indicates that most of students agreed with the statement. Most of the students agreed 43.4% (n=179) that participate in PA sessions at least 3 times a week, 25.0% (n=103) strongly agreed while 14.3% (n=59) disagreed with the statement. Therefore, the implication of the statement indicates that most students agreed with the statement.

The students were also asked if they train within their heart rate zones and most of them strongly agreed 29.9% (n=123), 28.9% (n=119) agreed while 13.6% (n=56) disagreed and 8.5% (n=35) strongly disagreed with the statement. Hence, the

statement's outcome shows that the majority of the students agreed.

4.4 Knowledge and Attitude of Physical Activity Participation between male and female secondary school students in Kakamega.

Fourth goal of the research was to determine disparities in attitude and knowledge regarding PA engagement between male and female secondary school students in Kakamega County. Independent t-test was done and results were in table 4.9 for knowledge level between male and female and table 4.10 for attitude between male and female students

4.4.1 Independent t-test of the socio-demographics and the Knowledge of students towards Physical Activity.

Table 4:9: Results between socio-demographics and the Knowledge of Physical Activity.

	Male		Female				95% CL		
Variable	M	SD	M	SD	t (438)	p	LL	UL	Cohn' s d'
Scores	2.07	0.69	2.13	0.738	-0.783	0.434	-0.188	0.081	0.84

From the table, knowledge of PA between male and female was compared using an independent-sample t-test. However, there were no any variations noted (t (438) = -0.738, p=0.434) in scores for Male (M=2.07, SD=0.690) and Female (M=2.13, SD=0.738). The extent of the difference in the means (mean difference=-0.054, 95% CI: -0.188 to 0.081) was very minimal.

4.4.2 Independent t-test of the socio-demographics and Attitude of students towards Physical Activity.

Similarly, Table 4.10, indicates an independent-sample t-test to compare students'

attitudes towards physical activity in Male and Female students was done.

Table 4:10:
Results if independent t-test on Socio-demographics characteristics and Attitude of Physical Activity.

	Male		Female				95% CL		
Variable	M	SD	M	SD	t (438)	p	LL	UL	Cohn's d'
Scores	2.76	0.69	2.73	0.69	-0.373	0.709	-0.105	0.154	0.04

However, there were no notable variations (t (438) = -0.373, p=0.709) in scores for Male (M=2.76, SD=0.691) and Female (M=2.73, SD=0.687). The extent of the difference in the means (Mean difference=0.025, 95% CI: -0.105 to 0.154) was very minimal.

CHAPTER FIVE

DISCUSSION.

5.0 Introduction.

A detailed explanation of research findings is presented in this chapter as per research goals. It discusses; knowledge, attitude, practice and participation of PA and knowledge and attitude of PA participation between male and female secondary school students in Kakamega.

5.1 Knowledge of secondary school students on PA participation.

Knowledge of PA participation among secondary school children was the first goal of the study. Socio-demographic features of secondary schools and students was assessed. The schools were four public secondary schools with two mixed-day schools and two boarding schools (one boys' school and a girl's school). The research also revealed that most respondents were female 52.9% (218) students with the majority of them being 17 years of age 26.7% (110). These findings corroborate with research by Fabunmi et al., (2019), research findings also showed that most respondents were female students as compared to men, however, the study didn't look at the age of the respondents.

However, this research differed with a study by Vaezi et al., (2020), regarding the knowledge, disposition and PA habits of middle school pupils, the findings were slightly different from the current research, where most of students were boys 50.7% and girls 49.3%, with the majority of the students being 13 years of age. In terms of area of residence, the current study found that majority 250 (60.7%) of the students indicated to be living in urban areas. This corroborates with Vaezi et al., (2020)

where majority of the students lived in urban areas with about a quarter of the respondents living in rural areas.

In the current study form 2 were more 176 (42.7%) compared to those from other classes. This is comparable to research by Sun et al., (2023), in their study on understanding, disposition and training of body shape and fitness which was conducted in China, also had the majority of female students participating in the study as compared to male students. The study also revealed that sophomores (51.2%) were more represented compared to freshmen (36.3%).

The findings are at par with a research by (Ra et al., 2022) conducted in Malaysia among high school students which revealed a mean age of 16 years with a high turnover among female students as respondents as compared to males (Ra et al., 2022). However, there is a slight difference with the current results where majority of the students were aged 17 years. Most studies conducted across the globe on knowledge, attitude, and practice of physical activities have similar results concerning gender turnover and mean age of participants. This is because the majority of students attending high school their age ranges between thirteen to seventeen years (Vaezi et al., 2020; Oja & Piksööt, 2022; Ra et al., 2022).

Despite the varied research carried out on students' knowledge, attitude, and practice of PA, few researches have taken into account the socio-demographics characteristics of these students and how they affect their knowledge, attitude, and practice. Thus, this calls for more study to have conclusive findings hence have a positional stand.

The findings on Secondary School students' knowledge on PA participation, showed

that most students 59.4% had some understanding about PA participation. Similar research conducted by Fabunmi et al., (2019), found similar results out of 520 participants, where 97.88% of the participants showed good understanding of PA participation. The study went further and assessed the difference in knowledge between male and female students, from the finding males scored higher it terms of knowledge of physical activity participation than girls.

Majority of the students agreed on the importance of maintaining good health through physical activity this correlates with research by Ra et al., (2022), in their research among high school students in Malaysia, found that most students (87.3%) acknowledged physical activity and its necessity in maintaining good health. However, some 97 (23.5%) were unsure of the benefits especially in reducing blood pressure and maintaining a normal heart rate. The current study also found that majority 324 (78.1%) acknowledged physical activity increases and maintain strength and endurance this was similar with Malaysian study Ra et al., (2022) which also indicated that the students acknowledged the importance of regular PA in increasing muscle mass, flexibility and maintaining blood pressure normalcy.

The study also corroborates with another study conducted in Nnuska area in Nigeria, the results showed positive results with the majority of the students understanding more about practice of PA (Aniodo, 2014). Unlike the current study, the study looked at the knowledge of the students on types of PA, its benefits, and hindrances to participation in PA. Many students had a high understanding of the type of PA, its benefits, and hindrances to engaging in PA among students.

However, the current study slightly differs from a study done in Isfahan Province,

Iran where the majority of the students scored lowest in the knowledge of physical activity (mean ± standard deviation, 6.7 ± 2.19) (Vaezi et al., 2020). Consequently, the students revealed to have been taught on the positive impacts of PA with many students having received the message from many sources, especially through media channels such as television, radio, and newspapers. Almutairi et al., (2022) compared the knowledge of PA between male and female students, and the results were remarkable. The findings indicated that female pupils had better knowledge of PA than their male counterparts. However, males were more likely to practice PA than female students were.

There are many researches that have been done to assess the knowledge about PA; however, it is hard to collate these findings with previous findings because of the goals, various instruments, and methods used (Adhikari, 2020; Almutairi et al., 2022b; Feroz Ali et al., 2022). However, as seen above there are few studies that show some significant results with similar findings from the current study. Most of these studies mainly conducted their study among older people and college students very few have taken into account the growing need for physical activity among teenagers. It is also evident that in regards to the knowledge, attitude and practice model, a person's understanding can alter relevant perspectives and viewpoints, making them to adjust corresponding behaviors.

5.1.2 Relationship between Knowledge of Physical Activity and Physical Activity Participation.

The researcher looked at the correlation between knowledge and PA participation. Pearson product correlation was conducted, the results $r=0.159$, $p<0.001$). This indicated that as understanding of physical activity participation rises, there tends to be a slight increase in the actual practice of physical activity. Therefore, suggests that students with more knowledge about physical activity participation are likely to participate in PA more. This shows a moderately positive significant association between knowledge and practice of physical activity. The findings are similar to a study by Qwabe., (2023) which also showed a significant correlation between knowledge and practice of PA (Qwabe., 2023).

Similar results were observed by Sun et al., (2023), the results showed positive correlation between knowledge and practice of physical activity. However, most studies focused on the correlation between knowledge, attitude and gender (Almutairi et al., 2022b; Guddal et al., 2019; Ra et al., 2022). Thus, studies that have looked at the correlation between knowledge and physical activity participation, did not have a conclusion. From the above findings practitioners need to focus on knowledge to improve physical activity.

5.2 Attitude toward Physical Activity among secondary school students

Examining secondary school students' attitude towards PA was the second objective of the study. Attitude is made of moods, which refers to a particular way of reasoning or belief that has impact on a person's behavior (Qwabe., 2023). Thus, with a good attitude towards PA, one is bound to participate in it, through its positive effect in

the prevention of non-communicable and chronic illnesses. The research findings, reveal that most students 75.8% had a positive attitude toward physical activity. This is because the majority 75.8% of the students agreed with the statements used to assess their attitude toward physical activity participation while 16.5% disagreed.

This was study corroborated with (Gouveia, et al., 2019) which assessed students' attitude toward physical activity in Nigeria revealed that students had a positive attitude toward physical activity. The study, which involved secondary school students in Nigeria, reported that students generally held favorable views towards engaging in physical activities.

Regarding the statement "I enjoy participating in physical activity" most 79.6% of students agreed to the statement while those who agreed to the statement that physical activity influences their mood and sleep 57.8%. This could be due to positive attitude towards physical activity. Thus, the attitude could be as a result of most students having moderate understanding of PA as well as its positive health benefits. These findings collate with research by (Mwimo et al., 2021) where 88.6% confirmed that physical activity highly improves their mood and make them feel well.

Concerning the statement "physical activity helps me to maintain body weight" 73.5% were in agreement and the statement "Physical activity is important in preventing disease in adults and children." The majority of the students 79.1% agreed with the statement. Most students participated in PA to maintain body weight compared to preventing diseases. The findings are in agreement with (Mwimo et al., 2021) research, which found that 63.3% of the respondents acknowledged the benefits of PA in maintaining body health and wellness especially in reducing non-

communicable diseases. Mwimo indicated that the participants were aware of these due to their past experiences and awareness of PA involvement.

However, the current study differs with a study by Kariuki conducted in Kiambu County revealed that 54.4% of boys had negative attitude and 51% girls also had negative attitude towards physical activity. The study also further looked at the correlation among the attitudes of female and male students of which there was insignificant correlation between male and female students' attitudes towards physical activity ($p = 0.44$ and 0.48 respectively) (Kariuki, 2017). This research also differs from other studies which indicated a high positive attitude towards physical activity among high school students (Vaezi et al., 2020; Ziari et al., 2017; Ra et al., 2022). However, Fabunmi, 2019 and Kumar et al., 2022 found that girls had more positive attitudes towards physical activity than boys.

The study also corroborates with Ousman Bajinka and Modou Badjan, (2019), in their research which revealed that secondary school students had a positive attitude toward PA irrespective of their gender. However, they slightly differ from the current findings since it did not look at the attitude between the different genders assessed. The findings also differ from other studies discussed above which found that girls had more positive attitudes than male students (Fabunmi, 2019 and Kumar et al., 2022). From the above data there is need for more studies to focus on attitude and gender since this study didn't focus more on it.

5.2.1 Relationship between Attitude towards Physical Activity and level of Practice of Physical Activity.

A significant positive correlation (r=.178, p<0.001) between attitude and level of PA participation was revealed, this means that a positive attitudes towards physical activity increase participation. The majority of the studies conducted also showed that there is a correlation between attitude and level of PA participation among students (Ziari et al., 2017; Oja & Piksööt, 2022; Ra et al., 2022). This study's results collate with Fabunmi et al., (2019), that found a positive relation between attitude and practice of physical activity. Qwabe., (2023) in their study also indicated a positive correlation between the two variables (attitude and physical activity).

5.3 Physical Activity Participation among secondary school students

The researcher also sought to find out level of PA participation among secondary school children in Kakamega County. Everybody desires a good healthy living, and therefore everyone needs to reach a respectable state of health. This could be attained through regular participation in physical exercise. Something people do regularly or the way they do it over time is known as practice (Qwabe., 2023).

The study results reveal that the majority of the students participated in physical activity 54.1%, with the majority of them indicating to participate in ball games 112 (27.2%). These findings corroborate with Vaezi et al., (2020), in their study in Isfahan, found that majority of the students participated in PA. The research also found that the students loved ball games 27.2% more than indoor games 4.6%. This can be attributed to the fact that ball games are some of the major sports activities practiced across the globe.

The current research indicated that most students participated in PA during break time (28.9%), and physical education lessons (21.4%). These results diverge from systematic review research by Hollis et al., (2017), the findings indicate that most students engaged actively in physical activity during the physical education time. However, the study was only limited to P.E. time and did not assess the activeness of these students during their free time and break time in school.

In regard to the frequency of participation the study found that most of the students 104 (25.2%) participated in physical activity 3-4 times a week. This could be attributed to children demonstrating desirable indicators of physical activity and social behavior.

The current study showed a high level and active participation in regular physical activity which corroborate with a cross-sectional study conducted by (Guddal et al., 2019), the results showed that boys engaged more in high level of participation in physical activity for both that boys engaged more in PA than girls, however, boys scored high in terms of strength training as compared to girls who indicated participation in aesthetic training mainly. This is at per with several other studies conducted globally (Hollis et al., 2017; Silva et al., 2018; Almutairi et al., 2022; Sun et al., 2023).

According to Dawood, (2020), most adolescents who are in both middle and secondary school level usually score higher in terms of physical activity participation. This is because they have the knowledge and understand the importance and health benefits of being active. However, physical activity participation in children living in urban areas seems to be low in contrast to those

living in rural areas (Ra et al., 2022). This is due to the congestion and the sedentary lifestyle of most city dwellers that most of the children mainly engage in playing video games rather than the actual physical activity in the field. Thus, increased screen time and advanced technology have resulted in diminished PA participation in both adults and children (Ziari et al., 2017).

5.4 Male and female secondary school students' Knowledge and Attitude of Physical Activity Participation in Kakamega.

The independent t-test of the knowledge and attitude of PA participation amidst male and female secondary schools' students in Kakamega County was done. There were insignificant differences in knowledge of male and female students, ($t(438) = -0.738$, $p=0.434$) Boys scored ($M=2.07$, $SD=0.690$) while Ladies scored ($M=2.13$, $SD=0.738$). In terms of attitude the t-value was -0.373, with a corresponding p-value of 0.709, showed that the difference in scores between male ($M=2.76$, $SD=0.691$) and female ($M=2.73$, $SD=0.687$) students were not statistically significant hence there was insignificant difference between male and female students on attitude toward PA. Similar results were observed by (Gouveia e. a., 2019) involving secondary school students explored the relationship between students' attitudes toward physical activity. The research revealed that there was insignificant difference between the attitudes of male and female students. However, these results differ from other studies that showed that there is a significant difference between gender and attitude toward physical activity (Ziari et al., 2017; Kumar et al., 2022). Females scored higher (59.88 ± 8.20) in terms of a positive attitude toward physical activity than males (57.40 ± 10.01). This is highly attributed to the different sex roles between males and females; they tend to engage in many activities that promote avenues. However, the

study did not show any difference in terms of physical activity participation since both males and females participated in PA. Ziari et al., (2017), reported a higher score among male students as having a more positive attitude than female students have.

Kumar et al., (2022), also observed an insignificant difference between gender and knowledge of physical activity $t(498) = 8.43$, $p < 0.001$. He found out that females had more knowledge of physical activity than their male counterparts did. However, this differs from the current study results, which showed that the correlation was insignificant. The study by Ziari et al., (2017), also corroborates with the current results as it found that there was insignificant difference between males' and females' understanding of physical activity.

CHAPTER SIX

SUMMARY OF THE FINDINGS, CONCLUSIONS AND RECOMMENDATIONS.

6.0 Introduction.

This section provides an overview of findings, conclusions and recommendation of the research.

6.1 Summary of the findings.

The study summary is provided per objective.

6.1.1 Knowledge of PA participation among secondary school students

6.1.1.1 Socio-Demographic characteristics.

The study assessed four public secondary schools with two mixed-day schools and two boarding schools (one boys' school and a girl's school). These were, Shikoti Girls Secondary School which was represented by 26.5%, Mwiyala Secondary School, 27.2%, Ikonyero Secondary School, 15.3% and Kakamega High School 31.0%. Majority of the respondents were female students 53.2%, with majority of the students being 17 years of age.

6.1.1.2 Knowledge of Physical Activity Participation

Assessing secondary school students' knowledge of PA participation was the first objective of this study. The findings showed that most students had some understanding about physical activity participation.

6.1.1.3 Relationship between Knowledge of PA and practice of PA.

The study looked at the correlation of knowledge and practice of PA. Pearson product correlation was conducted, findings reveal a moderately positive correlation between knowledge and PA practice ($r=.159$, $p<0.001$).

6.1.2 Attitude toward Physical Activity Participation

Examining the attitude of secondary school students towards physical activity was the second goal of the study. The findings of the research, indicates that most students had a positive attitude toward physical activity, since majority of the students agreed with the questions used to assess their attitude toward physical activity participation.

6.1.2.1 Relationship between Attitude towards Physical Activity and level of practice of Physical Activity.

A moderately significant positive correlation between attitude and level of physical activity participation ($r=.178$, $p<0.001$) was also observed.

6.1.3 Physical Activity Participation

Third goal of the study was to find out secondary school children's level of physical activity participation in Kakamega County. The results reveal that most students participated in physical activity 53.0%, with the majority of them indicating to participate in ball games 27.2%. The results also indicates that most of the students participated in physical activity 3-4 times a week 25.2%.

6.1.4 Male and female secondary school students' Knowledge and Attitude of Physical Activity Participation in Kakamega

The independent t-test of the socio-demographic characteristics (gender) and the knowledge and attitude of students toward physical activity indicated that there was insignificant correlation between male and female students concerning knowledge and attitude toward physical activity ($t(438) = -0.738$, $p=0.434$) in scores for Male ($M=2.07$, $SD=0.690$) and Female ($M=2.13$, $SD=0.738$) and ($t(438) = -0.373$, $p=0.709$) in scores for Male ($M=2.76$, $SD=0.691$) and Female ($M=2.73$, $SD=0.687$)

respectively.

6.2 Conclusion

To conclude, students had moderate understanding of physical activity, since they understood physical activity's positive impacts in maintaining health and wellness in both children and adults. However, more effort is required to raise the students' level of awareness on the benefits of physical exercise to guarantee successful participation in PA.

Most students had a positive attitude regarding physical activity from the study findings. This could be attributed to the various physical exercises practiced within these schools, since most of the schools in western have been to actively promote different physical exercises to its students.

Despite, the majority of the students indicating to have knowledge and positive attitude toward physical activity, very few actively participated in moderate to vigorous physical activities. Ball games were the major type of physical activity the students engaged in followed closely by athletics. This shows a high performance in outdoor games by these students. Thus, there is need for sensitization to heighten students' engagement level in physical activity.

A significant relationship between knowledge and practice of PA, which shows that knowing benefits associated with physical activity highly promotes and boosts the zeal to practice and participate in physical exercise. This could also increase a person's interest and regularity in physical activity participation.

Similarly, there was a significant correlation between attitude and PA participation. Thus, a positive attitude toward something could increase the chances of PA

participation. A positive perception of PA as being beneficial to health generally boosts the chances of one engaging in the exercise itself. The study also, revealed that there was insignificant correlation in genders in terms of knowledge and attitude toward PA. Both male and female students were aware of the importance and they also engaged in PA in and out of school.

6.3 Recommendations.

The following recommendations were made from the study findings:

6.3.1 Secondary school students' Knowledge of Physical Activity Participation in Kakamega County.

There is a need for more sensitization on the positive health impacts associated with physical exercise among students to guarantee successful engagement in physical activities.

Develop and implementation of awareness advocacy within secondary schools to impact more knowledge on physical activity importance.

6.3.1.1 Policy recommendations on Knowledge level among secondary school students in Kakamega County.

Designing and implementation of training programs and distribution of qualified games teachers to who can positively impact students' physical activity participation.

6.3.1.2 Future studies recommendations on Knowledge level among secondary school students in Kakamega County.

Conduct longitudinal studies to examine how knowledge and attitudes towards physical activity evolve over time among secondary school students.

6.3.2 Attitude toward Physical Activity Participation among secondary school students in Kakamega County

More behavioral change communication should be conducted among students to help improve their attitude towards participation in physical exercise.

Develop and promote peer education programs where students can influence and motivate each other to participate in physical activities.

Development of outreach programs where experts from the industry including universities can promote physical activity knowledge in local secondary schools and communities.

6.3.2.1 Policy recommendations on Attitude toward Physical Activity Participation among secondary school students in Kakamega County.

Kenyan Government to strengthen sports legislation to support physical activity engagement in schools and ensure they are accessible.

6.3.2.2 Future studies recommendations on Attitude toward Physical Activity Participation among secondary school students in Kakamega County.

These studies can be done on junior secondary schools' students as this is a new level of study in Kenyan system, this research should be repeated and be done in other parts of the country to give conclusive findings.

6.3.3 Secondary school students' level of participation in Physical Activity in Kakamega County.

Use of positive reinforcement strategies such as inter houses competitions to encourage regular participation in physical activities.

Parental/guardian involvement in promoting PA through organizing physical activity

clinics.

School-based programs need to be implemented to promote PA including structured extracurricular activities.

UNICEF and UNESCO through their platforms they can spearhead global campaigns to promote PA and donate resources to schools and communities.

6.3.3.1 Policy recommendations on Physical Activity participation level among secondary school students in Kakamega County.

The government to allocate adequate funding to support school physical activities programs.

Increase opportunities for PA through policy formulation by ministry of Education and KICD.

6.3.3.2 Future studies recommendations secondary school students' level of participation in Physical Activity in Kakamega County

Investigate possible barriers to physical activity participation among secondary school students within Kakamega County.

Future research can target additional objectives PA Assessment methods like use of accelerometer, direct observation checklist and interviews with other stakeholders.

Study should be a replicated across all counties in Kenya and globally to give more picture of PA levels among secondary school students.

6.3.4 Knowledge and Attitude of Physical Activity Participation between male and female secondary school students

Launch awareness campaigns to promote the benefits of physical activity across genders, emphasizing that both males and females have similar levels of knowledge and positive attitudes towards physical activity.

Need to enforce in-service course, seminars and workshops on physical activity and sports for learners to increase PA provision and opportunities by Ministry of Education, KICD and TSC.

6.3.4.1 Policy recommendations on Knowledge and Attitude of Physical Activity Participation between male and female secondary school students

The ministry of education should integrate for more physical activities' such as indoor games in the school curriculum to ensure students have diverse choices to participate in.

Increase awareness and training among parents and teachers to increase support and advocacy for PA among secondary school teachers and students, since data showed that majority were in moderate PA levels.

6.3.4.2 Future studies Policy recommendations on Knowledge and Attitude of Physical Activity Participation between male and female secondary school students

Longitudinal studies need to be conducted more to track changes in students' knowledge, attitudes, and practices over time and identify long-term impacts of interventions.

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APPENDICES

Appendix I: Informed Consent

Dear respondent,

My name is Joseph Muchiri, a Masters student from Masinde Muliro University of Science and Technology, pursuing MSc. Health Promotion and Sport Science. I am conducting research on **"Knowledge, Attitude and Practices of secondary school students of Kakamega County in Physical Activity Participation."** The information obtained from this study will solely be used for the purpose of academics. The above study has been cleared by the University ethics and review committee, National commission for science and technology, Ministry of education-Kakamega County and the required permissions have been obtained from the relevant authorities. Your participation is crucial in advancing knowledge and informing stakeholders and policymakers on interventions required.

Procedures to be followed

The research assistants will explain to you the purpose of this study. With your consent to participate in this study, we will ask you question on demographics. We will also ask several questions to assess your physical activity knowledge. We will also ask some questions on your attitude towards physical activity. Lastly, we will seek to know your level of physical activity involvement.

Kindly note that all these activities will be conducted in your school with the approval of school authority. We will try our best to make the sessions as short as possible and also make sure that you are comfortable as a participant. I assure you

that the research team has been trained appropriately to take an approach that protects you by making discussions wholesome, discrete and confidential as possible.

Privacy and Confidentiality

During this research, your privacy will be keenly observed. The questions will be asked in an enclosed room with the research participant and the researcher/research assistant only. The participant should also note that any information given to the researchers will be treated with confidentiality. The information will be used solely for statistical purposes and records relating tothe participant's identity such as name will not be captured, codes will be assigned to the participants and will be used to trace the participants instead there's need to recall.

Voluntarism

Participants will be well informed on the purpose of the study and participation will be purely onvoluntary basis, thus as the respondent you have the right to withdraw from the study at any givenpoint. The researcher may also terminate the study for reasons that will be explained to the participants. No participant will be persuaded by any means to participate in the study.

Beneficence

No rewards neither physical nor material to be given to the participants at any given point of the study. The respondents will not accrue any direct benefits from the research as it is meant to generate generalizable data and information that will help the stakeholders on the current level ofphysical activity knowledge, attitudes and participation among secondary school students. Feedback from the data collected and analyzed will be shared with the participants, from the respective institutions for

effective adjustment on their physical activity.

Person to Contact

You are welcome to ask questions before consenting and at any time thereafter. The principal investigator and other research team members will be available to answer your questions anytimeduring the data collection process. In case of further queries regarding the study, you may contactme or the MMUST Ethical Review Secretariat on the contact information given below. Your participation will be highly appreciated.

Thank you

May God bless you.

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Tel: +254-725300432 Email: rodiango@mmust.ac.ke

Respondent's consent

I have understood the above information as fully explained to me by the principal investigator, andI voluntarily consent my child/students to participate in this study (Please indicate by signing yourwillingness to participate in this study)

Yes ☐ No ☐

Respondent name_____sign_____Date _____

Investigator's Statement

I, the undersigned, have explained to the volunteer participant in the most understandable way andlanguage, the procedures to be followed, risks and benefits involved in this study.

Name of investigator /Research Assistant _____

Appendix II: Questionnaire

CONFIDENTIAL Serial/Entry Number…….

KNOWLEDGE, ATTITUDE AND PRACTICES OF SECONDARY SCHOOL STUDENTS OF KAKAMEGA COUNTY IN PHYSICAL ACTIVITY PARTICIPATION.

SCHOOL……DATE OF INTERVIEW……..……

Section1: Demographic Characteristics					
Questions and filters	**Coding of variables**	**Remarks**			
Age (As at your last birthday– whole number)	1= 14 years 2= 15 years 3= 16 years 4 = 17 years 5 = 18 years				
Gender	1 = Male 2=Female				
Class/Form	1= One 2= Two 3= Three 4 = Four				
Religion	1= Christian 2=Muslim 3= Hindu 4 = Others				
School name					
Type of school	1=Day school 2=Boarding school 3=Day and boarding school				
Location of the school	1=Urban 2=Rural				
Section2: Knowledge *(Tick one box only)*					
Items	**Strongly Disagree=1**	**Disagree=2**	**Not sure=0**	**Agree=3**	**Strongly Agree=4**
Physical activity maintains good health					
Physical activity increases and maintain strength and					

endurance					

Physical activity can be aerobic and or an aerobic.					
That I know age predicted heart rate maximum (HR (max) can easily be determined by 220 minus ages.					
Physical activity maintains blood pressure					
Regular physical activity causes increased insulin needs					
Physical activity does more harm than good					

Section3: Attitude *According to my opinion I think…. (Tick one box only)*					
Items	**Strongly Disagree=1**	**Disagree=2**	**Not sure=0**	**Agree=3**	**Strongly Agree=4**
I enjoy participating in physical activity					
I feel physical activity influence my mood/ sleep					
According to me, physical activity helps me to maintain body weight					
Physical activity is important in preventing diseases in both children and adult					
Anytime am free I like engaging myself in a physical activity					
I should exercise regularly for my health					

Section4: Participation ***(Tick one box only)***					
Items	**Strongly Disagree=1**	**Disagree=2**	**Not sure=0**	**Agree=3**	**Strongly Agree=4**
I always exercise for at least 6**0 minutes per day**					
I participate in physical activity sessions at least 3 times a week					
I always train within my heart rate target zone.					
Do you participate in physical activity?	1=Yes 2=No				
If yes, what physical activities do you participate in?	1=Ball games 2=Athletics 3=Martial art 4=Indoor games				
How would you describe your overall level of physical activity outside of school hours?	1=Sedentary (little to no physical activity) 2=Low (minimal physical activity) 3=Moderate (engaging in physical activity occasionally) 4= Active (regular participation in physical activities) 5=Very Active (engaged in vigorous physical activities regularly)				
How often do you participate in physical activity (ies) mentioned?	1=Daily 2=3-4 times per week 3=1-2 times per week 4=Rarely 5=Never				
What time do you participate in physical activities?	1=During break time 2=During P.E lessons 3=During my free time at home/school 4=Other (please specify)				
Where do you prefer to engage in physical activities?	1=Outdoor sports field/courts 2=Fitness center/gym 3=Home 4=Community recreation centers 5=Other (please specify)				

Appendix III: Approval from Institutional Scientific and Ethics Review Committee

MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY
Tel: 056-31375
Fax: 056-30153
E-mail: ierc@mmust.ac.ke
Website: www.mmust.ac.ke
P. O. Box 190,
50100.
Kakamega,
KENYA

Institutional Scientific and Ethics Review Committee (ISERC)

REF: MMU/COR: 40312 Vol 6(01) Date: November 30th, 2023

To: Mr. Joseph Muchiri Ndunda

Dear Mr.,

RE: KNOWLEDGE, ATTITUDE AND PRACTICES OF SECONDARY SCHOOL STUDENTS OF KAKAMEGA COUNTY IN PHYSICAL ACTIVITY PARTICIPATION.

This is to inform you that the ***Masinde Muliro University of Science and Technology Institutional Scientific and Ethics Review Committee (MMUST-ISERC)*** has reviewed and approved your above research proposal.

Your application approval number is **MMUST/IERC/200/2023.** The approval covers for the period ***November 30th, 2023 to November 30th, 2024.***

This approval is subject to compliance with the following requirements;

i. Only approved documents including informed consents, study instruments, MTA will be used.
ii. All changes including (amendments, deviations, and violations) are submitted for review and approval by ***MMUST-ISERC.***
iii. Death and life threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to ***MMUST-ISERC*** within 72 hours of notification
iv. Any changes, anticipated or otherwise that may increase the risks or affected safety or welfare of study participants and others or affect the integrity of the research must be reported to ***MMUST-ISERC*** within 72 hours
v. Clearance for export of biological specimens must be obtained from relevant institutions.
vi. Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. Attach a comprehensive progress report to support the renewal.
vii. Submission of an executive summary report within 90 days upon completion of the study to ***MMUST-ISERC.***

Prior to commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology and Innovation (NACOSTI) https://research-portal.nacosti.go.ke and also obtain other clearances needed

Yours Sincerely,

Prof. Gordon Nguka (PhD)
Chairperson, Institutional Scientific and Ethics Review Committee

Copy to:
- The Secretary, National Bio-Ethics Committee
- Vice Chancellor
- DVC (PR&I)

Appendix IV: Approval form Director of Postgraduate Studies

MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY (MMUST)

Tel: 056-30870
Fax: 056-30153
E-mail: directordps@mmust.ac.ke
Website: www.mmust.ac.ke

P.O Box 190
Kakamega – 50100
Kenya

Directorate of Postgraduate Studies

Ref: MMU/COR: 509099

15th November 2023

Joseph Muchiri
HPS/G/01-53894/2019,
P.O. Box 190-50100,
KAKAMEGA.

Dear Mr. Muchiri,

RE: APPROVAL OF PROPOSAL

I am pleased to inform you that the Directorate of Postgraduate Studies has considered and approved your Masters Proposal entitled: ***"Knowledge, Attitude and Practices of Secondary School Students of Kakamega County in Physical Activity"*** and appointed the following as supervisors:

1. Prof. Edwin Wamukoya - MMUST
2. Dr. Roselyne Odiang'o - MMUST

You are required to submit through your supervisor(s) progress reports every three months to the Director Postgraduate Studies. Such reports should be copied to the following: Chairman, School of Public Health, Biomedical Sciences and Technology Graduate Studies Committee and Chairman, Health Promotion and Sport Science Department. Kindly adhere to research ethics consideration in conducting research

It is the policy and regulations of the University that you observe a deadline of three years from the date of registration to complete your Master's thesis. Do not hesitate to consult this office in case of any problem encountered in the course of your work.

We wish you the best in your research and hope the study will make original contribution to knowledge.

Yours Sincerely,

MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY
DIRECTORATE OF POSTGRADUATE STUDIES
P.O. BOX 190 - 50100, KAKAMEGA (K)
Date..... Sign.....

Prof. Stephen O. Odebero, PhD, FIEEP
DIRECTOR, DIRECTORATE OF POSTGRADUATE STUDIES

Appendix V: Approval from National Commission for Science, Technology & Innovation.

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: **226193**

Date of Issue: **22/December/2023**

RESEARCH LICENSE



This is to Certify that Mr.. joseph Ndunda muchiri of Masinde Muliro University of Science and Technology, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Kakamega on the topic: KNOWLEDGE, ATTITUDE AND PRACTICES OF SECONDARY SCHOOL STUDENTS OF KAKAMEGA COUNTY IN PHYSICAL ACTIVITY PARTICIPATION. for the period ending : 22/December/2024.

License No: **NACOSTI/P/23/32196**

226193

Applicant Identification Number

Director General
NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Verification QR Code

NOTE: This is a computer generated License. To verify the authenticity of this document, Scan the QR Code using QR scanner application.

See overleaf for conditions

Appendix VI: Approval from Ministry of Education Kakamega County

REPUBLIC OF KENYA

MINISTRY OF EDUCATION
STATE DEPARTMENT OF EARLY LEA3RING AND BASIC EDUCA4TION

Telephone:
Fax:
E-mail: wespropde@yahoo.com
When replying please quote our Ref.

County Director of Education
Kakamega County
P. O. BOX 137 - 50100
KAKAMEGA

REF: KAKA/C/GA/29/17/VOL.VI/258

22nd January, 2024

MR. JOSEPH NDUNDA MUCHIRI
MMUST
KAKAMEGA

RE: RESEARCH AUTHORIZATION

Reference is made to a letter from NACOSTI Ref No: NACOSTI/P/23/32196 dated 22nd December, 2023 concerning subject matter.

This is to inform you that you have been authorized to carry out research on **'knowledge, attitude and practices of secondary school students in physical activity participation - Kakamega County'** for the period ending 22nd December, 2024.

Please accord him/her any necessary assistance he/she may require.

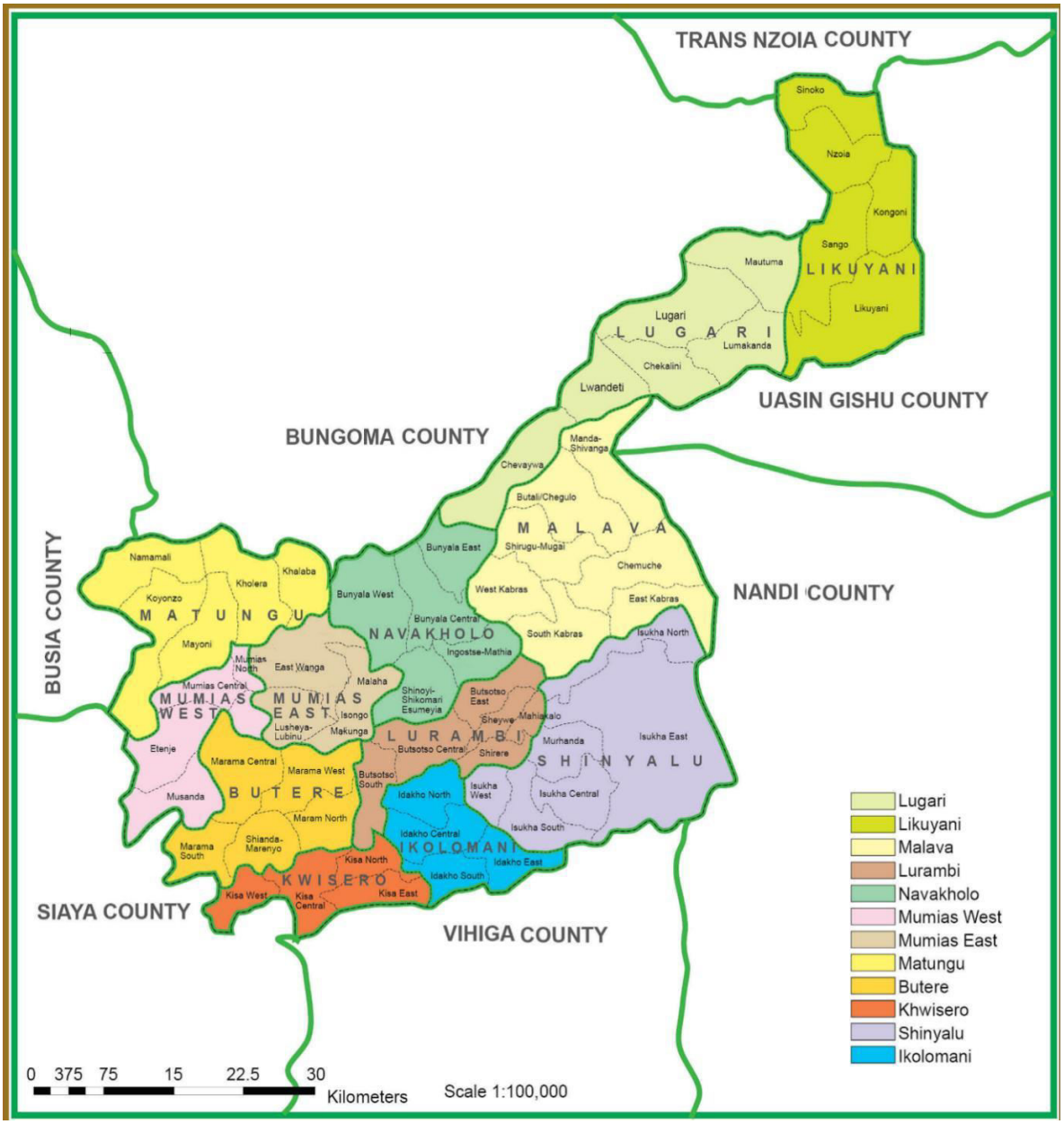
COUNTY DIRECTOR OF EDUCATION
KAKAMEGA COUNTY

HELLEN NYANG'AU
COUNTY DIRECTOR OF EDUCATION
KAKAMEGA COUNTY

***Copy to*:**

The Regional Director of Education
WESTERN REGION

Appendix VII: Map of Kakamega County



Source: Kakamega County CIDP 2023