

**UNIVERSITY OF EDUCATION, WINNEBA**

**AN INVESTIGATION OF THE PHYSICAL ACTIVITY PROFILE OF  
COLLEGES OF EDUCATION STUDENT-TEACHERS IN THE NORTHERN  
ZONE OF GHANA**



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**MASTER OF PHILOSOPHY**

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**UNIVERSITY OF EDUCATION, WINNEBA**

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ZONE OF GHANA**

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(202113905)**



**A thesis in the Department of Health, Physical Education, Recreation  
and Sports, Faculty of Science Education, Submitted to the School  
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in the University of Education, Winneba**

**FEBRUARY, 2023**

## DECLARATION

### Student's Declaration

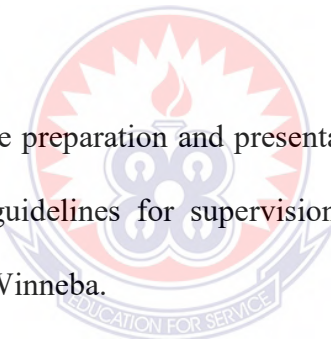
I, Issah Richard Bukari, declare that this dissertation with the exception of quotations and references contained in published works which have all been identified and duly acknowledged, is entirely my own original work, and it has not been submitted, either in part or whole, for another degree elsewhere.

**Signature:** .....

**Date:** .....

### Supervisors' Declaration

We hereby declare that the preparation and presentation of this work was supervised in accordance with the guidelines for supervision of thesis as laid down by the University of Education, Winneba.



Dr Richmond Stephen Sorkpor (Principal Supervisor)

**Signature:** .....

**Date:** .....

Dr Ernest Yeboah Acheampong (Co-Supervisor)

**Signature:** .....

**Date:** .....

## **DEDICATION**

This work is dedicated to my lovely Mom



## ACKNOWLEDGEMENT

My most heartfelt gratitude goes to Dr Richmond Stephen Sorkpor and Dr. Ernest Yeboah Acheampong of the Department of Health Physical Education, Recreation and Sports, my supervisor and co-supervisor respectively who upon their heavy schedules, took time to read through this work and did all necessary corrections. Their guidance and inspiration at all levels from the preparation of this dissertation to the end was invaluable.

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## ABSTRACT

Physical activity plays a crucial role in promoting overall health and well-being, and its impact on cognitive function and academic performance has been widely recognized. Given the importance of the teaching profession and the demanding nature of its responsibilities, understanding the physical activity levels of student-teachers was essential for devising effective interventions to promote healthier lifestyles among this cohort. The primary purpose of this research was to assess the current physical activity patterns of student-teachers in the Northern Zone of Ghana. The multi-stage sampling technique was used. The study employed a quantitative research approach. The research design was descriptive survey. A sample of 200 student-teachers from four Colleges of Education in the Northern Zone were selected, and their physical activity habits, exercise routines, and sedentary behaviours were assessed using validated researcher designed questionnaires. It was found from the study that, the forms of physical activity that student-teachers involved in included jogging, brisk walking, running, climbing stairs and spot exercises, the benefits derived from regular physical activity or exercise were found to be enormous and includes longevity of life, improved health and emotional wellbeing. Lack of equipment and facilities are contributing factors to physical inability among student-teachers of the Colleges of Education in the north. Lack of regular physical activity causes stress. Student teachers of the Colleges of Education in most cases engaged in regular physical activities alone, or with small groups. Such information was valuable for educational institutions, policymakers, and health practitioners to develop targeted strategies and initiatives that can enhance the physical activity levels and overall well-being of student-teachers. With the recommendations, it was stated that any activity for a start is preferable to idleness and people must be encouraged to begin with a pace that suit their level of energy. Considerable time can be used for the beginning since the aim is to progress steadily in the time and intensity. Where these student-teachers are coming from can make the provision of fitness centres their priority through their Local Government Authorities or benevolent individuals. Student-teachers as individuals from various communities should be encouraged to own simple training equipment in order that they can engage in regular physical activity both at home and in school. Student teachers must be educated on the dangers of sedentary lifestyles and since they are teachers in the making, they can best disseminate that information. This will create some level of awareness among people that, physical inactivity can cause several health problems such as stress and emotional disorders.

## CHAPTER ONE

### INTRODUCTION

#### 1.1 Background to the Study

Current research supports the notion that regular physical activity, fitness, and exercise are crucial for the health and well-being of individuals across various demographics, including student-teachers. Numerous studies have demonstrated that engaging in regular physical activity can lead to numerous physical and mental health benefits.

For instance, a recent systematic review and meta-analysis by Johnson, et al. (2023), found strong evidence that regular physical activity is associated with reduced risks of chronic diseases and improved overall well-being. The researchers analyzed data from 50 prospective cohort studies involving diverse populations and concluded that physical activity positively impacts health outcomes.

Furthermore, a longitudinal study conducted by Smith et al. (2022) focused specifically on the impact of physical activity on student teachers' well-being. The results indicated that those who engaged in regular exercise and physical activity reported lower levels of stress, improved mood, and increased job satisfaction compared to their sedentary counterparts.

In addition to vigorous exercises, moderate health-enhancing physical activities also play a significant role in improving health. A randomized controlled trial conducted by Lee et al. (2023), investigated the effects of moderate-intensity exercise on mental health. The study revealed that participants who incorporated moderate physical activities, such as brisk walking or cycling, into their daily routines experienced a significant reduction in symptoms of depression and anxiety.

Depression, according to Pearce et al. (2022), is the leading cause of mental health-related disease burden and a major cause of disability worldwide, affecting approximately 280 million people and accounting. Depression was also associated with premature mortality from other illnesses and suicide. Prevention of depression requires effective interventions, including modification of established risk factors. Narrative reviews have concluded that physical activity can prevent future depression. (Mammen & Faulkner, 2013). One meta-analysis of prospective studies reported that compared with people with low levels of physical activity, those with higher levels had 17% (95% CI, 12%-21%) lower odds of developing depression, Schuch, et al. (2018) while another meta-analysis reported 21% (95%, 18%-25%) lower odds when synthesizing 106 associations from 65 studies using diverse exposure definitions (Dishman et al., 2021).

Ryan et al., (2018) and Sacko et al. (2018), both on physical activity tips advocated for children participation in a very minimum of an hour or more of moderate-to-vigorous intensity physical activity (MVPA) daily to realize substantial health advantages. The globe especially most developing nations are facing a replacement epidemic, that's epidemic of physical inactivity among people.

Generally, man was created for movement activities and alternative physical activities, and therefore the ability to perform them were a condition of living and the survival of the individual, family and society. These days we have got a powerful tendency within the opposite direction. Most men and women in industrialised countries lead an inactive lifestyle. Schools are widely recognized as important settings for the promotion of physical activity, Physical education and Sports which are major contributors to economic and social development. Their roles are well

recognized by governments, the World Health Organisation (WHO) and many if not all Non-Governmental Organisations. According to the WHO (2018) the vast majority of children and adolescents spend most hours of their days at school, so it is essential that they be given ample opportunity to be physically active if they are to reach the recommended level of 60 minutes per day. The school years are a time for teaching young people the skills, knowledge and behaviour for lifelong habits. An engagement in physical activity has not only health benefits and contributes to a child's physical, mental and emotional development but also has potentially broad social and academic gains (WHO, 2018). Physical activity also improves self-esteem and reduces anxiety and stress among individuals (Chalkley & Milton, 2021). Childhood obesity is one cause of anxiety among school children. Obese children are systematically discriminated against; as a result, they tend to develop a negative self-image that appears to persist into adulthood (Johnson et al. 2023). The fight against childhood obesity should be a concern for schools, since there is high probability for obese children to transition into adulthood as obese (Kline, 2017). The Colleges of Education have no different story for their students in terms of physical activity because most of the student teachers are in their teens.

A cross-sectional study by Lee et al. (2023) investigated the association between weight discrimination and the adoption of unhealthy behaviours. The findings indicated that obese individuals who experienced discrimination were more likely to engage in maladaptive coping strategies, such as binge eating or avoidance of physical activity, which further perpetuated the negative cycle of weight gain and poor self-image. A systematic review by Johnson and Brown (2022) investigated the effectiveness of physical activity interventions implemented in schools. The review revealed that schools that actively promoted physical activity through various

initiatives, such as active recess breaks, after-school sports programs, and active commuting campaigns, significantly increased students' overall physical activity levels. Barriers within schools that restrict teachers from providing physical education programmes (Smith & Johnson, 2023). Appropriate physical activity and sports for all constitute one of the major components of a healthy lifestyle, along with healthy diet, tobacco free life and avoidance of other substances harmful to health. The Colleges of Education as institutions for churning out professional and well-trained teachers have the moral right to ensure that these healthy lifestyle goals are realised.

The World Health Organisation (2018), had scientific evidence that indicates that regular physical activity, exercise, and fitness are key determinants of health. Appropriate doses of regular physical activity and participation in sports provides individuals of all ages, including those with disability, with physical and mental health benefits and social relationships. Physical activity is a cheap and strong means for prevention of diseases, improvement health and wellbeing, and it also promotes integration and social interaction (WHO, 2018). This report provides the public health recommended levels of physical activity, the prevalence and costs of physical inactivity, and the health benefits of regular activity.

Again Smith et al. (2023) opined that influences of the social environment on physical activity habits include the attitudes of family, peers, and health professionals. Aspects of the physical environment that may influence exercise include weather, distance from facilities, and time pressures. Measures must therefore be taken to investigate the possible ways Colleges of Education are faced with several barriers especially teaching of physical education and Physical activity, curriculum and its provisions. According to Kavosi et al. (2015), physical activity programmes boost the self-esteem

of male College students. Physical activity has been widely recognized for its numerous benefits and minimal adverse events. Various studies have recommended incorporating mild to moderate physical activities as an intervention to enhance self-esteem, a crucial determinant of mental health (Smith et al., 2023). Research indicates a positive correlation between self-esteem and several desirable qualities, including improved social adjustment, stress management, and adoption of health-related behaviours (Johnson & Williams, 2022; Brown et al., 2023).

There was also good evidence that physical activity has an important beneficial effect on anxiety. Physical activity is important for psychological wellbeing and can be used as a means to improve mood and self-esteem. Most researchers and scholars also dealt on Physical Inactivity and clearly stated various degrees of ailments associated with it. (Nuzum et al., 2020).

Physical inactivity on the other hand is associated with many of the leading causes of death, chronic morbidity and disability. The apparent protective effect of being more active, and consequently less inactive, was identified first through studies of occupational activity over 50 years ago. Subsequent research has investigated different types, duration, frequency and intensity of activity in association with various cardiovascular, musculoskeletal and mental health outcomes. Literature also quantify and qualify the role of physical inactivity as a risk factor and worldwide interest and efforts to increase levels of participation (Kleinke et al., 2020). The limited existence of national guidelines on physical activity for health in Low- and Middle-Income Countries (LMIC) make evident, the need for the development of global recommendations that address the links between the frequency, duration,



intensity, type and total amount of physical activity needed for the prevention of NCDs. (Liu et al., 2022).

According to Muthoni et al. (2018), Physical inactivity accounts for more than 3 million deaths worldwide, and is implicated in causing 6% of coronary heart diseases, 7% of diabetes, and 10% of colon or breast cancer. The combination of the decline in fitness standards of young people, high drop-out rates, and inadequate pathways to accessing physical activity, the substantial increase in the prevalence of overweight and obesity among children and adolescents around the world undoubtedly equates to a growing concern (Murphy & Demaio, 2018). It was not only schools that have been identified as having a key role to play, but it was also apparent that physical educators were becoming more accountable than ever before as their roles continue to evolve and they pursue opportunities to facilitate activities that engaged students and provided education on lifestyle choices and healthy behaviours. Schools are learning environments with the capacity to equip students with these attributes; however, it is the quality of the programmes in schools particularly, Colleges of Education that will ensure that young people are given the opportunities to learn and exhibit or show indicators of learning any concept. Physical inactivity currently represents one of the greatest public health challenges for most industrialized countries (Moxley et al., 2021).

The pandemic of physical inactivity is associated with a range of chronic diseases and early deaths. Despite the well documented disease burden, the economic burden of physical inactivity remains unquantified at the global level (Ding et al., 2016).

In the United States, physical inactivity is considered such a serious threat to public health that the promotion of physical activity was designated as the nation's top

priority in the federal Healthy People 2000 program (National Centre for Health Statistics, 2015).

## **1.2 Statement of the Problem**

Physical activity is a fundamental aspect of a healthy lifestyle and is closely linked to overall well-being and academic performance (World Health Organization, 2020; Strong et al., 2018). As Colleges of Education in Ghana are responsible for training future educators, it is crucial to understand the physical activity profile of student-teachers in order to promote positive role modeling and establish effective health promotion strategies (Al-Khamees et al., 2019; Roick et al., 2021). However, there is a lack of comprehensive research on the physical activity behaviors, habits, and preferences of student-teachers in the Northern Zone of Ghana.

The absence of data on the physical activity profile of Colleges of Education student-teachers in the Northern Zone poses several critical challenges. Firstly, it hinders the identification of prevailing physical activity levels among this specific population, preventing a clear understanding of their overall health status and fitness (Ding et al., 2019; Trost et al., 2014). This information gap also hampers efforts to develop tailored interventions to improve physical activity participation and encourage healthier behaviours among student-teachers, thus limiting the potential positive impact they could have on their future students (Lubans et al., 2016; Guagliano et al., 2020).

Furthermore, without a thorough investigation into the factors influencing physical activity engagement among student-teachers, educators, and policymakers are unable to address potential barriers to active lifestyles effectively (Herczeg et al., 2022; Sallis et al., 2016). Understanding the challenges and facilitators for physical activity in this

context is crucial to developing targeted strategies that promote sustainable and long-term behavior change (Bauman et al., 2012; O'Donoghue et al., 2020).

Moreover, the Northern Zone of Ghana has distinct cultural, environmental, and socio-economic factors that may influence physical activity patterns differently from other regions. However, the lack of region-specific data makes it challenging to design regionally relevant interventions and policies to improve physical activity levels among student-teachers (Ghana Statistical Service, 2021; Taylor et al., 2017).

Therefore, a comprehensive investigation into the physical activity profile of Colleges of Education student-teachers in the Northern Zone of Ghana was essential. By gathering and analyzing relevant data, this study sought to fill the existing research gap, contributing valuable insights into the physical activity behaviors and preferences of student-teachers (Heath et al., 2018; Tremblay et al., 2020). The findings will inform educational institutions, public health authorities, and policymakers about the current state of physical activity among this important population and support evidence-based initiatives to promote active and healthy lifestyles within the Colleges of Education in the Northern Zone of Ghana (Dankyi et al., 2021; Guthold et al., 2018).

According to Meghan (2016), there are several proven indicators that have shown physical activity benefits for the human brain, its basic functions, and abilities. One of the most critical brain functions that can predict academic success is memory. With De Greeff, et al., (2018), Positive effects were found for physical activity on executive functions, attention and academic performance in preadolescent children, largest effects are expected for interventions that aim for continuous regular physical activity over several weeks.

The researcher also realises that the valuable impacts of physical activity or exercise on wellbeing, execution and life span are notable. Despite the fact that there is clear logical proof that normal physical activity or exercise has amazing constructive outcomes on both mental and physical prosperity of individuals, most students in the Colleges of Education are still seen with doubtful minds about physical activity therefore play loose on physical activity.

Domfeh (2015), did similar work factors influencing female teacher-trainees' non-participation in physical activity and sports in colleges of education in Ashanti region. But work has not been done at the College of Education concerning participation in physical activity by both male and female student teachers. Using the 2008 Demographic and Health Survey data, Doegah and Amoateng (2019) found that Ghanaian youths were found to be physically inactive. They also found that physical activity was associated with marital status and region of residence among males whilst religion, marital status, place of residence and region of residence were found to be significantly associated with physical activity among females. But in the Northern Zone particularly in the Colleges of Education, there is no evidence of this current. This informed the researcher's choice to undertake this study.

Authors have discussed specific interventions, ways to improve safety, after school programs, activity clubs, and finding ways to motivate students to participate in physical activity (Russ et al., 2015). It was the purpose of this study to review and synthesize the literature on identifying the barriers of physical activity then to identify the approaches to overcoming these barriers among College of Education students.

Researchers reviewed studies on college students' physical activity (PA) behaviors and found that previous research on this topic focused on describing college students'

PA patterns and their determinants. Researchers reported that about 40% to 50% of college students are physically inactive (Seghers et al., 2020).

### **1.3 Purpose of the Study**

The purpose of this research study was to investigate the physical activity profile of student-teachers enrolled in Colleges of Education located in the Northern Zone of Ghana. The study aimed to gain a comprehensive understanding of the current physical activity patterns, exercise routines, and sedentary behaviours of student-teachers within the Northern zone.

### **1.5 Objectives of the Study**

The study specifically sought to:

1. Identify the forms of physical activity undertaken by student teachers of the Colleges of Education in the Northern Region.
2. Establish the benefits of regular physical activity to student teachers of the Colleges of Education in the Northern Region.
3. Identify the factors that contribute to physical inactivity among student teachers of the Colleges of Education in the Northern Region.
4. Examine the health implications of physical inactivity of student teachers of the Colleges of Education in the Northern Region.

### **1.6 Research Questions**

This study sought to find answers to the following;

1. What forms of physical activity do student teachers in the Colleges of Education undertake?
2. What are the benefits of regular physical activity to student teachers in the Colleges of Education?

3. What factors contribute to physical inactivity among student teachers in the Colleges of Education?
4. What are the health implications of physical inactivity of student teachers in the Colleges of Education?

### **1.7 Significance of the Study**

The findings of the study provided more evidence on the usefulness of regular physical activity to all persons, especially student teachers of the Colleges of Education. The study further identified the barriers to physical activity and the consequences of inactivity to the health of students and others. In as much as nations need their human resource for increased productivity, there was also the need to improve the health status of the working population.

This study also sought to guide various stakeholders and individuals in the Colleges concerned and others on measures to adopt to improve these behaviours of inactive lifestyles.

The findings informed the student-teachers on the implications of inactivity and what must be done individually. Moreover, it added up to existing literature.

### **1.8 Delimitation of the Study**

The study was delimited to only four Colleges of Education in the Northern Zone. Self-designed instrument (questionnaire) was used as a tool for data collection. The study was also delimited to only the physical activity profile of the student-teachers in the Northern Zone.

### **1.9 Limitation(s)**

The researcher faced some challenges due to the combination of the research activities with other academic and co-curricular activities.

The personal reports by the respondents which was done in the questionnaire to measure variables for analysis might have affected the results of the study since some of the respondents might be carried away by other factors such as interest or otherwise to either over or under estimate their responses.

Visits to some of the Colleges of Education were difficult and the researcher had to rely on colleagues for help in those Colleges. The above might have negatively impacted on the results since the researcher was not present at a point for first-hand information.

### **1.10 Operational Definition of Terms**

**PE:** Physical Education



**Physical activity (PA):** any bodily movement that involves the use of the skeletal muscles for development of the individual.

**Moderate-to-Vigorous Intensity Physical activity (MVPA):** requirement of an individual during exercise.

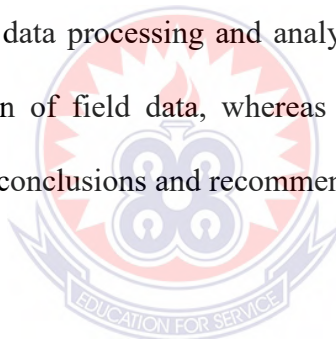
**Spot exercise:** commonly referred to as "spot training" or "spot reduction," is a fitness concept that suggests targeting specific areas of the body with exercises to reduce fat or build muscle in those specific areas

**Student-teacher:** a student enrolled in a teacher training institution and under training to become a professional teacher.

**WHO:** World Health Organization

### **1.11 Organisation of the Study**

The study was organised into five chapters. Chapter one was on introduction. The chapter considered issues such as background to the study, statement of the problem, purpose of the study, research questions, significance of the study, delimitations of the study, limitations, definition of terms and organisation of the study. The second chapter focused on review of literature on theories and concepts as well as some previous studies related to female participation in physical education and coaching of sports teams. Chapter three presented the methodology of the study. It included the research design, population, sampling procedure, data collection instrument, data collection procedure and data processing and analysis. The fourth chapter presented the results and discussion of field data, whereas the fifth chapter focused on the summary, main findings, conclusions and recommendations.





## **CHAPTER TWO**

### **REVIEW OF RELATED LITERATURE**

#### **2.0 Preview**

This review discussed the literature relevant to the current study and theoretical framework. It included the following sub headings: What Physical activity is, Physical activity and Physical education Class, Physical education Course outline for Colleges of Education, forms of physical activities, causes of physical inactivity, health implications of physical inactivity, benefits of physical activity,

#### **2.1 Theoretical Framework**

A theory explains why a phenomenon occurs by investigating a set of concepts and their interrelationships (Corley & Gioia, 2011). A number of theories and models have been used in this research work to help solidify the focus of the study. Among them are; The Affective Reflective Theory (ART), Theory of Reasoned Action (TRA), Health Belief Model, Trans Theoretical Model of Health Behaviour Change, Social, economic and environmental factor integration,

#### **2.2 The Missing Automatic Affective Evaluation**

The automatic affective evaluations of physical activity (Conroy & Berry, 2017) and the affective-reflective theory (Brand & Ekkekakis, 2018), have multiple similarities. They both rely on two prominent dual-process models, the reflective-impulsive model (Strack & Deutsch, 2004) and the associative-propositional evaluation model (Gawronski & Bodenhausen, 2006). The terminology (e.g., automatic affective evaluation verses automatic affective valuation) and the mechanisms underlying physical activity behaviour (e.g., automatic processes preceding and interacting with controlled processes) also closely match. In particular, the automatic processes

included in these models fully rely on affective experiences associated with physical activity. These models argue that perceiving a cue related to physical activity automatically activates the concept of physical activity together with associated pleasant or unpleasant affective memories, which in turn leads to an impulse favouring the tendency to approach or avoid physical activity. This mechanism was first described by Williams and Evans (2014), who argued that affect processing results from previous or anticipated affective responses to a health-related behaviour. Overall, these models are consistent with the literature highlighting the importance of affective responses to exercise-related cues in the regulation of physical activity (Williams & Bohlen, 2019; Lee et al., 2016; Rhodes & Kates, 2015).

However, automatic processes related to affective experiences associated with a reduction, a cessation, or an absence of physical activity (i.e. sedentary behaviours) were not considered despite experimental evidence demonstrating their involvement in the regulation of physical activity (Cheval et al., 2015; Bernacer, et al., 2019; Cheval, et al., 2018). In other words, the possibility that the concept of physical effort minimization can be paired with positive affective perceptions (pleasure) due to the experience of their repeated concomitance was not considered. Yet, the automatic affective evaluation of effort minimization cues resulting from this pairing is likely connected to an impulse that prompts an individual to change or maintain movement-based behaviours. Therefore, it seems essential to consider effort minimization in idiosyncratic models of physical activity.

In sum, by highlighting the important and hitherto overlooked role of the automatic affective evaluation of physical activity, the idiosyncratic dual-process models have advanced greatly the modelling of the neuropsychological processes underlying

physical activity behaviours (Brand & Ekkekakis, 2018; Conroy & Berry, 2017). Adding the automatic affective evaluation of physical effort minimization to this modelling likely would improve further its accuracy.

Physical effort can be associated with muscle fatigue, namely, the decrease in the ability to produce force, which may arise not only because of changes at the level of the muscle (peripheral fatigue) but also because the central nervous system fails to adequately drive the motoneurons (central fatigue) (Gandevia, 2001). In addition, physical effort often is processed as a negative experience to be avoided (Prévost, et al., 2010). Therefore, the repeated experience of its reduction contributes to a positive automatic affective evaluation of contextual cues related to its minimization. At least two pathways may help individuals avoid the implementation of behaviours minimizing physical effort in the presence of such contextual cues:

- i) a controlled pathway that relies on the elaboration of an action plan aiming to inhibit or compete with the automatic processes, and
- ii) an automatic pathway that relies either on the positive automatic evaluation of physical activity cues or on previously developed habits favouring energy consumption.

In the next section, we analyse the evolutionary origins of the automatic affective evaluation of movement-related cues. Based on evidence from multiple fields, we contend that humans have evolved to be physically active but in an efficient way, through favouring behaviours that minimize effort.

## **Efficient Physical Activity**

The Human Body and Its Functioning Are Shaped for Physical activity. For over two million years, the anatomy and physiology of the human lineage have adapted to the high levels of physical activity required by the hunting strategy of our evolutionary ancestors. Specifically, bipedal hominin hunters combined endurance running and tracking to drive their prey into exhaustion or hyperthermia (Lieberman, 2011). This strategy of persistence was efficient because, due to sweating, the hunters had higher capacity to cool than their prey, but multiple adaptations further supported this efficiency. For example, whereas quadrupeds have a fixed 1:1 ratio of gait and breathing cycles, humans can decouple these cycles and optimize ventilatory efficiency. At a muscle level, humans exhibit a much higher ratio of slow-twitch fibers than chimpanzees. These fibers have high mitochondrial volume densities and capillary-fiber contact length, which facilitates O<sub>2</sub> diffusion and improves endurance capacities.

Human running efficiency has also been improved by the increased length of the triceps surae tendon, which is absent or short in great apes. The elastic recoil of this Achilles tendon can output 35% to 75% of the positive work required per stride (Lai et al. 2014). Similarly, the elastic properties of the longitudinal arch of the human foot that is absent in other primates can contribute 9% to 17% of the total limb mechanical work of running (Stearne et al., 2016). Humans also developed features that enhanced stabilization during running, such as wider shoulders that increase the moment generated by upper-limb swinging, which counterbalance lower-limb swinging. Head stabilization has also been improved through the appearance of passive structures such as the nuchal ligament, which is absent in chimpanzees and australopithecines (Bramble & Lieberman, 2004). These adaptations, together with a more extended hip

and a longer hindlimb, also decreased cost of human walking, which is far more common than running among hunter-gatherers (Pontzer et al., 2014). Specifically, walking is 50% to 75% less costly than both quadrupedal and bipedal walking in chimpanzees (Sockol et al., 2007; Pontzer, 2017). Finally, long-distance walking and running in hot environments became possible through the improvement of thermoregulatory capabilities, including the multiplication of eccrine sweat glands for evapotranspiration and reduced body hair that increases convection rates (Bramble & Lieberman, 2004). All the aforementioned adaptations favoured energetic efficiency and shaped humans as physically active living beings to the point that physical activity became essential to their health (Guthold et al., 2018).

### **2.3 Affective Reflective Theory (ART) of Physical Inactivity and Exercise**

Affective-Reflective Theory (ART) of physical inactivity and exercise according to Brand and Ekkekakis (2018), is a dual-process theory, which assumes that stimuli (e.g. a friend's reminder that you intended to go for a run, or remembering that you had planned to go for a run) triggers automatic association and a resulting automatic affective valuation of exercise (type-1 process). An automatic affective valuation is the unattended assignment of positive (association with pleasure) or negative (association with displeasure) value to a stimulus, either as the result of repeated exercise-related emotional experiences mediated by cognitive appraisals (e.g., pride, embarrassment) or as a result of repeated experiences of core affective reactions to stimuli (e.g., sense of physical reinvigoration, bodily discomfort). The automatic affective valuation serves as the basis for a controlled, reflective evaluation (type-2 process), which can follow if self-control resources are available. The reflective evaluation draws on propositions about exercise and physical inactivity, derived from previous experience and mental simulation (e.g., anticipation of the affective

consequence of actions). Higher-level cognitive operations, such as deliberative reasoning about one's needs and values (Deci & Ryan, 1985) may also contribute to this process. The automatic affective valuation is connected to an action impulse (approach or avoidance), whereas the controlled response can result in action plans.

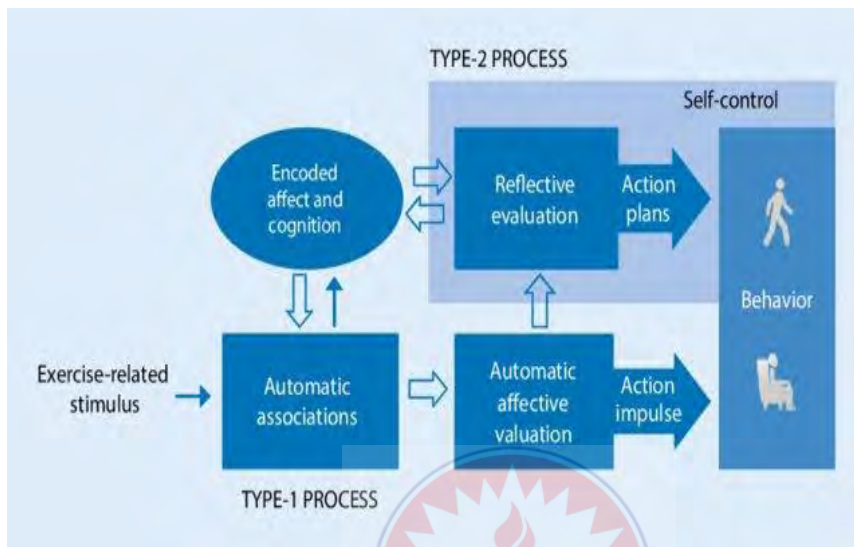
The ART aims to explain and predict behaviour in situations in which people either remain in a state of physical inactivity or initiate action. It assumes that experience, feelings, and thoughts connected with exercise influence whether someone would be willing to undergo physical strain similar to that previously experienced during exercise. Related to the topic of this study, the ART posits that, in the face of an exercise-related stimulus, one's negative affective valuation of exercise will act as a restraining force that may counteract any positive cognitive motivational drives toward action (or, on the other hand, if the affective valuation is positive, it will present a driving force and thus make it more likely that the person will change his or her current state of physical inactivity).

In this current study, the ART will be dealt with using the views of an article which states that the theory is intended to explain why people in a state of physical inactivity do or do not initiate action for exercise. The theory focuses on the psychological processes that govern momentary behaviour and deals specifically with exercise-related feelings (Brand & Ekkekakis, 2021)

In the context of exercise psychology, dual process approaches provide an innovative theoretical framework for interpreting the interplay between automatic and reflective processes and how this interplay can affect observable behaviour without instruments or expertise. The ART of physical inactivity and exercise, as described in this study,

builds on the theoretical ideas outlined above. This is followed by a review of empirical results that were used to refine the ART in its present form.

Graphical illustration of the Affective-Reflective Theory (ART) of physical inactivity and exercise Affective valuation and the type-1 process.



**Fig. 2.1: Affective-Reflective Theory (Brand & Ekkekakis, 2018)**

As seen, affective valuation is defined here as tacitly assigning to a stimulus a positive or a negative (association with displeasure) value, either as a result of continuous experiences of emotions mediated by mental checks (e.g., pride, embarrassment) or as a result of continuous experiences of core affective reactions not necessarily mediated by mental checks (e. g., sense of physical reinvigoration, pain, bodily discomfort). Here, the term "affective valuation" is used (the tacit assignment of valence in an associative pairing, involved in type1 processing) to bring out the postulated difference from "evaluation". As used in the social cognition literature and cognitive theories of emotions, an "evaluation" means some degree of cognitive appraisal (even if instantaneous, spontaneous, or subconscious) and engagement of prefrontal cortical pathways. That is why we use the term "evaluation" to show the type-2 process of reflectively appraising a propositional stimulus as "good" (useful, beneficial, healthy)

or "bad" (harmful, unsafe, unhealthy). This differentiation is necessary to accept the fact that, apart from social situations, where pleasant or unpleasant emotional feedback follow the cognitive appraisal of symbolic concepts and socially or culturally defined constructs (e.g., power hierarchies, social status, self-worth), exercise is not only a social clicker but also a physical or somatic stimulus. so, it can ignite not only social emotions.

#### **2.4 Main Theoretical Roots and Underlying Concepts**

The fundamental inspiration for the ART of physical inactivity and exercise was the social psychologist. Lewin (1951) proposed that, in order to accurately explain behaviour, psychological models must first consider the exact moment at which the behaviour occurs. This proposition and some of its consequences will be described first. Then, the theoretical roots and concepts from which the ART of physical inactivity and exercise were developed will be explained. These are the hedonistic perspective on motivated behaviour, the automatic evaluation effect, the evaluation-behaviour link, and the dual-process view of behavioural decision-making.

#### **2.5 Outline of the Theory**

The ART of physical inactivity and exercise focuses on the very moment at which an exercise-related perception happens. External stimuli (e. g., hearing a doctor's advice to start exercising) and internal stimuli (e. g., remembering the doctor's advice to exercise) trigger automatic associations related to the stimuli. This is applicable in the plight of student teachers because lessons such as Physical education lessons which are related and can cause change in student teachers' physical activity orientation are seriously limited.



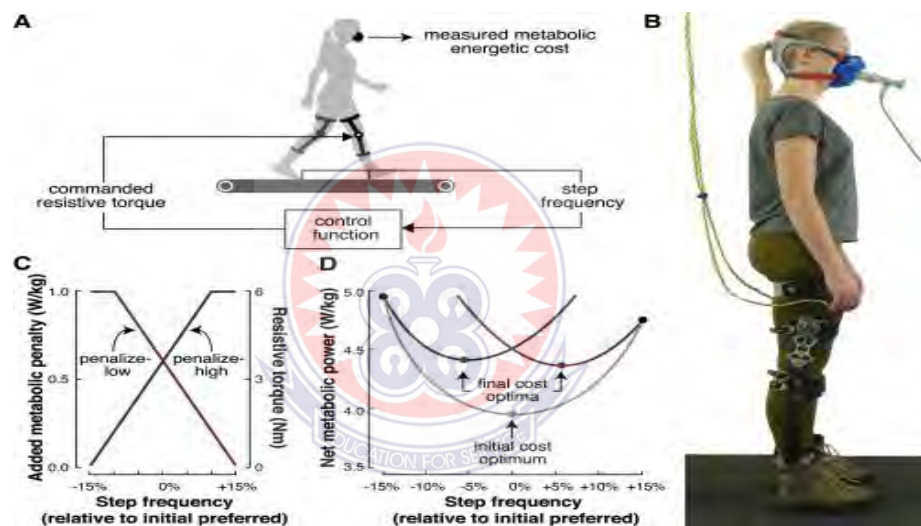
The ART is a psychological theory that relates what we know about people's acute affective responses to exercise Ekkekakis, et al., (2013) and how such experiences can influence the odds of future exercise (Rhodes et al., 2009; Rhodes & Kates, 2015). Simply put, many people (especially untrained individuals and e.g., overweight people) experience negative affect during exercise and this may have a significant negative effect on further exercise engagement. Habitual physical inactivity and exercise avoidance are explained by the ART as learned reactions; they originate from an automatic negative affective valuation of exercise, constituting an important restraining force. Interventions should, therefore, focus on minimizing unpleasant experiences while exercising, and/or should facilitate consistently pleasant experiences during exercise, so that positive automatic affective valuations of exercise can develop.

## **2.6 Theory of Energetic Cost Minimization (TECM)**

The theory of energetic cost minimization (TECM) assumes that biomechanically efficient behaviours have a rewarding value (Cheval et al., 2018). It refers to evidence on the multiple neuro-behavioural adaptations that have contributed to the minimization of metabolic costs in the course of human action and during movement (Srinivas & Ruina, 2006). For example, individuals automatically adapt their step frequency in real time to optimize energy costs (Selinger et al., 2015) and learn to minimize the physical effort required to obtain specific rewards (Skvortsova et al., 2014). This automatic behavioural tendency of effort optimization is theorized to be a neurobiologically anchored process.

The TECM assumes that situational factors (such as one's internal physiological state or external physical environment) may either incentivize the behavioural opportunities to minimize or lead the individual to effectively temper the tendency to reduce energetic cost (Cheval et al., 2019). The availability of cognitive resources can weaken the automatic tendency toward effort optimization (Cheval et al., 2018).

In sum, the theory conceptualizes the evolutionary inclination to avoid unnecessary physical exertion as a restraining force that may hinder the ability of individuals to effectively implement their conscious intention to be physically active.



**Fig 2.2: Diagram of the TECM**

The TECM has its roots in evolutionary behavioural biology and posits an ever-present tendency (a restraining force) in human behaviour toward efficiency in anticipation of potentially exhausting physical activity as well as during physical performance. In the light of this theory, with regard to possible intervention approaches, people should be aware that this tendency exists. Most generally, executive cognitive functioning, e.g., the capacity for self-control should be strengthened. In addition, psychological training (Sheeran et al., 2013), through (for example) evaluative conditioning, attentional bias modification, or approach-

avoidance training could be useful, in order to change individuals' automatic reactions to physical activity-related stimuli and reduce the restraining force.

## **2.7 Self-Determination Theory (SDT)**

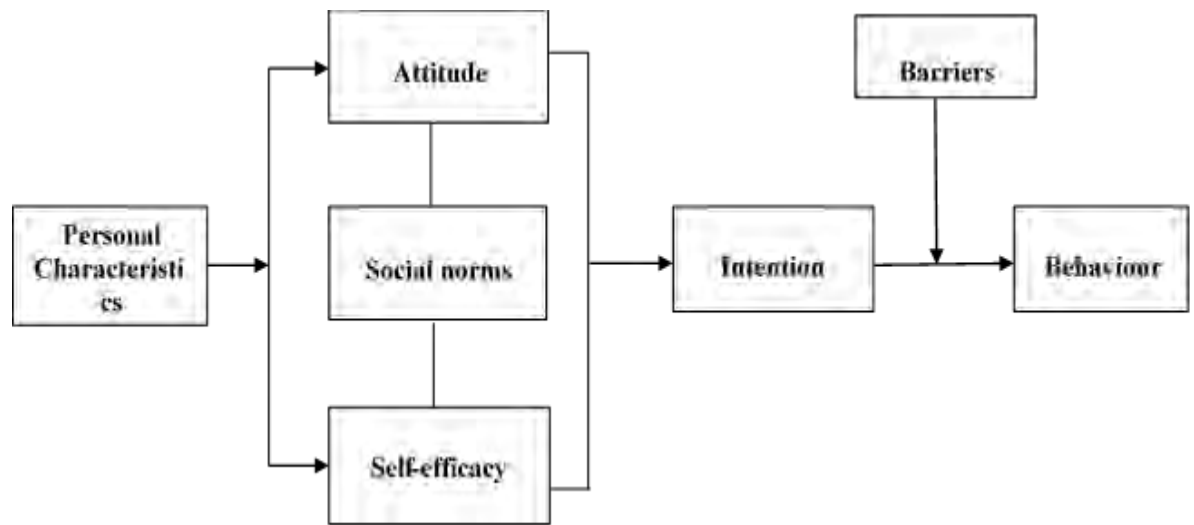
SDT has been widely used to study motivation for physical activity in survey designs, as well as to develop interventions for the promotion of Physical activity (Deci & Ryan, 1985). The theory emphasises the importance of focusing not just on the quantity but also on the quality of motivation to engage in behaviours such as Physical activity. The amount of motivation is not necessarily beneficial as some types of motivation reflect internal and external pressures for behavioural engagement. Such pressures could translate into high motivation but low quality of motivation but of low quality in terms of supporting long-term behavioural adherence and psychological well-being (Edmunds et al., 2007).

In the SDT literature, three broad types of motivation are identified, namely, self-determined motivation, controlled motivation, and amotivation. Self-determined motivation is the only motivation that has high quality. It encompasses both intrinsic reasons that capture the enjoyment of performing an activity (e.g., “I love running”) as well as extrinsic reasons. The extrinsic reasons reflect high degrees of internalisation of the value of the behaviour and are termed ‘integrated regulation’ (e.g., “I run because running is part of who I am”) and ‘identified regulation’ (e.g., “I run to keep healthy and slim”). Controlled motivation encompasses extrinsic reasons that reflect a low degree of internalisation of the value of the behaviour. Such reasons are usually distinguished as being ‘introjected’, reflecting internal pressures and contingencies (e.g., “I need to run to feel good about myself”), and ‘external’, reflecting external pressures or rewards (e.g., “I run because my partner is pressuring

me to lose weight”). Lastly, amotivation reflects lack of either self-determined or controlled motivation for behavioural engagement (e.g., “I have started running but I don’t really know if it is worth continuing”).

According to Quested et al. (2021), promoting self-determined motivation for physical activity: From theory to intervention work. *Essentials of exercise and sport psychology: An open access textbook*, 37-61., self-determined motivation for behavioural engagement is more likely to be observed when individuals experience satisfaction of three basic psychological needs. These are the needs for autonomy (e.g., “I run of my own free will”), competence (e.g., “I am good at running”) and relatedness (e.g., “I get along well with my running buddy”). In contrast, when such needs are frustrated, individuals are likely to develop controlled or a motivated reasons for behavioural engagement. A central tenet of SDT is that the social environment is a key factor in supporting or thwarting individuals’ psychological needs and, hence, promoting self-determined motivation for Physical activity. Lastly, it has also been shown in the SDT literature that the content of individuals’ goals matter in terms of supporting vs frustrating the three psychological needs. Intrinsic goal content (e.g., health, affiliation) relative to extrinsic goal content (e.g., image and social recognition) is more likely to satisfy the three basic psychological needs (Sebire et al., 2013). This implies that most student teachers are denied of these goals since the College environment does not help matters.

### Graphical Representation of the Main Components of SDT



**Fig. 2.3: Author's Construct (Bukari, 2023)**

In this theoretical model, attitudes, social norms and self-efficacy expect the aim to act in a positive way, which in flip predicts the behaviour. Personal characteristics (for instance gender, age and academic level) impact those behavioural determinants. Barriers decide why the aim is changed into behaviour.

#### **2.7.1 Application of the self-determination theory**

Teixeira et al. (2012) carried out a scientific overview of the literature that has implemented SDT to look at motivation for Physical activity. Sixty-six research (seventy-two unbiased samples) have been blanketed with inside the overview, frequently cross-sectional, even though the quantity of experimental research on this subject has extended significantly due to the fact that then. The overview confirmed that self-decided kinds of motivation have been tremendous predictors of Physical activity. Teixeira et al. (2012) counselled that recognized law is probably extra critical for starting up a brand-new exercising programme while intrinsic motivation is probably extra instrumental for long-time period adherence. However, there has been no robust empirical proof base for this hypothesis, which desires trying out in destiny research. Controlled kinds of motivation have been frequently unrelated to Physical

activity; there have been research displaying that introverted law definitely expected Physical activity cross-sectionally, however now no longer over time, suggesting that this form of motivation isn't always conducive to long-time period Physical activity adherence. In addition, there are a few mental costs (e.g., decrease exceptional of life, better anxiety) related to being stimulated through introverted law. Amotivation became both unrelated and negatively associated with Physical activity. With regard to the 3 mental desires recommend through SDT, competence became the maximum constant correlate of Physical activity. Lastly, intrinsic dreams have been continually related to better Physical activity, while the findings concerning extrinsic dreams and Physical activity have been mixed.

## **2.8 Physical Education Course Outline for Colleges of Education**

Reviewing the courses of the Four-year bachelor of education curriculum, thus the eight-semester initial teacher education curriculum, the researcher realised there is no Physical education as a soul course to be offered but a blended course of Physical activity, Sports, Music and Dance which is offered by all level 100 students for only the first semester. In level 200 it is only in the second semester too that student teachers are allowed to do Music and Dance and PE, this time not all student teachers but for only those in the Primary and Early Grade Programmes. The other course is Policy document and Syllabus analysis in PE/Music and Dance which is also offered by same students who do Primary and Early Grade courses. This is taken in the third-year semester one.

There is no Physical education (PE) course again in the rest of the semesters and this is not a welcoming news to tutors of PE since the contact hours with student teachers is limited. Apart from the limited nature of the course in the subject allocations, the

content being designed for student teachers is not all that activity oriented to cater for the needs of students when it comes to physical activities.

Ningthoujam et al. (2017) recommends that children obtain a minimum of 60 minutes of physical activity in a day. It is not possible in most schools to provide the 60 minutes of daily physical activity for every student through the physical education program alone; this has led to development of the idea of having comprehensive school physical activity programs. Some students attend physical education one day a week; others attend two or three days; and a few have daily physical education. The physical educator is to provide maximum physical activity time within the class period, teach skills and activities that transfer into physical activity outside of physical education class, motivate children to be physically active, and take the role of physical activity director for the school. If students are to receive the amount of physical activity they need each day, other opportunities to be physically active within the school day must be provided. The physical education teacher has unique responsibilities in the school physical activity program to ensure that students are physically active within the physical education class.

The physical education teacher also has the responsibility to help direct and guide opportunities for physical activity within the school outside the physical education class. Most of these roles of mentioned above all need planning and adequate time to realised, this applies to the student teachers of the Colleges of Education too since they also have limited time to do any practical activity. They (student teachers) are learning to go out and teach the young ones but the learning time is equally not there to learn ones every student is seriously looking at passing examination and nothing else.

Physical education teachers have the responsibility to teach skills that students will need to participate in physical activity outside of the physical education class and skills they will need for a lifetime of physical activity. Skills learned in physical education class transfer to skills used in a child's play. From the kindergarten-age child playing tag, to the second-grade child jumping rope, to the older child playing a game of kick ball, the skilled child is more likely to participate in physical activity. If a child is confident in his or her skills, there is typically no hesitation to play; however, the low-skilled child, especially in the upper grades, is less inclined to take part in group activities for fear of failure and peer ridicule. Students need skills to be participants in physical activity.

Good physical education programs take the time to teach children activities they may do on their own. Examples of these are jump rope chants, non-elimination tag games, hopscotch, Four Square, tetherball, and basketball activities such as Horse and Around the World. Including these activities briefly in a physical education class and then encouraging children to play them on their own is likely to promote more physical activity on the playground and in their neighbourhoods.

## **2.9 Concept of Physical Activity**

Physical activity refers to all energy expended by movement, and is defined as any body movement produced by skeletal muscles that results in energy expenditure above resting level (Caspersen et al., 1985). This definition includes all types of activities: household and outdoor chores, the jobs held outside the home (occupational activity), walking, cycling, shopping, sports, intentional exercises, and other activities of daily living or other recreational activities. In turn, exercise is vigorous activity, planned, and structured, designed specifically to improve fitness and health. Examples



include brisk walking, cycling, and aerobic, competitive sports. Physical fitness which is related to physical activity, is defined as set of attributes such as stamina, mobility, and strength that are associated with ability to perform physical activity. Fitness mainly results from levels of physical activity, although also depends on energy expenditure.

According to WHO (2018), Physical activity on prescription is a patient-centred initiative in the Swedish health-care system. Health professionals in primary care and specialists can prescribe physical activity for disease prevention and treatment. The prescription includes the type and dose of physical activity, potential contraindications and a plan for follow-up, which are documented in the patient's clinical record. The initiative includes close collaboration with sports associations, municipal and private facilities and other activity providers. To increase capacity, health professionals are offered a handbook that summarizes scientific knowledge on preventing and treating various diseases and conditions with physical activity.

### ***2.9.1 Key facts about physical activity***

- i. Physical activity has significant health benefits for hearts, bodies and minds
- ii. Physical activity contributes to preventing and managing non-communicable diseases such as cardiovascular diseases, cancer and diabetes
- iii. Physical activity reduces symptoms of depression and anxiety
- iv. Physical activity enhances thinking, learning, and judgment skills
- v. Physical activity ensures healthy growth and development of young people.
- vi. Physical activity improves overall well-being

Globally, 1 in 4 adults do not meet the global recommended levels of physical activity. Up to 5 million deaths a year could be averted if the global population was

more active People who are insufficiently active have a 20% to 30% increased risk of death compared to people who are sufficiently active.

More than 80% of the world's adolescent population is insufficiently physically active (Bull et al., 2020).

## **2.10 Physical activity and Physical education Class**

Physical education programs and policies can shape the quantity and quality of physical activity among students across schools (Slater et al., 2012). Studies using direct observations of physical activity have found large variations in the amount of vigorous- or moderate-intensity physical activity performed by students during their physical education classes: a range of 9-48 percent (Pate et al., 2011).

A study conducted by Rasberry et al., (2011) indicated that participants (n = 65) who participated in physically active brain breaks acquired a higher daily step count average, compared to participants (n = 52) who did not participate in physically active brain breaks. Thus, this study compared the effect of physically active brain breaks in a college classroom on college students' physical activity levels to students who did not participate in physically active brain breaks.

Goss (2022) highlighted the importance of developing physical literacy (PL) from childhood, although it remains unclear how best to evidence an individual's PL journey. The aim of this study was to explore key stakeholders' views of current practice, future directions and effective implementation of PL assessment, with a view to informing the development of a rigorous, authentic, and feasible PL assessment. For many years, most if not all, universities had strict physical education requirements. They were viewed as a necessary and constructive part of a student's

education. Amherst College became among the first to have a physical education program in 1861. Its purpose was, “to provide activities that would help Amherst students maintain their health and relieve the strain associated with their ‘academic courses’” (Petruzzello et al., 2020).

A number of school-based intervention studies have targeted physical education classes as a focus for increasing vigorous- or moderate-intensity physical activity in young children; many of these studies have included other intervention components, such as environmental changes. In The Child and Adolescent Trial for Cardiovascular Health (CATCH) intervention study, involving children in elementary schools, an increase in the intensity of physical activity in physical education classes during the intervention was observed in the intervention schools compared with the control schools. Compared with control students, moreover, those in the intervention schools reported significantly more minutes of daily vigorous activity (Luepker et al., 1996). In the Sports, Play, and Active Recreation for Kids (SPARK) intervention, also comprising elementary schools, vigorous- or moderate-intensity physical activity increased during physical education among 4th graders (Sallis et al., 1999). The SPARK intervention also showed that students who received physical education from specialists had the highest percentage of class time (40 percent) in vigorous- or moderate-intensity physical activity, compared with those who received physical education from trained teachers (33 percent) and controls (18 percent) (Sallis et al., 1999).

Looking at daily physical activity in general, it has been declining over the last few decades. Children and adults all spend less time outdoors working and playing, and more time indoors viewing television, doing sports betting and playing video games.

The movement to a more inactive lifestyle is the result of business and industry's progression away from agriculture, advancements in technology. This progression to a more sedentary lifestyle is no exception in public schools as physical education and recess have been cut to just a few days a week, or is even non-existent in many schools. Budget cuts and increased academic accountability have been the demise of physical education programs, as well as extracurricular sport offerings in the public schools. Currently, many opportunities are blocked, Covid 19 has also come and many students do not take the initiative to participate in physical activity on their own. In 1989, 90% of elementary schools allowed organized recess for at least one class period each day. This percentage has decreased due to safety and liability concerns (Jarrett, 2002).

David et al. (2013) cites that many schools now sell candy, chips, and soft drinks, and that only 2% of students reach the 26 recommended daily number of servings of the five food groups. Many schools have reduced or abolished recess in lieu of more academic time. As a result, less than 25% of students get at least 30 minutes of physical activity per day (Henry, 2018). Only 3.8% of elementary schools, 7.9% of middle schools, and 2.1% of high schools provide daily physical education class at a time when there are approximately 25 million students that are overweight or obese (Sallis et al. 2014). The agency also stated that replacing physical education time with more academic time does not necessarily improve academic performance, and children that are more active perform better academically. Coupled with reduced time in physical education, the quality and quantity of elementary school physical education programs have decreased over the last several decades, as pressures to meet increasing academic standards have risen (Forrester et al., 2007). Forrester et al. (2007) noted that certified physical educators are only required in 28 states, and 75%

of parents do not want physical education removed from the school curriculum. Recently, more research has indicated the benefits of youth resistance training, which is often achieved in before and after-school programs along with physical education classes. “Resistance training refers to a specialized method of conditioning that involves a progressive use of a wide range of resistive loads and a variety of training techniques. These methods are designed to enhance muscle function, increase muscle size, improve body compositions, boosts sports performance, and reduce athletic injuries” (Faigenbaum, 2003).

Along with Faigenbaum, organizations such as the American Academy of Pediatrics (2001), the American College of Sports Medicine, & American Dietetic Association (2000) support properly supervised and well-designed youth training programs. Benefits of youth resistance training include increased muscular strength, muscle power, muscular endurance, bone mineral density, motor performance skills, cardiorespiratory fitness, sports performance, improved body composition, enhanced mental health and well-being (Faigenbaum, 2003). Resistance training can also stimulate a more positive attitude towards lifetime physical activity (Faigenbaum, 2003). Physical education and Sport (PES), is believed to enhance self-esteem, self-confidence, cognitive and social development, academic achievement, and PES helps develop self-respect and respect for others (Bailey, 2006). Bailey uses the framework of a 50-nation study titled, Project Report to the 4th International Conference of Ministers and Senior Official Responsible for Physical education and Sport (MINSPEs IV), which described PES outcomes as pertaining to five domains: Physical, Lifestyle, Affective, Social, and Cognitive. Educational budgetary constraints and more accountability to raise academic test scores have resulted in many physical education classes being reduced or even cut from many schools and

school systems, thus students are not able to explore the five domains of PES. Coupled with a loss of recess or breaks for exercise, students are not engaging in the recommended amount of physical activity at school, and many parents and school administrators are concerned that an increase in PES time detracts from academic class time and performance on examinations (Sallis et al., 1999). However, Bailey (2006) notes that physical activity increases blood flow to the brain, which can increase alertness, change in mood, and improved self-esteem. Bailey cites a landmark French study by Shephard (1996). Where academic time was reduced by 26%, and replaced with Physical education and Sport (PES) to determine the effects of increased PES.

Shephard's study reported fewer discipline problems, reduced absenteeism, and more attentiveness. Recent studies from Australia, Canada, and the United States have revealed comparable sets of standardized test scores when at-school physical activity increased by 50 minutes a day and time spent in academic classes was reduced by 50 minutes per day (Ahamed et al., 2007; Sallis et al., 1999). In conclusion, physical levels of youth have been on the decline due in part to the reduction of time spent in physical education class, recess, and extracurricular opportunities. Many of these programs have succumbed to budgetary constraints, while others were dismissed or changed by educational administrators, in the name of academic accountability as stated earlier. This research will not support decreased time for physical activity in lieu of more time for academics.

### **2.11 Forms of Physical Activities**

Physical activity is “bodily movement that is produced by the contraction of skeletal muscles and that which substantially increase the amount of energy expended”.

According to Caspersen et al. (1985), the elements of physical activity are bodily movement via skeletal muscle; results in energy expenditure; Energy expenditure (kilocalories) varies continuously from low to high; and positively correlated with physical fitness. Physical activity including sports and exercise as well. Anyone involved in sports and exercise, will use skeletal muscle and energy. There are many benefits if one is involved in sports and exercise. For example, it can increase one's health and reduce health problems.

Most people tend to focus on one type of exercise or activity and think they are doing enough. Research has shown that it's important to get all four types of exercise thus; endurance, strength, balance, and flexibility. Each one has different benefits. Doing one kind also can improve your ability to do the others, and variety helps reduce boredom and risk of injury. No matter one's age, one can find activities that meet his/her fitness level and needs.

Motor skills can be divided into two groups that are the most characteristic:

- i. Fitness talents: strength, speed and endurance (determined by phenotypic factors),
- ii. Coordination skills: a sense of balance of rhythm, orientation and rhythm, correct reaction speed, dexterity, flexibility. Piotrowska and Pabianek (2019), presented the motor skills that fall into four subgroups, including: 1. Strength skills, 2. Speed giftedness, 3. Endurance skills, and 4. Coordination skills.

### ***2.11.1 Strength skills***

Strength is the ability to overcome external resistance or counteract it at the expense of muscular effort.

There are different properties of operating forces, including:

- i. Static force - depends on increased hypertonia (muscle tone) e.g. dynamometer compression.
- ii. Explosive force - the ability to generate large amounts of strength in the shortest possible time, e.g. javelin throw.
- iii. Dynamic strength - the ability to perform high resistance at high speed (also known as power), e.g. a squat jump (Piotrowska & Pabianek, 2019).

### ***2.11.2 Speed giftedness***

Speed is "the ability of a person to make moves in a minimum time period for given conditions. It is assumed that the task does not last long and does not lead to fatigue. The most important factor determining speed is the muscular system – bound within the morphological structure, as well as the ratio of red fibres to white fibres.

Speed is affected by the following:

- i. Response time - this is the period of time that passes from the moment the stimulus occurs to the time the motion is triggered - the action is performed. This is an innate trait, practically not susceptible to training activities.
- ii. Speed of a single move - depends on muscle structure and occurrence of white and red fibres in it.
- iii. Frequency of movement - illustrates the number of movement cycles performed at a given time, e.g. swimming for 50 m, number of kicks per time unit.

### ***2.11.3 Endurance skills***

Among the publications related to sports, a distinction is made between:

- i. General Endurance
- ii. Special Endurance



Endurance is defined by the ability to perform long-term work without reducing performance. The specificity of endurance depends on the glycogen reserves the muscle contains (Piotrowska & Pabianek, 2019). However, it is undoubted that a big role is played by human decision making, that is related to will. It is used during extreme tiredness, pain symptoms related to effort.

The term general endurance defines the ability to engage large muscle groups during physical work that is carried out for a long time (Wiśniowska-Szurlej et al., 2020). The period of special endurance is reserved for specific physical effort in a given sport, in which specific adaptations are required. Special strength consists of the specificity of the human body, movement technique, time and intensity of effort.

Additionally, it can be divided into:

- i. speed endurance
- ii. strength endurance
- iii. coordination endurance



### **Coordination Capacity**

The most widely understood coordination can include eye-hand and eye-spatial coordination, which are associated with motor skills such as dexterity and agility. Through acquired-skills, it is possible to make complex movements, develop balance and sense of rhythm as well as combine a series of movements. We define agility as a feature thanks to which we have the ability to react quickly to a stimulus, perform precise movements at various levels of advancement.

Dexterity is defined as the ability to perform economic movements, with due diligence.

Flexibility: - this term means the body's ability to obtain a large amplitude in its motor activities. Flexibility activities are to immunize the ligament apparatus to perform activities during take-off.

Shaping flexibility is conditioned by specific factors, including:

- i. Soft tissue flexibility (ligaments, tendons)
- ii. Muscle group present at a given joint
- iii. Gender and age
- iv. Body temperature and muscle group
- v. The amount of muscle tissue
- vi. Body type

## **2.12 Physical Activity Guidelines for Student-Teachers**

Engaging in regular physical activity is crucial for maintaining good health and well-being. As student-teachers in colleges of education in the Northern Zone of Ghana, it's important to incorporate physical activity into your daily routine to enhance your physical fitness, mental health, and overall academic performance.

### **Guidelines**

#### **Aerobic Exercise**

Aim for at least 150 minutes of moderate-intensity aerobic exercise or 75 minutes of vigorous-intensity aerobic exercise every week, spread across several days. Engage in activities like brisk walking, cycling, dancing, or playing sports like soccer or basketball (World Health Organization, 2020).

### **Strength Training**

Incorporate strength training exercises for major muscle groups at least two days a week. Use your body weight, resistance bands, or gym equipment to perform exercises like push-ups, squats, lunges, and lifting weights (American College of Sports Medicine, 2018).

### **Flexibility and Mobility**

Include stretching exercises for flexibility and mobility at least three days a week. Perform static stretches for major muscle groups, holding each stretch for 15-30 seconds (American College of Sports Medicine, 2018).

### **Balance and Coordination**

Engage in activities that improve balance and coordination, such as yoga, tai chi, or balance exercises, at least three days a week. These activities can help prevent falls and improve posture (Centers for Disease Control and Prevention, 2020).

### **Breaks and Movement during Study Hours**

During study sessions, take short breaks every 30 minutes to stand up, stretch, and move around. This helps reduce sedentary behaviour and promotes circulation and focus (Van den Berg et al., (2019).

### **Hydration and Nutrition**

Stay hydrated by drinking water throughout the day, especially when engaging in physical activities. Consume a balanced diet rich in fruits, vegetables, whole grains, lean proteins, and healthy fats to support your energy levels and recovery (Academy of Nutrition and Dietetics, 2021).

Incorporating regular physical activity into your routine as a student-teacher in a college of education especially in the Northern Zone of Ghana can have numerous benefits for overall well-being.

### **2.13 Wellness**

Wellness is a multidimensional concept that encompasses physical, mental, emotional, and social well-being. For student-teachers, who often juggle academic demands, teaching responsibilities, and personal commitments, prioritizing wellness is essential for achieving success in both their educational pursuits and their future teaching careers.

#### **Importance of Wellness**

Maintaining a sense of wellness can have profound effects on the lives of student-teachers.

**Enhanced Academic Performance:** Prioritizing wellness can positively impact academic performance. When student-teachers take care of their physical health through regular exercise, proper nutrition, and adequate sleep, they are better equipped to focus, retain information, and engage in their studies effectively (Dunton et al., 2019).

**Stress Management:** Pursuing higher education and teacher training can be demanding. Engaging in stress-relief practices such as mindfulness, meditation, or deep breathing can help student-teachers manage the pressures of coursework, lesson planning, and teaching responsibilities (Shapiro et al., 2019).

**Emotional Resilience:** Wellness practices contribute to emotional resilience. Student-teachers who prioritize emotional well-being through activities like journaling,

seeking counselling when needed, and maintaining a supportive social network are better equipped to handle challenges and setbacks (Reivich et al., 2013).

**Interpersonal Relationships:** Building and maintaining strong relationships with peers, mentors, and fellow student-teachers is integral to a positive educational experience. Engaging in social wellness activities fosters a sense of belonging, collaboration, and mutual support (Keyes et al., 2019).

### **Strategies for Wellness**

**Physical Wellness:** Engage in regular physical activity, eat a balanced diet, and get sufficient sleep. Incorporate exercise routines and healthy eating habits into your daily schedule.

**Mental and Emotional Wellness:** Practice mindfulness, meditation, and relaxation techniques to manage stress. Seek support from mentors, counsellors, or peer groups to discuss challenges and emotions.

**Social Wellness:** Participate in social activities, join clubs or organizations, and interact with peers and mentors. Cultivate meaningful relationships that provide emotional support and encouragement.

**Intellectual Wellness:** Continuously engage in learning, explore new ideas, and challenge yourself academically. Pursue hobbies and interests that stimulate your mind.

**Occupational Wellness:** Find purpose and satisfaction in your studies and teaching experiences. Set goals, manage time effectively, and maintain a healthy work-life balance.

Wellness plays a pivotal role in the lives of student-teachers, influencing their academic achievements, emotional well-being, and future success as educators. By incorporating strategies for physical, mental, emotional, social, and intellectual wellness, student-teachers can create a strong foundation for personal growth and professional excellence.

## **Health**

Health is a state of complete physical, mental, and social well-being, and it is a fundamental factor that significantly impacts the quality of life for individuals in all walks of life. For student-teachers, maintaining good health is particularly important as it not only supports their personal well-being but also has far-reaching effects on their academic performance and future teaching careers (Hillman, Erickson, & Kramer, 2008).

### **Physical Health Benefits**

**Enhanced Cognitive Function:** Good physical health is closely linked to improved cognitive function. Engaging in regular physical activity, maintaining a balanced diet, and getting sufficient sleep contribute to optimal brain health, enhancing memory, concentration, and overall cognitive abilities (Hillman et al., 2008).

**Higher Energy Levels:** Prioritizing physical health leads to increased energy levels, allowing student-teachers to stay alert and focused throughout their busy academic and teaching schedules (Penedo & Dahn, 2005).

### **Mental and Emotional Health Benefits**

**Stress Reduction:** Healthy habits play a crucial role in managing stress. Engaging in relaxation techniques, exercise, and mindfulness practices helps alleviate stress, which

is particularly beneficial for student-teachers who often experience high levels of academic and professional pressure (Keng et al., 2011).

**Improved Mood:** Physical activity and a balanced diet have been shown to positively impact mood by promoting the release of endorphins and regulating neurotransmitters. This can help student-teachers maintain a positive outlook, even during challenging times (Craft & Perna, 2004).

### **Social Health Benefits**

**Enhanced Interpersonal Relationships:** Good health enables student-teachers to actively participate in social activities, fostering stronger relationships with peers, mentors, and colleagues. A supportive social network provides emotional encouragement and a sense of belonging (House et al., 1988).

**Effective Communication Skills:** Physical well-being contributes to mental clarity and emotional stability, enhancing communication skills. Student-teachers with good health are more likely to engage confidently and effectively with students, colleagues, and parents (Mealer & Jones, 2014).

### **2.13 Physical Activity Patterns of College Student Teachers**

College student teachers often have diverse physical activity patterns. These patterns can range from high levels of activity, such as participation in organized sports or fitness classes, to lower levels due to academic and teaching commitments (Orr et al., 2006). **Sedentary Behaviour:** The demands of studying and lesson planning may lead to prolonged periods of sedentary behaviour among College student-teachers. Long hours spent sitting during lectures, lesson preparation, and grading can impact their overall physical activity levels (Biswas, et al., 2015).

## **Factors Influencing Physical Activity Patterns**

**Time Constraints:** Academic and teaching responsibilities can limit the time available for physical activity. Balancing coursework, lesson planning, and teaching duties can challenge student teachers' ability to engage in regular exercise (Troost et al., 2002).

**Campus Environment:** The availability of fitness facilities, walking paths, and active transportation options on campus can influence physical activity patterns. Access to resources that promote physical activity may encourage student teachers to stay active (Loprinzi et al., 2014).

**Peer and Social Influence:** College student teachers may be influenced by the physical activity behaviors of their peers and colleagues. Engaging in group activities or participating in fitness-related clubs can enhance motivation to stay physically active (Spink et al., 2019).

## **Implications and Recommendations**

**Time Management:** Student teachers can benefit from effective time management strategies that prioritize both academic and physical activity commitments. Scheduling dedicated time for exercise can help maintain a balanced routine.

**Incorporate Activity:** Integrating physical activity into daily routines, such as walking or biking to campus, can help counteract sedentary behaviour and promote overall health.

**Promote Awareness:** Campus initiatives that raise awareness about the importance of physical activity and provide resources for staying active can positively impact the physical activity patterns of college student teachers.



Understanding the physical activity patterns of college student teachers is crucial for promoting their health and well-being. By recognizing the challenges, they face and implementing strategies to incorporate physical activity into their routines, colleges and universities can support student teachers in maintaining a balanced and active lifestyle.

As college students move through their college careers, trends show an increase in weight coinciding with a decrease in physical activity and a diet lacking in essential nutrients. Huang et al. (2003), states that, with increasing age through high school and college, physical activity continues to decrease into adulthood. Students' self-reported height and weight and BMI was calculated. With this study most students have reported similar cases of the causes of their increase in size and weight as in such areas of nutrition, facilities to aid in sports and games, loaded academic activities and several barriers. Though this current study did not focus on the anthropometric variables, previous studies clearly addressed some of the findings of this study (Huang et al. 2003).

### **2.13 Causes of Physical Inactivity**

The presence of at least 1 perceived barrier to physical activity was reported about physically inactive students, and the average number of perceived barriers was significantly higher among them compared with physically active students (Awadalla et al. 2014). The significant barriers among physically inactive students were: time limitations, lack of accessible and suitable sports facilities have other important priorities, lack of friends to encourage, lack of support and encouragement from others, lack of motivation, high cost, not being interested in sports, lack of sports skills, feeling tired on physical activity and ignorance about the benefits of sports.

According to Rowland (1999), efforts to improve exercise habits in the population confront the clearly-established trend for a progressive decline in individual physical activity throughout the life span. The daily caloric expenditure (relative to body size) of an 18-year-old is approximately half that of when he/she was 6 years old. (This is confirmed by life's experience: consider the Brownian motion of a group of kindergarten children at a birthday party compared to the same individuals at their high school graduation reception.) In reviewing research data, Sallis (1993), concluded that during the school-age years, daily physical activity decreases at a rate of about 2.7% per year in males and 7.4% per year in females. Levels of activity steadily decline during the adult years as well. The percentage of adults in the United States who are sedentary generally increases 2-3-fold between the ages of 20 and 65 years (Stephens, 1987).

It appears that this basic trend for declining activity during life has a biological basis (Rowland, 1998). Evidence supports the presence of an inherent control centre within the central nervous system which governs levels of activity. With increasing age, centrally-dictated caloric expenditure through activity declines, paralleling that of basal metabolic rate. The decline in physical activity with age is therefore largely intrinsic, the result of a fall in central drive as well as other biological factors, such as a decreasing skeletal muscle mass in older years. There is no question, however, that the shape of the physical activity-age curve, i.e., the rate of decline in activity, is influenced by extrinsic, or modifiable, factors. And this is where interventional strategies can be effective in improving habits of physical activity. Critical to this approach is the identification and manipulation of psychosocial and environmental determinants which affect the individual's motivation and participation in physical activity.

According to the World Health Organization (2018), Physical inactivity is a leading risk factor for premature death from non-communicable diseases. Conversely, regular physical activity is associated with reduced risks of heart disease, stroke, diabetes and breast and colon cancer, and with improved mental health and quality of life. Worldwide, 23% of adults and 81% of adolescents (aged 11–17 years) do not meet the global recommendations for physical activity. The prevalence of inactivity varies considerably within and between countries – it is as high as 80% in some adult populations – and inactivity increases with economic development, owing to the influence of changing patterns of transportation, use of technology, urbanization and cultural values. Significant inequities exist, with girls, women, older adults, underprivileged groups and poor people, people with disabilities and chronic diseases, and the inhabitants of rural communities all having less access to safe, accessible, affordable and appropriate spaces and places in which to be physically active.

The WHO's seventy-first world health assembly Provisional Agenda Item 12.2 again revealed that Walking and Cycling are key means of transportation enabling people to engage in regular physical activity on a daily basis, but the role they play and their popularity are declining in many countries. Sport is an underutilized yet important contributor to physical activity for people of all ages, in addition to providing significant social, cultural and economic benefits to communities and nations. Sport can also contribute in emergency and crisis situations as part of humanitarian programmes aimed at health and social needs. As the Kazan Action Plan highlights, “sport for all, including traditional sport and games, is a fundamental field of intervention for governments to achieve the full potential of physical activity for personal and social development”; and the Commission on Ending Childhood Obesity recognised that active play and recreation are important elements of healthy growth

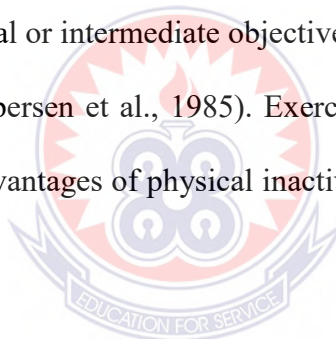
and development in children, particularly those under five, and both reports emphasize that quality physical education and the school environment can inculcate physical and health literacy for lifelong healthy, active lifestyles and prevention of non-communicable diseases. For many adults, the workplace is a key place to be physically active (on the trip to and from work and during working hours) and reduce sitting/sedentary behaviour, thereby increasing productivity and preventing injuries and absenteeism. Primary and secondary health care providers can help patients to become more active and prevent non-communicable diseases as part of treatment and rehabilitation pathways. Older adults in particular can benefit from regular physical activity to maintain physical, social and mental health, prevent falls and realize healthy ageing

With technological advances and conveniences, people's lives have in many ways become increasingly easier, as well as less active. In addition, people have many personal reasons or explanations for being inactive. The most common reasons adults don't adopt more physically active lifestyles are cited as; insufficient time to exercise, inconvenience of exercise, lack of self-motivation, non-enjoyment of exercise, boredom with exercise, lack of confidence in their ability to be physically active (low self-efficacy), fear of being injured or having been injured recently, lack of self-management skills, such as the ability to set personal goals, monitor progress, or reward progress toward such goals, lack of encouragement, support, or companionship from family and friends, non-availability of parks, sidewalks, bicycle trails, or safe and pleasant walking, paths close to home or the workplace.

Insufficient physical activity is one of the ten leading global risk factors for mortality with worldwide prevalence ranging from 16.6 to 34.5% for adults and between 77.5

and 84.0% for school-age adolescents (World Health Organization, 2019). These estimates are based on self-reports and are, therefore, likely underestimating the degree of inactivity. In this context, “insufficient” is defined as less physical activity than recommended in evidence-based guidelines. For example, healthy adults are advised to accumulate (in bouts of at least 10 min) a minimum of 150 min of moderate-intensity aerobic physical activity per week (or at least 75 min of vigorous-intensity aerobic physical activity or a combination of moderate and vigorous aerobic physical activity), in addition to performing muscle-strengthening activities on two or more days (World Health Organization, 2010).

Exercise is defined as “a subset of physical activity that is planned, structured, and repetitive and has as a final or intermediate objective the improvement or maintenance of physical fitness” (Caspersen et al., 1985). Exercise represents an efficient way of avoiding the health disadvantages of physical inactivity. However, most people fail to perform regular exercise.



#### **2.14 Health Implications of Physical Inactivity**

In 2002, the World Health Organization listed physical inactivity as one of 10 powerful risk factors for premature death. The organization concluded that 1.9 million premature deaths occur globally and some 600,000 in the European Region, and also 19 million disabilities adjusted for age could be due to insufficient physical activity. Abdullah et al. (2013), the above was part of a report by the World Health Organisation in 2002. Coronary Heart Disease (CHD), stroke, type 2 diabetes, some cancers (colon, rectal, breast) and depression were specified as the causes of death. Furthermore, it is estimated that physical inactivity causes about 22% ischemic heart disease and 10-16% cases of each of the above-mentioned type of cancer (WHO,

2003). Strong evidence exists that physically inactive people have up to double the risk of heart disease compared to active (Cavill et al. 2006). Moreover, an increase by about 9% of deaths from 2005 by 2030 due to cardiovascular and coronary heart diseases in developing countries and by 1% in developed countries are prognosed (Oldridge, 2008).

Being a couch potato. Not exercising. A sedentary or inactive lifestyle. You have probably heard of all of these phrases, and they mean the same thing: a lifestyle with a lot of sitting and lying down, with very little to no exercise. The following are true about inactive people;

One burns fewer calories. This makes you more likely to gain weight.

One may lose muscle strength and endurance, because you are not using your muscles as much.

Their bones may get weaker and lose some mineral content.

Metabolism may be affected, and the body may have more trouble breaking down fats and sugars

The immune system may not work as well

Poor blood circulation may occur

Body may have more inflammation

There might be development of hormonal imbalance

In the United States and around the world, people are spending more and more time doing sedentary activities. During leisure time, we are often sitting: while using a

computer or other devices, watching TV, or playing video games. Many jobs have become more sedentary, with long days sitting at a desk. And the way most people get around involves sitting in cars, on buses, and on trains. All these have serious unhealthy follow ups to the individual (Bray & Born, 2004).

In addition, the United States has experienced a dramatic rise in the prevalence of obesity, to the point where it has become an epidemic and public health concern. Specifically, from 1980 to 2008 obesity increased from 7% to 20% among children aged 6–11 years and from 5% to 18% among adolescents aged 12–19 years (Ogden et al., 2010). Obese children have a greatly increased risk of becoming obese adults, and more than 34% of United States adults are already obese, while another 34% are overweight (Flegal et al., 2010). These high rates are a serious concern considering obesity's association with the premature development of chronic diseases including heart disease, stroke, osteoarthritis, and some forms of cancer. The International Agency for Research on Cancer estimates that 25% of cancer cases worldwide are due to overweight, obesity, or a sedentary lifestyle (Vaninio & Bianchini, 2002). Among the culprits blamed for the obesity epidemic are decreasing levels of physical inactivity and increasingly sedentary lifestyles (Kohl & Hobbs, 1998; Prentice & Jebb, 1995). Conversely, scientific evidence has given hope by demonstrating the critical role of regular physical activity in obesity prevention and recovery (Katzmaryk & Shephard, 2000; Strong et al., 2005).

Given the compelling evidence for the protective role of physical activity against obesity and other chronic diseases, the United States Department of Health and Human Services (USDHHS) (2008) has developed guidelines for youth and adults. These recommend that youth engage in 60 or more minutes of moderate-to-vigorous

physical activity each day and adults in at least 150 minutes of moderate-intensity or 75 minutes of vigorous-intensity activity each week. Despite these recommendations, only 42% of children aged 6–11 years and 8% of adolescents meet this standard (Troiano et al. 2008). Adults are similarly deficient, with 39% being completely sedentary and 61% never engaging in vigorous-intensity physical activity (Pleis & Lucas, 2009). Moreover, the amount of time spent engaging in physical activity decreases continuously from childhood to older adulthood (Sallis, 1993; Trost et al., 2002). In view of the numerous health benefits of physical activity, inactivity in America has become a public health concern and needs to be addressed in both research and practice.

The researcher believed the above description of the association between physical activity and disease constitutes an appropriate discussion of why one should be physically active. This chapter outlines several theoretical approaches to physical activity promotion, intending to alert all about the role of theory in both research investigations and intervention implementation and assessment. The researcher began with a broad definition of theory as it relates to physical activity and proceed with a thorough discussion of its role throughout the research process.

### **2.15 Benefits of Physical Activity**

Lovell et al. (2010), explained that adequate physical activity has a critical bearing on wellbeing and quality of life. University contexts present key opportunities to promote physical activity behaviour in young adult populations for example, female students. However, there is lack of information regarding attitudes toward exercise of female university students who do not achieve physical activity sufficient for health benefits. This restricts the design of effective and specialized physical activity promotion



programmes. Regular physical activity is associated with numerous health and psychological benefits, for both women and men. By regularly engaging in physical activity, we delay overall mortality. This is also the case when the individual increases effort by changing the lifestyle of sitting or insufficient activity (Ainsworth et al., 2000).

It is very likely that recreational physical activity in the form of part of work and leisure contributes to a reduction in the incidence of colon cancer and breast cancer (Thune & Furberg, 2001). Load and resistance exercise most affect bone mineral density. Sport tends to increase bone mineral density, which reduces the risk of fractures (Wolff et al., 1999). Physical fitness has a positive effect on the state of well-being, contributes to the performance of daily duties as well as improving sports performance. Classroom physical activity also helps students be more physically active. A review on Physical activity suggests that physical activity may foster improved academic performance, yet schools are receiving more pressure to achieve high academic standards. It is important for classroom teachers, administrators and school psychologists to understand the benefits of incorporating physical activity into the school day (Erwin et al., 2012; Martin & Murtagh, 2017; Watson et al. 2017; Kibbe et al., 2011). Regular physical activity improves strength and endurance; helps build healthy bones and muscles; helps control weight; improves mental health by reducing anxiety, stress, and depression; and increases self-esteem.

According to Claudio & Karly (2012), regular physical activity is associated with both physiological and psychological health benefits. Physiologically, regular physical activity is related to decreased risk of coronary heart disease (Lee et al., 1995; Manson et al., 1999; Morris et al., 1990; Paffenbarger & Hyde, 1984;

Paffenbarger et al., 1986; Powell et al., 1987), hypertension, type 2 diabetes mellitus are decreased when one engages in regular physical activity (Albright et al., 2000; Grundy et al., 1999; Hu et al., 1999; Paffenbarger et al., 1983), various cancers are related to a study by (Lee, 2003) and overall mortality (Lee & Skerrett, 2001). Specific to youth, regular physical activity has a demonstrated association with increased bone mass, aerobic fitness, and levels of high-density lipoproteins as well as reduced risk for hypertension, obesity, and diabetes (Myers et al., 1996). Further, increased physical activity is related to increased concentration, academic achievement (Sallis et al., 1999), higher confidence, stronger self-image, reduced disruptive behaviour, and lower levels of depression (Dowling, 2000).

The most common health-related components are: cardio-respiratory capacity, muscular efficiency and speed, agility (Ortega et al., 2008). Extensive research provides unequivocal proof that engaging in regular physical activity is highly effective in warding off various health concerns, such as cardiovascular disease, diabetes, cancer, hypertension, obesity, depression, osteoporosis, and premature death. The correlation between physical activity and overall well-being is expressed linearly, meaning that the more frequently one participates in physical activity and the higher the intensity, the more significant the enhancement in physical fitness and overall health (Warburton et al., 2006).

The Relationship between Physical activity and Academic Achievement will be the first to review. Due to interest in the establishment of a relationship between physical activity and academic achievement, reviews have been conducted to attempt to evaluate the overall effects reported across studies. Examples are (Taras, 2005; Etnier

et al., 2006), where they conducted a meta-analysis to examine the effects of physical activity upon several measures of cognitive functioning in school aged youth.

The development of each person is realized through various dimensions: physical activity, social, cognitive, and emotional. These aspects function in a manner that is interconnected and interdependent. As a result, any change occurring in one of these areas significantly impacts and is influenced by the others (Altavilla & Di Tore, 2014). Physical inactivity or the sedentary person may foresee some muscle activity and consequent changes in metabolic functions and other functions. Physical inactivity is therefore, the lack of muscle contractions sufficient to stimulate the reconstruction, the lack of a sufficient increase in the metabolism and the lack of sufficient amounts of movements of a certain intensity, such as to require skills which allow to maintain the motoric control. In the sportive training this level of stimuli is defined as physiological overload (Cirillo, 2021).

Practicing regular physical activity has a number of benefits, which are amplified if it is started in very young age, in overall terms and in terms of physical well-being (Altavilla & Di Tore, 2016). Many studies have provided evidence that various diseases are present mainly in people who do not normally perform a physical activity, compared to those that habitually practice a constant physical activity.

The frequency of these pathological conditions in inactive subjects has steadily increased in recent decades (Booth et al., 2002). It was found a clear relationship between the lack of physical activity and increased incidence of disease states, however, not due to factors such as age, gender, body fat, smoking, alcohol, the previous state health, education, income provided increasingly clear evidence that physical inactivity is a cause of serious problems for individual health. Physical activity remains the biological stimulus needed for the preservation of structures, of functions of the organs and systems, so that they can perform at the best their physiological tasks. If health is conceived as energy for survival, for the physical performance, for cognitive and social life, then the adaptations due from the moderate activity, both in quantity for intensity, they improve health, reducing the risk of certain diseases, such as the type 2 diabetes, the overweight and obesity. The role of physical inactivity as a risk factor varies greatly from person to person and between the different pathologies, even if it remains a high-risk factor for the start of the sarcopenia (loss of muscle mass) and osteoporosis in people elderly (bones brittle), while result a weaker risk factor for coronary heart disease and cancer.

Regular physical activity, active play and sports can be a practical means to achieving numerous health gains, either directly or indirectly through its positive impact on other major risks, in particular high blood pressure, high cholesterol, obesity, tobacco use and stress.

Physical activity reduces the risk of cardiovascular disease, some cancers and type 2 diabetes. These benefits are mediated through a number of mechanisms: in general, it improves glucose metabolism, reduces body fat and lowers blood pressure. Physical activity may reduce the risk of colon cancer by effects of prostaglandins, reduced

intestinal transit time, and higher antioxidant levels. Physical activity is also associated with lower risk of breast cancer, which may be the result of effects on hormonal metabolism. Participation in PA can improve musculoskeletal health, control body weight, and reduce symptoms of depression. The following are not exception when it comes to benefits of physical activity:

- i. Reduces the risk of dying prematurely
- ii. Reduces the risk of dying from heart disease or stroke, which are responsible for one-third of all deaths
- iii. Reduces the risk of developing heart disease, colon cancer and type 2 diabetes
- iv. Helps to prevent/reduce hypertension, which affects one-fifth of the world's adult population
- v. Helps control weight and lower the risk of becoming obese
- vi. Helps to prevent/reduce osteoporosis, reducing the risk of hip fracture in women
- vii. Reduces the risk of developing lower back pain can help in the management of painful conditions, like back pain or knee pain
- viii. Helps build and maintain healthy bones, muscles, and joints and makes people with chronic, disabling conditions improve their stamina
- ix. Promotes psychological well-being, reduces stress, anxiety and depression
- x. Helps prevent or control risky behaviours, especially among children and young people, like tobacco, alcohol or other substance use, unhealthy diet or violence

Four areas or types of Physical Activities that can benefit a wide range of areas in our life are also taken care of in this study;

1. Keep and improve your strength so you can stay independent
2. Have more energy to do the things you want to do and reduce fatigue
3. Improve your balance and lower risk of falls and injuries from falls
4. Manage and prevent some diseases like arthritis, heart disease, stroke, type 2 diabetes, osteoporosis, and 8 types of cancer, including breast and colon cancer
5. Sleep better at home
6. Reduce levels of stress and anxiety
7. Reach or maintain a healthy weight and reduce risk of excessive weight gain
8. Control your blood pressure
9. Possibly improve or maintain some aspects of cognitive function, such as your ability to shift quickly between tasks or plan an activity
10. Perk up your mood and reduce feelings of depression

## **2.16 Summary of Chapter**

The review of literature under this chapter is done thematically. Physical inactivity is recognized as an important risk factor for multiple causes of death and chronic morbidity and disabilities.

Physical activity was chosen rather than physical fitness as the measure of exposure because it is through increases in the behaviour (physical activity) that health benefits accrue and improvements in cardiorespiratory fitness can be achieved. The main focus of this study is to investigate causes and barriers to College of Education student teachers' physical inactiveness. Review is therefore done in several areas including

theories and models to support the present study. Areas of concern had to do with what physical activity and its benefits, physical inactivity and its accompanying issues to its victims. How student teachers involve in physical activities was also reviewed and health implications of physical inactivity.



## CHAPTER THREE

### METHODOLOGY

This chapter focuses on the methods that were used in collecting data for the study. It consists of the research design, population, sample and sampling technique, procedures for data collection, and data analysis. In addition, considerations that were taken to strengthen the validity of data and reliability of the instrument were described.

#### 3.1 Research Design

Research design refers to the structured and systematic plan or framework adopted by researchers to address their research questions or hypotheses and to guide the collection, analysis, and interpretation of data (Creswell, 2014). It encompasses the overall strategy that researchers employ to investigate a particular problem or phenomenon, outlining the study's scope, approach, and methods employed to obtain relevant and reliable information.

Quantitative research approaches are characterized by the use of numerical data and statistical analysis to draw objective conclusions (Smith et al., 2020). This study used descriptive survey design which involves collecting data from a large sample using structured questionnaires (Johnson & Brown, 2018). The data obtained are analyzed quantitatively to identify patterns and trends.

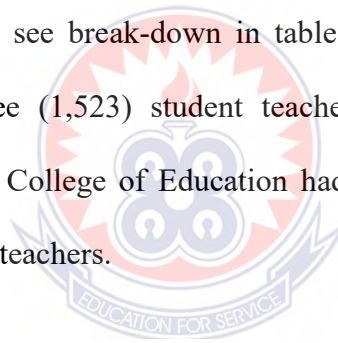
This study used a descriptive design of survey type. Data was presented using tables and discussions. This design allows researchers to easily describe and provide understanding of the phenomenon using simple descriptive statistics.



### 3.2 Population

Research population refers to the entire group of individuals, objects, or elements that share common characteristics and from which a sample is drawn to conduct a study or research (Leavy, 2017). It represents the larger target population to which the research findings are intended to be generalized.

The population of the study comprised of student teachers of four Colleges of Education in the Northern Zone. The Colleges of Education and their population are; For the E. P. College of Education Bimbilla, the total population was one thousand, nine hundred and fifty-eight (1,958) and the break down can be seen in table 3.1 below. Tamale College of Education had two thousand and eighty-eight (2,088) student teachers in total, see break-down in table 1. A total of one thousand five hundred and twenty-three (1,523) student teachers were in Gbewaa College of Education and Gambaga College of Education had one thousand, one hundred and fifty-four (1,154) student teachers.



**Table 3.1: Population Distribution of the Various CoE**

Name of College	No. of Students Level 100	No. of Students Level 200	No. of Students Level 300	No. of Students Level 400	Total
Gambaga CoE	275	369	256	254	1,154
Bimbilla CoE	590	550	413	405	1,958
Gbewaa CoE	354	483	354	332	1,523
Tamale CoE	522	520	527	519	2,088
<b>Overall Total</b>	<b>1,741</b>	<b>1,922</b>	<b>1,550</b>	<b>1,510</b>	<b>6,723</b>

Source: Field Data, 2022

### 3.3 Sample

In order to make generalizations to the Colleges in the Northern Zone and draw appropriate conclusions on physical activity nature of the student teachers, there was

the need to conduct sampling in the research process. This confirms the assertion by Miller (1991) that, a study based on representative sample is often better than a larger sample or a whole population, for there is no need interviewing large numbers of people saying the same thing. “The researcher needs to select only a few interviewees from the universe for study” (Miller, 1991). Two hundred (200) student teachers and were sampled for this study out of the total of one thousand five hundred and ten (1,510) level four hundred students.

### **3.4 Sampling Technique**

This study used the multi-stage cluster sampling technique to sample the respondents for the study. Firstly, the Northern Zone was randomly selected out of the five Clusters of Colleges of Education in the Country namely; the Eastern-Greater Accra Zone, Ashante-Brong-Ahafo Zone, Northern Zone, Central Western Zone and the Volta Oti Zone.

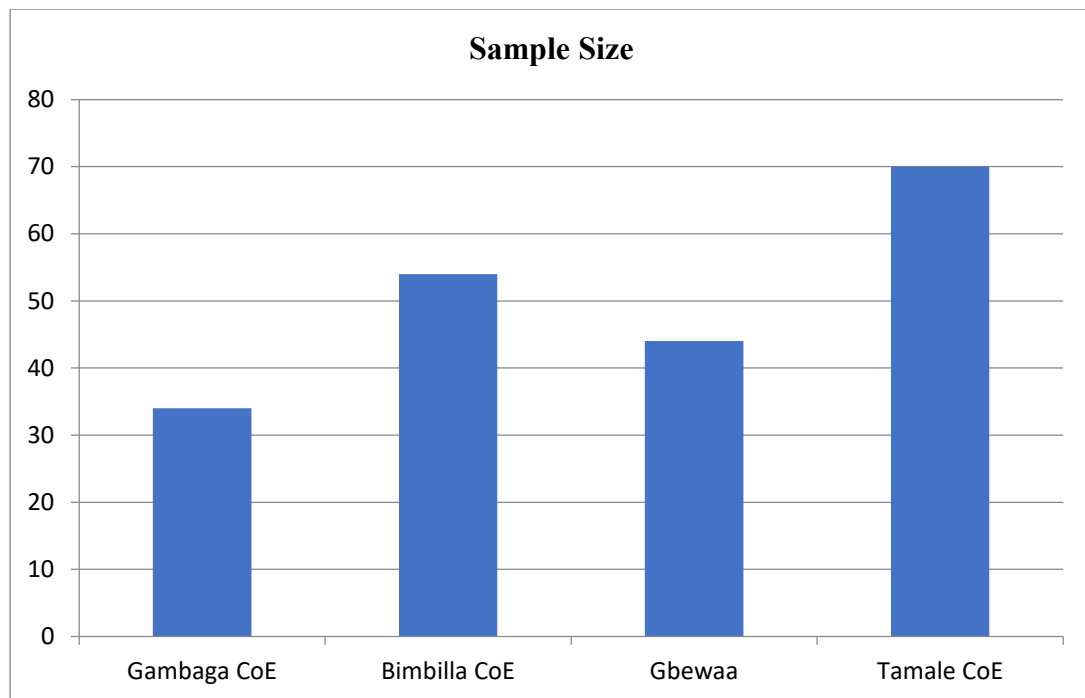
The researcher randomly selected four (4) Colleges from the ten (10) Colleges of Education in the Northern Zone. The four Colleges of Education selected includes; Tamale College of Education and Bimbilla College of Education both from the Northern Region, Gambaga College of Education from the North East Region and Gbewaa College of Education from the Upper East Region. For the respondents, the purposive sampling technique was used to select the level 400 student teachers in each of the four Colleges of Education to take part in the study. This group of students were used because they were the students on campus since the Colleges of Education in Ghana now run the track system as seen in the senior high schools in Ghana.

Randomly proportionate sampling was done to obtain student numbers from the Colleges selected to form representatives of each College, which gave the total of two hundred (200) students for the study.

**Table 3.2: Sample Population Representing the Various CoE**

<b>College</b>	<b>Finite Population (Level 400)</b>	<b>Sample size (Level 400)</b>
Gambaga CoE	254	34
Bimbilla CoE	405	54
Gbewaa CoE	332	44
Tamale CoE	519	68
<b>Total</b>	<b>1,510</b>	<b>200</b>

Table 3.2 displays information on the sample representation of the level 400 student-teachers in the various Colleges of Education taking part in the study, in total, two hundred (200) student-teachers participated in the study. A proportionate stratified random sample calculation was done to each College level 400 students' total number which gave the number of representatives of the Colleges. The formula used was; Sample size divided by Population and multiply by the stratum size (total number of level 400 student-teachers in each College of Education). The researcher took this number because of convenience and also to get a representation that will produce the desire outcome. A graphical presentation of the students is in figure 3.1.



**Figure 3.1: Calculated sample size representing the various CoE**

Visser et al. (1996) indicated in their work that surveys with lower response rates (approximately 20%) yielded more accurate measurements than did surveys with higher response rates (approximately 60 or 70%). This is contrasted by Keeter et al. (2006) who found that response rates of 25% yielded similar results as compared to response rates of 50%. Choung et al. (2013) further confirmed that response rates of 52% provided reliable results for a study with a target population of 723. Evans (1991) also reported that for small samples, less than 100, a response rate higher than 80% is preferable. Accordingly, response rates of 20 to 80% and above have been proven to be adequate for reliable results.

### **3.5 Instrumentation**

The instrument for data collection was questionnaire. Questionnaires are instruments designed to collect data for decision making in research. It is considered as the best for researchers who wish to acquire original data for describing a large population

(Babbie & Mouton, 2002). Questionnaires play a vital role in quantitative research as they offer a structured and standardized way of collecting data from a large number of respondents (Davis & Olson, 1985). They are widely used in various fields, including social sciences, psychology, marketing, and public health, among others. According to Davis and Olson, (1985), the importance of using questionnaires in quantitative research can be understood through the following key aspects:

**Data Collection Efficiency:** Questionnaires allow researchers to collect data from a large and diverse sample in a relatively short period. By using standardized questions, the process becomes efficient and facilitates data analysis and comparisons.

**Standardization and Consistency:** Questionnaires provide consistency in data collection, ensuring that all respondents receive the same set of questions. This standardization minimizes potential biases introduced by differences in interviewers or data collectors.

**Objectivity:** Questionnaires help maintain objectivity in data collection, as there is no direct interaction between the researcher and the respondents during the process. This reduces the chances of researcher bias influencing the data.

**Precision and Quantifiability:** The structured nature of questionnaires allows for precise and quantifiable responses, which are crucial in quantitative research. Numerical data obtained from questionnaires enable statistical analysis, helping to draw valid conclusions.

**Generalizability:** Large-scale data collection using questionnaires allows researchers to generalize their findings to a broader population. This enhances the external validity of the research results.

**Anonymity and Confidentiality:** Questionnaires offer a level of anonymity to respondents, encouraging them to provide honest and unbiased answers. Confidentiality measures further protect the privacy of participants.

**Cost-Effectiveness:** Compared to other data collection methods, such as interviews or focus groups, using questionnaires is often more cost-effective, especially when dealing with a large and geographically dispersed sample.

**Longitudinal Studies:** Questionnaires are useful in longitudinal studies where data is collected at multiple time points, enabling researchers to track changes and trends over time.

**Easily Replicable:** Well-designed questionnaires can be easily replicated and reused in similar studies, making it easier to build on existing research.

**Multifaceted Data Collection:** Questionnaires can capture a wide range of variables and responses, allowing researchers to explore various dimensions of the research problem.

All the above forms part of the reason for the researcher choosing it as the instrument for this study. Questions for the instrument obviously addressed the research questions. The questionnaire was divided in two parts. The first part comprising six (6) items which solicited background information on the participants, and the second part comprising thirty (30) items were measured on a (5) point Likert scale (*Strongly agree, Agree, Uncertain, strongly disagree, and disagree*) type questions that solicited respondents' views about their knowledge, attitudes and barriers to physical activity and regular exercise in the College of Education.

The choice of questionnaire guaranteed the respondents' anonymity, since their names were not required on the questionnaire sheets.

### **3.6 Validity and Reliability Considerations**

Draft copies of the instruments were sent to the supervisors who are experts in the field of Physical education for their comments and justification. This was used to produce the final draft.

After the validity of the instrument, the improved questionnaire was tested using level 400 students which realised a validity coefficient value of 0.85. These level 400 students were used because they had all the characteristics as required by the researcher. Same level 400 students were finally used as the subjects of the study.

The instrument was self-designed, validated and reliability examined. The main validity consideration for this study was on how to make the study findings stand the test of time and realise the main study focus (barriers of physical activity), and to determine whether the instruments used really measured the key elements or variables undertaken (perceived benefits of regular physical activity, health implications of physical inactivity, and the extent of regular physical activity among student teachers). "The degree to which items in an instrument reflect the content universe to which the instrument will be generalized" (Straub et al. 2004). That is whether the instrument is able to measure what it intends measuring (construct validity). This was done through the administration, collection and critically analysing the views of respondents which revealed some findings which can be traced to the chapter four (4).

### **3.7 Ethical Considerations**

The questionnaire was self-designed and validated and this made it not transgress any ethical requirements. For example, one could not identify a respondent from the way responses were made during the data collection and data analysis, as the survey was anonymous. Through the questionnaire instructions section, the participants were assured that the study involved an anonymous survey, where their names were not to appear on the questionnaires. Participants were also assured that the answers they gave would be treated as strictly confidential and that they could not be identified in person based on the answers they gave (see instructions section of the questionnaire in Appendix A and the covering letter of introduction to participants in Appendix B). Participants were also reminded of the significance of their participation in the study, as it was very important to get their input to complete the project.

### **3.8 Procedures for Data Collection**

This section presents all the processes the researcher went through to generate data for the study. It includes sending and distributing the questionnaire to the participants and also allowing them to complete them. During the completion of the questionnaire, further clarifications were sought and explanations were provided by the researcher through some volunteer research assistants. A week and some few days of time was also spent by the respondents to complete the questionnaires after which they were collected. Questionnaires meant for students were sent to the various Colleges of Education through volunteer research assistants, copies of an introductory letter which was given to the researcher by the Department of Health, Physical Education, Recreation and Sports was made available for the assistants to show to leaders who matter in the various Colleges of Educations where the study was undertaken.. As



directed by the researcher, clarification was given to student teachers where necessary.

Questionnaires (response) were collected two weeks after distribution and sent to the researcher for analysis, this was done by the assistants who were members of staff of the participating Colleges.

### **3.9 Data Analysis Plan**

After collecting data, it was coded for entry into the software for data processing thus, the Statistical Package for the Social Sciences (SPSS version 20). The data were analysed based on the research questions. After using the SPSS software to generate the tables which contained respondents' views or responses, critical examination of the views was done. Descriptive statistics with Mean, Standard Deviation, frequencies and simple percentages were used to present the data on the basis of the reaction of the respondents to the various items. The discussion was done with the research questions in mind. The questionnaire items as presented in the analysis were grouped under themes to avoid wrong placement of data in the computations. Appropriate tables were also used to clarify data presentation. The results were discussed thoroughly and supported with evidence from related literature. The use of bar Charts to show more clarity was done during the discussing of findings. This was done to some selected items.

Data for the survey was quantitative in nature, and was processed for statistical analyses using the SPSS version 20.0. This involved a number of statistical operations. A data base was then carefully created using the SPSS programme with all variables labelled and given defined values. Descriptive data analysis was conducted

to find out whether the observed differences in the extent to which the respondents perform regular physical activity was significant or otherwise.



## CHAPTER FOUR

### RESULTS FINDINGS AND DISCUSSIONS

This part presents the outcomes and the discoveries of the information investigated through survey from the respondents. Results from the information were examined by each research question raised and furthermore dependent on each set of survey things for each research question raised.

The results of the study pertaining to the perceived barriers to providing physical activity to student teachers of some Colleges of Education in the North. A total of two hundred (200) student teachers in level 400 were involved in the study. The demographic information of the respondents was described and this was followed by the presentation of results and discussion of the findings.

#### 4.1 Data Analysis

In this part, information was introduced and examined with brief remarks to clearly show the research questions. Notwithstanding, itemized conversation was made on the discoveries under topics created from the research questions and upheld with related writing.

*Table 4.1: Age Range of Students*

Age Range	Frequency	Mean	Squared Deviations	Standard Deviation	Percentage (%)
20 to 25	91	30.3	600.25		45.5
26 to 30	89	29.6	492.84		44.5
30 and above	20	6.6	2,162.25		10.0
<b>Total</b>	<b>200</b>	<b>66.5</b>	<b>1,085.11</b>	<b>32.94</b>	<b>100.0</b>

Source: Field Data, 2022

Ages of student teachers from the data gathered ranges from 20 to 30 years. Majority of the respondents were from the age range of 20 to 25 years, that is, 91 (45.5%) of the student teachers were in this age range. Again, 89 students representing 44.5% were between the ranges 26 to 30 years. Twenty (20) students, that is 10% were aged 30 years and above.

**Table 4.2: Type of Physical activity Normally Performed**

<b>Form of Physical activity</b>	<b>Frequency</b>	<b>Percentage (%)</b>
Cycling	7	3.5
Brisk walking	45	22.5
Climbing the stairs	14	7.0
Running	39	19.5
Yard walking	3	1.5
Home chores	18	9.0
Jogging around	57	28.5
Spot Exercising/ targeted exercise"	17	8.5
<b>Total</b>	<b>200</b>	<b>100.0</b>

Source: Field Data, 2022

Research question 1 tried to distinguish the types of physical activity attempted by student teachers. The aim was to discover the types of exercises student teachers are routinely occupied with, which decidedly or contrarily sway on their overall wellbeing.

Table 4.2 presents the details of respondents in regards to the types of physical exercises they are occupied with. The outcomes show that, greater part of the respondents occupied themselves with activities like running, brisk walking, and jogging around. It is clear from the table that, while 19.5% and 22.5% separately were doing running and brisk walking respectively, 57 students (28.5%) of the respondents were occupied with jogging as a type of activity. Home chores was next with 18

(9.0%) respondents. Cycling and Sport exercising/ targeted exercise had 7 respondents representing (3.5%) and 17 respondents (8.5%). Climbing the stairs and yard walking had 14 (7.0%) and 3 (1.5%) respectively.

Some of the students were also seen from their responses indicating that they take part in more than one activity, but student teachers' activities were only analysed using the dominant activities. Support from the bar graph projects a very clear picture for readers simply distinguished between the types of activities undertaken by student teachers.

**Table 4.3: Main Motivation for Exercising?**

<b>Motivation for Exercise</b>	<b>Frequency</b>	<b>Percentage (%)</b>
Improve Physical Health	56	28.0
Improve Mental Health	37	18.5
Competitions	32	16.0
Improve body's appearance	38	19.0
Recreation / Leisure	37	18.5
<b>Total</b>	<b>200</b>	<b>100.0</b>

Source: Field Data, 2022

When student teachers responded to an item in the questionnaires on what will motivate them to exercise, fifty-six (56) thus (28%) of them were with the mind that they will only partake in exercises because they want to improve their physical health. Thirty-eight (38) respondents representing twenty-eight (19%) said they will exercise to only improve on their body appearance. Competitions were chosen by 32 (16%) respondents; this shows that they only exercise or engage in physical activity because they want to be fit to compete. Some exercise just for recreation and leisure time pursuit and were 37 representing (18.5%), one of the most important reasons for

exercising thus for mental health was responded to by 37 student teachers and this formed (18.5%) of the total respondents.

**Table 4.4: Benefits of Regular Physical Exercise to Student Teachers of the Colleges of Education**

Statement	Strongly Agree Freq. (%)	Agree Freq. (%)	Uncertain Freq. (%)	Disagree Freq. (%)	Strongly Disagree Freq. (%)
I do vigorous activity that elevates my heart rate for 35 minutes at least three days a week	14 (7.0)	22 (11.0)	36 (18.0)	114 (57.0)	14 (7.0)
I do exercises for flexibility at least three days a week	34 (17)	30 (15)	36 (18)	64 (32)	36 (18)
I do exercises for muscle fitness at least three days a week	20 (10.0)	20 (10.0)	29 (14.5)	91 (45.5)	40 (20.0)
I regularly perform exercises designed to relieve tension	22 (11.0)	34 (17.0)	31 (15.5)	46 (23.0)	67 (33.5)

Source: Field Data, 2022

Research question two dealt with the benefits of physical activity to student teachers. After student responses, 14 (7%) of the students strongly agreed and 22 (11%) also agree that they do vigorous activities and that help improve their heart rate. Thirty-six (36) students representing (18%) were however uncertain as to whether the training they do is vigorous and helps in improving their heart rate or not. The statement 'I do vigorous activity that elevates my heart rate for 35 minutes a week' was denied by One hundred and fourteen (114) students and this represented about (57%) of the total number.

On the aspect of doing exercise for flexibility, 34 students (17%) strongly agreed that they do, 30 students (15%) agreed, 36 (18%) were uncertain, 64 students (32%) disagreed and 36 students (18%) strongly disagreed. On the exercises for muscular fitness item, it was seen that the same number of students thus 20 students representing (10%) strongly agree and agreed that they do exercises for the purposes of making their muscles fit or building their muscles. Twenty-nine (29) (14.5%) of the student teachers were uncertain, ninety-one (91) students representing almost (45.5%) disagreed while 40 (20%) strongly disagreed that they do not do exercises for muscle fitness. It also revealed that some of student teachers also do exercise to relieve tension, this was gathered when about 56 students thus (28%) strongly agree and agreed they do designed exercises to release tension. Forty-six (46) (23%) disagreed while sixty-seven (67) (33.5%) of the students strongly disagreed. Meanwhile 31 students representing (15.5%) were uncertain.

**Table 4.5: Value of Physical activity to Student Teachers**

Question	Very High Freq. (%)	High Freq. (%)	Some what Freq. (%)	Low Freq. (%)	Very Low Freq. (%)
How much do you value regular physical activity?	106 (53.0)	49 (24.5)	15 (7.5)	22 (11.0)	8 (4.0)
How much do you value physical appearance?	58 (29.0)	42 (21.0)	52 (26.0)	20 (10.0)	28 (14.0)
How much do you value physical strength?	34 (17.0)	32 (16.0)	12 (6.0)	65 (33.0)	57 (28.0)
How much do you value physical endurance?	26 (13.0)	42 (21.0)	44 (22.0)	58 (29.0)	30 (15.0)

Source: Field Data, 2022

The response of student teachers on how much value was placed on some physical activity variables are measured in the above table five. In table five above. It is evident that almost all students valued and rated regular physical activity 'very high' and 'high'. These ratings took 106 (53%) and 49 (24.5%) as very high and high respectively. Those who rated physical activity 'low' stood at twenty-two (22) (11%) respondents, and 'very low' were eight (8) students representing (4%), while those who thought it was 'somewhat' valid or not were 15 (7.5%).

Physical appearance as a result of physical activity was rated 'very high' by fifty-eight (58) (29%) students and 'very low' by twenty-eight (28) (14%) students. High response was forty-two (42) students representing (21%) respondents. Observing the youth today with regards to physical activity, the researcher was rather not surprised when the data showed that 34 and 32 respondents rated physical strength very high and high respectively, both making (33%). This, the researcher strongly believes it was because most male and some female youth now want to be seen with build-up muscles and looking strong among other peers. A whole one hundred and twenty-two however rated as low and 'very low' the value for physical strength. Twelve (12) (6%) students were uncertain.

Endurance in physical activity mostly is required by those who engage in competitions and also in hard labour, some of the student teachers were not exception to these activities but the numbers went down in this table on the very high and high ratings. Twenty-six (26) and forty-two (42) respondents chose very high and high ratings, these represented (13%) and (21%) respectively. Forty-four (44) (22%) students chose 'somewhat', fifty-eight (58) (29%) students for low value rating and 30 (15%) rated very low.



Daily physical activity is essential to maintaining a healthy weight and reducing the risk of chronic disease. That is why regular physical activity is recommended to reduce belly fat and decrease the risk of developing these conditions.

**Table 4.6: Factors Contributing to Physical Inactivity**

<b>Statement</b>	<b>Strongly Agree Freq. (%)</b>	<b>Agree Freq. (%)</b>	<b>Uncertain Freq. (%)</b>	<b>Disagree Freq. (%)</b>	<b>Strongly Disagree Freq. (%)</b>
I have been worried about my inability to partake in Physical activity.	49 (24.5)	38 (19.0)	53 (26.5)	18 (9.0)	42 (21.0)
I have no exercise equipment in my College to use.	52 (26.0)	52 (26.0)	23 (11.0)	30 (15.0)	43 (21.5)
I have no time for exercise because of my social and academic responsibilities	35 (17.5)	67 (33.5)	23 (11.5)	54 (27.0)	21 (10.5)
I have been thinking about other recreational activities that are more entertaining than exercise.	72 (36.0)	47 (23.5)	32 (16.0)	30 (15.0)	19 (9.5)
Exercise has no positive effects on my health	18 (9.0)	14 (7.0)	23 (11.5)	45 (22.5)	100 (50.0)
The College curriculum does not allow for more Physical activity and sports.	62 (31.0)	41 (20.5)	37 (18.5)	43 (21.5)	17 (8.5)

Source: Field Data, 2022

Table 4.6 above shows the outcome of research question three (3). The research question dealt with the factors contributing to physical inactivity among students in the Colleges of Education of the Northern Region. When the data was analysed, Students who agreed that they were worried about their inability to take part in physical activity were 38 (19%), strongly agree was 49 (24.5%), those who were

uncertain were also 53 (26.5%), 18 (9%) students however disagreed while (21%) strongly disagreed.

Question on facilities was next and again respondents who said they did not have equipment for exercising at their Colleges of Education were more. 52 students strongly agreed, 52 students also agreed, in percentage wise, that was (26%) and (26%) respectively. Thirty (30) disagreed, 43 disagreed strongly also presenting (15%) and (21.5%) respectively, and 23 (11%) students were uncertain. It is evident again that student-teachers do not have enough time reserved to engage in physical activities since more than half thus 102 of the student-teachers representing (60%) for both strongly agreed and agreed indicated that they do not have time to exercise but do have for only academic and social responsibilities.

Most of the student-teachers will prefer other recreational activities that are more entertaining than physical activities. One hundred and nineteen (119) representing (59.5%) agreed and strongly agreed.

Those who think that exercise has no positive impact in their lives when it comes to health issue were however few. Eighteen (18) of the student-teachers, that is (9%) strongly agreed, 14 (7%) agreed. This sums up to only (16%) of the total respondents as against 145 students-teachers who disagreed and strongly disagreed, indicating that exercise have positive effect in their health as students, they form (72.5%). Student-teachers who were uncertain constituted (11.5%) of the entire respondents.

This result shows clearly that exercise has positive impact on student teachers and everyone. The curriculum designed for the Colleges of Education does not support more physical activities as reflected from the data gathered and shown in table 4.6

above. Sixty-two (62) representing (31%) students strongly agreed while 41 (20.5%) agreed that the curriculum does not allow them to be engaged in more physical activities. Thirty-seven (37) were uncertain and that formed (18.5%) of the total respondents. Forty-three (43) and 17 representing (21.5%) and (8.5%) respectively agreed and disagreed that the curriculum plays a role in their inactive lifestyle.

**Table 4.7: Health Implications of Physical Inactivity**

Question	Frequency of response		
	Yes	No	Not Sure
Do you get adequate amount of sleep each night?	85 (42.5)	109 (54.5)	6 (3.0)
Are you happy most of the time?	92 (46)	69 (34.5)	39 (19.5)
Do you have sound studies in School?	41 (20.5)	92 (46)	67 (35.5)
Do you generally feel stressed?	40 (20)	118 (59)	42 (21)
Are you physically fit?	38 (19)	38 (19)	124 (62)
Are you able to perform your daily physical tasks?	74 (37)	116 (58)	10 (5)
Are you physically able to perform leisure activities?	81 (40.5)	93 (46.5)	26 (13)
Do you have limitation that prevent you from exercising?	162 (81)	38 (19)	-
Do you usually exercise alone?	83 (41)	117 (58.5)	-
Do you exercise regularly?	69 (34.5)	131 (65.5)	-

Source: Field Data, 2022

In respect to the health implications of physical inactivity among student teachers, 85 (42.5%) students said ‘yes’, that they get adequate sleep each night. Hundred and nine (109) (54.5%) chose ‘No’ meaning they don’t get adequate sleep at night, that is more than half of the respondents. Six (6) students-teachers however were undecided. More student-teachers also responded affirmatively to the question whether they have limitations or things that prevent them from exercising, (81%) students out of the 200 total with only 38 (19%) student-teachers choosing ‘No’ indicating they do not have

limitations, most of the students mentioned lack of facilities and space as their barriers for exercising. When they (student teachers) were asked whether they exercise alone, 117 (58.5%) declined while 83 (41%) said yes. With the issue of been stressed up, 40 (20%) respondents were of the view that they generally feel stressed up. 118 (59%) students disagreed. But 42 (21%) were not sure. One hundred and one (131) students representing (65.5%) were recorded to have responded ‘No’ to the question; ‘do you exercise regularly?’ with only 69 (34.5%) students confirming that they do regular exercise.

**Table 4.8: Where Student Teachers Exercise?**

<b>Place of Exercise</b>	<b>Frequency</b>	<b>Percent</b>
My College Hostel	54	27.0
Gym (Town)	16	8.0
Fitness Club (Town)	55	27.5
Others	75	37.5
<b>Total</b>	<b>200</b>	<b>100.0</b>

Source: Field Data, 2021

The place of exercise for 54 (27%) students was at the hostel, perhaps because they do not have designated places for exercise, 16 students exercised at the gymnasium and this represents (8%). Fitness clubs were the next stop for some students as 55 (27.5%) of them picked the gym as the place they normally exercise. Others as indicated in the questionnaire took 75 (37.5%) of the respondents. Some of the respondents wrote work place, school field, going for jogging and more as their places for exercise.

**Table 4.9: Recommendation of Remedies to Physical Inability**

	<b>Frequency</b>	<b>Valid Percent</b>
Making use of available facilities in one's community	88	44.0
Support from instructors	67	33.5
Policy and legislation on "exercise for fitness".	45	22.5
<b>Total</b>	<b>200</b>	<b>100.0</b>

Source: Field Data, 2021

In Table 4.9, 88 (44%) students opted for making use of available facilities in one's community as recommended remedy for physical inactivity. Sixty-seven (67) students representing (33.5%) look up to support from instructors to remedy physical inactivity. The last group of students that is 45 (22.5%) will want policy and legislation to guide the way student teachers engage in physical activity.

## **4.2 Discussion of Findings**

This part presents detailed discussion of results under themes derived from the research questions. Related literature found to be relevant to the current study have also been cited to strengthen the discussion.

### **4.2.1 Forms of physical activity**

The results on forms of physical activity performed by Student-teachers indicated that jogging was the most regular physical activity of the respondents. The results further showed that, running, brisk walking and climbing the stairs were performed regularly.

Regarding jogging, Deny (2017) in his study compared the impact of jogging exercise and extensive interval method on physical fitness, and found that extensive interval method gave better impact on physical fitness. It therefore affirmed results of this study through the responses of the student-teachers when majority of them took

jogging as the physical activity performed always. A study conducted by Milburn and Butts (1983) compared the effect of aerobic dance and jogging on female students and found out that both exercises significantly increase students' VO<sub>2</sub>Max. Despite this difference, since VO<sub>2</sub>Max is related to physical fitness, it is safe to say that jogging could improve physical fitness too. However, from some of the data gathered, some student teachers found it difficult jogging because of pressing issues academically as they indicated in follow-up questions.

The jogging activity as seen by many of the respondents and proven in the results of this current study has many undebatable benefits as a form of physical exercise. Nabkasorn, et al. (2006) in their study also found and suggested that jogging exercise could be effective in improving depressive state, hormonal response to stress and physiological fitness of adolescent females with depressive symptoms. This study however was not limited to females but both males and females which saw impressive agreed responses to the fact that jogging is beneficial as stipulated by Nabkasorn et al. (2006). Physical activities are varied and this called for the choosing of brisk walking by some student-teachers as their preferred and regular form of physical activity, the respondents might have seen it (brisk walking) as the most relaxed and simple form of exercise hence opting for it.

Murtagh et al. (2015) stated Physical activity is a cornerstone of well-being, and brisk walking is a simple yet effective form of exercise that holds significant scientific benefits. For student-teachers, who often lead busy and sedentary lives, incorporating brisk walking into their routine can offer numerous advantages for both physical and mental health.

### **Cardiovascular Health**

Brisk walking is an excellent cardiovascular exercise that engages the heart and promotes circulation. Research by Murtagh et al., (2015) highlights how regular brisk walking can help lower the risk of cardiovascular diseases, such as hypertension and heart disease, by improving heart function and reducing blood pressure.

### **Mental Clarity and Cognitive Benefits**

Physical activity, including brisk walking, has been linked to improved cognitive function and mental clarity. A study by Colcombe et al., (2004) demonstrated that aerobic exercise, like brisk walking, can enhance cognitive performance and contribute to better attention, memory, and information processing among individuals.

### **Stress Reduction and Mood Enhancement**

Engaging in brisk walking can lead to the release of endorphins, often referred to as "feel-good" hormones. These endorphins help alleviate stress and enhance mood. The study conducted by Hansen, et al. (2001) supports the notion that physical activity, such as brisk walking, is associated with reduced stress levels and improved emotional well-being.

### **Weight Management and Metabolism**

For student-teachers striving to manage their weight, brisk walking can play a pivotal role. Brisk walking contributes to calorie expenditure, which, over time, can aid in weight management. Moreover, research by Hjorth et al. (2017) indicates that regular physical activity, including brisk walking, can enhance metabolic rate and contribute to better overall metabolic health.

## **Social Interaction and Well-Being**

Brisk walking can also provide an opportunity for social interaction, allowing student-teachers to connect with peers or engage in group activities. Social interaction has been shown to contribute positively to overall well-being. A study by Kawachi et al. (1997) highlights the role of social connections in promoting health and happiness.

Researchers such as Powell and Single (1996) found that, walking is one of the best forms of physical activity. In their view, it is low impact (so does not put stress on the joints), weight-bearing (so it can improve bone density) and a heavy-weight individual walking briskly will burn about 250kcal an hour, so it can help with weight loss. Other benefits are stress reduction and enhanced sleep. The long run health benefits of walking are incredible (Blair & Jackson, 2001). Williams (2001) also said brisk walking was found to be less stressful and more relaxed form of exercising. In view of this research, even though there appears to be numerous forms of physical activity, brisk walking was found to be one of the most common activities among the College of Education students despite the fact that some expressed varied reasons which most at times hinders their ability to go out walking. Fear of been attacked when they come out in the early hours of the day and complaints of tiredness after the afternoon classes, were some of the concerns from student teachers. Conclusively, scientific research supports the manifold benefits of brisk walking for student-teachers. From cardiovascular health and cognitive enhancement to stress reduction and social interaction, brisk walking offers a holistic approach to improving both physical and mental well-being. Encouraging student-teachers to incorporate brisk walking into their routine can contribute to a healthier and more balanced lifestyle.



In another related study (Jeffery et al., 2000) found spot exercise to dominate physical activities engaged by persons with physical disability but some College students also responded to have participated in this physical activity. This, according to the authors may be due to various factors. Firstly, Jeffery et al. (2000) argued that, a type of disability may inform the form of exercise an individual will perform, which means that some of the College students might be challenged in one form or another especially those who responded to have responded that they partake in the activity. For instance, a person who lost both legs may engage in only spot exercises. Secondly, environmental factors such as the geographical location of a town including the nature of the land surface can influence the choice of exercise space and a form of physical exercise to engage in. Again, domestic and other responsibilities including work schedules are also contributing factors to the choice of exercises (Kelty et al., 2008). In view of these, Kelty et al. (2008) concluded that, the choice of a particular form of physical activity depends on individual's own assessment of their ability and how these abilities can be explored in an enabling physical environment.

Spot exercises, also known as targeted exercises, focus on specific muscle groups and are often integrated into busy routines. For student-teachers managing academic demands and teaching responsibilities, incorporating spot exercises can offer valuable physical and mental health benefits.

### **Muscle Strengthening and Endurance**

Spot exercises allow individuals to target particular muscle groups, leading to increased muscle strength and endurance. A study by Schuenke et al. (2012) demonstrated that spot exercises effectively promote muscle hypertrophy, contributing to greater strength and improved functional fitness.

### **Time Efficiency and Convenience**

Student-teachers often face time constraints due to their rigorous schedules. Spot exercises provide an efficient way to engage in physical activity without requiring a significant time commitment. Research by Astorino et al. (2013) highlights the importance of time-efficient exercise for individuals with busy lives.

### **Improved Posture and Flexibility**

Certain spot exercises can focus on enhancing posture and flexibility, which are particularly relevant for individuals spending prolonged periods seated. Research by Blanpied et al. (2017) suggests that targeted exercises can contribute to improved postural control and range of motion.

### **Stress Reduction and Cognitive Benefits**

Physical activity, including spot exercises, has been associated with stress reduction and cognitive benefits. A study by Craft and Perna (2004) indicates that engaging in regular physical activity can lead to reduced symptoms of anxiety and depression, contributing to improved overall mental well-being.

### **Positive Impact on Teaching Performance**

The physical demands of teaching, including standing and walking, can benefit from spot exercises that enhance specific muscle groups. Research by Goh et al. (2017) highlights how improved physical fitness positively correlates with teaching performance.

The College students as used for this study also gave similar reasons as stated by Kelty and friends in this regard. In other studies, (Edwards & Tsouros, 2006), regular brisk walking, wheelchair activities, swimming, social dancing, climbing

stairs, cycling, chair and bed exercises, gardening or house work were found to be forms of regular physical activities. Taking part in all these activities are hindered in the various Colleges of Education due to lack of facilities.

#### ***4.2.2 Perceived benefits of regular physical activity***

In this research work, both the perceived benefits and perceived barriers contains appreciable figures. However, the benefits have higher rates. Matters relating to the barriers are seen to have low rates. Research by Kamarudin, & Omar-Fauzee, (2007) supports the statement that exercise is not just about aerobic capacity and muscle size. Sure, exercise can improve your physical health and your physique, trim your waistline, improves your sex life, and even adds years to your life. Exercise does not only help one live longer; it helps one live better. In addition to making your heart and other muscles stronger and sending away a host of diseases, it can also improve your mental and emotional functioning and even boost your productivity and close relationships. This study finds that exercise can make enhancement of one's life. It can improve overall body functioning for the participant. This is consistent with research by (Kamrani et al. 2014). Burke and McCarthy (2011) through their investigation found that our level of fitness can also be increased by doing exercise or physical activity, this is also in line with the findings of this study when about 86 student teachers agreed that they do muscle exercise twice a week. But that's not what motivates most people to stay active. People who exercise regularly tend to do so because it gives them an enormous sense of well-being. They feel more energetic throughout the day, sleep better at night, have sharper memories, and feel more relaxed and positive about themselves and their lives. Exercise is also a powerful medicine for many common mental health challenges. (Kubayi & Surujlal, 2014; Burke et al., 2011) also have the same findings in their previous studies.

There exists some amount of literature in respect of the benefits of physical activity or exercise. This study therefore also investigated how regular physical activity or exercise could benefit Student teachers of Colleges of Education in the Northern Region though there several barriers. This study's findings that regular physical activity improves the health and wellbeing of students, is found to be consistent with findings from a number of studies such as (Fredriksson et al., 1989; Kune & Watson, 1990), who argued that, "regular physical activity enhances the general wellbeing of people."

Exercise has been linked to numerous physical health benefits such as improving weight, blood pressure management, lowering the risks of cardiovascular disease and other illnesses, and even increasing longevity (Blair & Kohl, 1992; Gauvin & Spence, 1995; Plante, 1999). This is not far from what was found in this current study, thus, respondents indicated that they do vigorous activity that elevates their heart rate, exercise for flexibility, exercise for muscle fitness and to relieve tension which are all physical activities that can enhance the general well-being of individuals.

In addition, just as findings of this study, student teachers after performing regular physical activity reliefs tension, some earlier studies also found that aside providing physical benefits, exercise has been consistently found to be associated with an improvement in mood and the ability to cope with stress as well as promote emotional health and well-being (Rodin & Plante, 1989; Byrne & Byrne, 1993; Gauvin & Spence, 1995).

A study at the University of Illinois examined the effects of 2 physical activity modes, walking and low-intensity resistance/flexibility training, on depressive symptoms and physical self-esteem over a 5-year period among adults. The results suggest that

adults who participate in walking or low-intensity resistance/flexibility training experience sustained reductions in depression symptoms and increases in physical self-esteem (Archer et al. 2014). It is therefore important to note that, the benefits of regular physical activity are found in literature to be of greater worth for health.

#### ***4.2.3 Factors contributing to physical inactivity***

Physical inactivity or a lack of exercise has been extensively studied in the literature, highlighting its detrimental effects on human health. The consequences of physical inactivity include increased risks of obesity, cardiovascular diseases, diabetes, and even mental health issues. Several studies have established a strong link between sedentary behaviour and various health problems. For instance, a meta-analysis by Lee et al. (2012) found that prolonged sitting is associated with a higher risk of all-cause mortality, cardiovascular disease, and diabetes.

#### **Contributory Factors to Physical Inactivity**

Literature has consistently identified various factors that contribute to physical inactivity among individuals. These factors range from personal, environmental, and societal influences. Lack of time, accessibility to facilities, and sedentary work environments are common barriers reported by individuals. For example, Bauman et al. (2012) discussed the impact of the built environment, including inadequate recreational facilities and unsafe neighbourhoods, on limiting physical activity opportunities.

#### **Barriers to Physical Activity in College Environments**

Studies focusing on college environments have revealed that the lack of facilities within colleges or their surrounding areas can indeed create barriers to normal physical activities among students. This aligns with the findings in your current study.

Many colleges and universities struggle with providing adequate spaces and resources for physical activities. This lack of facilities has been shown to discourage students from engaging in regular exercise. Research by Cale et al. (2016) indicated that a lack of on-campus recreational facilities led to reduced physical activity levels among college students.

The consequences of Physical inactivity or lack of exercise on the health of humans had been espoused in literature with same for the contributory factors, but in comparable research, there had been several findings that recognized few contributory elements to physical inactivity. Such findings still do not seem distinctive from what this current work has looked at. As proven in this current study, lack of facilities within the Colleges or where they are located have created a lot of barriers to normal physical activities. Hillsdon, et al. (2005) stated that, no matter the blessings of Physical activities, adults usually are not physically active. For instance, Hillsdon et al., (2005) survey confirmed that a tremendous 42.0% of adults in UK as an instance have been labelled as inactive, collaborating in no episodes of activity. In this current study, almost 37% of the subjects indicated that they have not been thinking about their inability to exercise, though the participants in this very study have shown awareness of some benefits of physical activity to humans yet they do not think about their inactive lifestyle.

Frankish et al., (1998) also found accumulating evidence which indicates that physical inactivity is a risk factor for cardiovascular and other major diseases. Frankish et al. (1998), in their study assert that the relationship between health and active living has social, emotional, and socioeconomic factors that affect an individual's decision to engage in an active lifestyle. This is in line with the present study which evidence

showed that, some people engaged in various forms of physical activities or exercises without being aware of their benefits.

Lack of sturdy motivation for Physical activity and shortage of sturdy ideals associated with the benefits of Physical activities have been associated with extra state of being inactive on this group of student teachers. Hillsdon and friends found 2 elements as associated with nearly 60% of the extra state of being inactive of their sample. These consequences recommend interventions on lack of sturdy motivation and sturdy belief for the benefits of physical activity and have been taken into consideration in public fitness tasks to lessen the superiority of physical state of being inactive in adults. Further, Hillsdon et al. (2005: p.312) referred to lack of easy training resources for adults at their comfort zones as a component for sedentary behaviour amongst humans. Although their study focused on adults while the current study dealt with student teachers, both results found that lack of equipment or resources is a major factor that contribute to physical inability among student teachers. They argue that considering a few adults not exercising at fitness centres in which centres have been noted to have facilities, there has been the want for such people to have those facilities to facilitate their fitness endeavours. Comparatively, despite the fact that the current study focused on student teachers who are both adolescents and adults, the result of lack of centres for physical activity have been comparable as an awful lot as they cause physical state of being inactive amongst the group under study.

#### ***4.2.4 Health implications of physical inactivity***

Generally, regular physical activity is found to improve psychological health by helping people cope with stress more successfully than they would without such engagements (Hillsdon et al., 2005). It is established in this study that student teachers are aware they can improve their physical health through exercise or physical activity. Hardcastle and Taylor (2001) and Thomas, et al. (2005) additionally espoused that there are wide range of risks that are associated with physical inactivity. These authors with their research located that, individuals have a more chance of developing blood pressure while they are less active. This research assume that greater range of people are inadequately active, and state of being inactive will increase the chance of widespread situations together with coronary heart ailment, non-insulin-based diabetes and colon cancer.

From this current study, lack of regular physical exercise was found to have made most student teachers physically unfit. Edwards and Tsouros (2006) Supporting the findings of this study, attested that lack of facilities for physical activity might also cause sedentary way of life that can make contributions to emotions of tension and depression, and might even develop the chance of certain cancers. Edwards and Tsouros further explained that thousands and thousands of deaths end result every year because of lack of regular physical activity. Additionally, physical state of being inactive has a tendency to increase with age, and ladies have been found to be much more likely to lead sedentary lifestyle than men. There is proof from this study that is convincing that exercising alone or in group with other evidence supported remedy is powerful in treating clinically significant depression (Brosse et al., 2002).



Research has additionally proven that physical activity is a powerful method of decreasing tension and diverse indices of pressure amongst adults (Dunn, Trivedi & O'Neal, 2001). This is clear from the findings of this study in table 7 when respondents felt stressed up when not physically active. While physical activity would possibly assist to deal greater efficaciously with perceived pressure, existing literature indicates that adults are not meeting recommendations for physical activity. Literature abounds to expose the relationships among physical activity and measures of stress and other emotional health implications, the weight of the findings on this study powerfully equally supports that.

#### ***4.2.5 The extent of physical activity amongst student teachers***

In research findings of Kwan et al. (2012) the prevalence of inactivity in leisure time varied with cultural and economic developmental factors and the likelihood of leisure-time physical activity is positively associated with the strength of beliefs in the health benefits of activity and with national economic development.

However, in their research, the knowledge about physical activity and health of university students was disappointing, with only 40–60% being aware that physical inactivity was relevant to risk of heart disease. This is in sharp contrast with the current study, although the focus of Kwan and colleagues was on the university students but the college students in this study rather were greatly aware of the dangers associated with physical inactivity and wished to have been active but were limited with a number of factors such as lack of equipment and facilities in some colleges, attention on academic work, and others as findings showed. The proof of awareness of physical activity and its benefits are clearly displayed in table 5 of the results where

student teachers placed more value on physical activity and its end results when undertaken effectively.



## CHAPTER FIVE

### SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This chapter presents the summary of findings, conclusions, and recommendations of the study. The findings were thematically reviewed with particular reference to the research questions and their findings after the analysis.

#### 5.1 Summary

The study used population age ranged from 20 to 32 years with 20 to 25 being the dominating range. From the statement of the problem through to the objectives to the data analysis, the study was geared towards finding out about the physical activity profile of student-teachers of the Colleges of Education in Ghana particularly those located in the Northern Region, the health implications, benefits of physical activity and how it affects development among athletes and students of these institutions of the Northern Region. The research design used for this study was the descriptive survey design. SPSS version 20.0 application software was the statistical analyses tool used. A close-ended questionnaire in the form of a likert scale anchored on a five-point ranging from strongly agree (SA), agree (A), uncertain (U), strongly disagree (SD), and to disagree (D).

The multi stage sampling technique, including purposive and the stratified sampling techniques were also used to select Colleges, student-teachers for the study. Data analyses were done by the use of descriptive statistics, simple frequencies and percentages. The findings of the study were presented based on the key research questions as follows:

### **Research Question 1**

Research question 1 focused on identifying the forms of physical activity undertaken by student teachers of the Colleges of Education in the Northern Region. The study found that, the preferred physical activity or exercise for student teachers included jogging around, running, brisk walking and climbing the stairs. Jogging around was seen as the activity students do the most followed by running and brisk walking.

### **Research Question 2**

Research question 2 explored the benefits of regular physical exercise to persons with physical disability. It was found from the study that regular physical activity or exercise improved the health and emotional wellbeing of persons who engaged in physical activity. The study also revealed that, most people engaged in physical activity without noticing their benefits.

### **Research Question 3**

Research question 3 investigated factors contributing to physical inactivity among students of the Colleges of Education in the north. The study found lack of training equipment as one major factor inhibiting regular physical exercise. It was also found that, inadequate time and attention for physical activity contributed to some amount of physical inability among the student teachers.

### **Research Question 4**

Research question 4 examined the health implications of physical inactivity of student teachers. In this current study, lack of regular physical exercise was found to have caused stress among student teachers in the colleges. This stress as a result of lack of regular exercise made some of the student teachers develop continuous tension and depression.

## 5.2 Conclusions

Many previous studies on the influence of leisure time physical activity on survival after myocardial infarction has shown different survival rates associated with regular and irregular physical activity (Gerber, et al., 2018). This finding suggests that the physical activity pattern may be an important factor. Presumably, personalization of physical activity patterns may facilitate rehabilitation of CVD patients, such as chronic heart failure (Mueller et al., 2007), or myocardial infarction (Gerber et al., 2011).

Based on the findings of this current study, the following conclusions were drawn:

- i. The forms of physical activity that student teachers involved in includes jogging, brisk walking, running, climbing stairs and spot exercises.
- ii. The benefits derived from regular physical activity or exercise are enormous and includes longevity of life, improved health and emotional wellbeing.
- iii. Lack of equipment and facilities are contributing factors to physical inability among student teachers of the Colleges of Education in the north.
- iv. Lack of regular physical activity causes stress and makes students teachers unfit.
- v. Student teachers of the Colleges of Education in most cases engaged in regular physical activities alone, or with small groups.

### **5.3 Recommendations**

As a measure, physical activity with moderate intensity has been found to have significant benefits to human health. Although the recommendation was ideal and must be followed fully, it should be noted that any activity for a start is preferable to idleness and people must be encouraged to begin with a pace that suit their level of energy. Considerable time can be used for the beginning since the aim is to progress steadily in the time and intensity.

Moreover, communities where these student teachers are coming from can make the provision of fitness centres their priority through their Local Government Authorities or benevolent individuals, these centres will be equipped with training equipment to facilitate regular physical exercise among student teachers which help build commitment in them and they can continue with it at school. Likewise, student teachers as individuals from various communities should be encouraged to own simple training equipment in order that they can engage in regular physical exercises both at home and in school. Student teachers must be educated on the hazards of sedentary lifestyles and since they are teachers in the making, they can best disseminate that information. This will create some level of awareness among people that, physical inactivity can cause several health problems such as stress and emotional disorders.

### **5.4 Suggestion for Further Research**

Future studies can focus critically on the impact of physical inactivity and its effects on student teachers' academic performance and perhaps look at it considering gender. A critical study into other selection criteria such as males and females could be more inclusive than the current study.

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## APPENDICES

### Questionnaire for Participants

Dear Respondent,

I am a student from The University of Education Winneba, I am currently doing research on the topic: Perceived Barriers to Providing Effective Physical activity to student teachers of Colleges of Education in the Northern Region

I am pleased to have you as one of my respondents in this study. It is my belief and hope that you will help supply some information which will be focused on the purposes of this research only. Your confidentiality during and after the provision information for this worthy course is highly assured.

#### Instructions:

In order to answer the questions as honestly as possible, your name need not appear anywhere on the questionnaire. Please, note that there is no right or wrong answers. Your help in completing the questionnaire is of vital importance, although participation is voluntary.

1. Age: \_\_\_\_\_

Age range: 16-20yrs  21-25yrs  26 – 30 yrs.  31+

### Forms of physical activity

2. What type of exercise do you normally perform? (*You may circle more than one*)

a) cycling

b) Brisk walking

c) Climbing the stairs

d) Running

e) Yard work

f) Home chores

g) Jogging around

h) Spot exercises

i) Others (*specify*): \_\_\_\_\_

Benefits of regular physical activity or exercise

3. What is your main motivation for exercising? (*Circle or specify only one*)

a) improve physical health

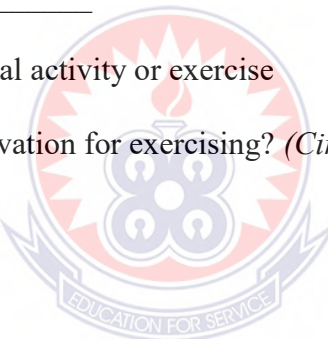
b) improve mental health

c) Competitions

d) improve body's appearance

e) Recreation/ leisure

f) Others (*Specify*): \_\_\_\_\_



For items 4-11, please tick (✓) only one response against each of the items provided.

	<b>Item</b>	<b>Strongly Agree</b>	<b>Agree</b>	<b>Uncertain</b>	<b>Disagree</b>	<b>Strongly Disagree</b>
4	I do vigorous activity that elevates my heart rate for 35 minutes at least three days a week					
5	I do exercises for flexibility at least three days a week					
6	I do exercises for muscle fitness at least three days a week					
7	I regularly perform exercises designed to relieve tension					

	<b>Question</b>	<b>Very High</b>	<b>High</b>	<b>Somewhat</b>	<b>Low</b>	<b>Very Low</b>
8	How much do you value regular activity?					
9	How much do you value physical appearance?					
10	How much do you value physical strength?					
11	How much do you value physical endurance?					

**Factors contributing to physical inactivity**

*For items 12-25, please tick (✓) only one response against each of the items provided.*

	<b>Item</b>	<b>Strongly Agree</b>	<b>Agree</b>	<b>Uncertain</b>	<b>Disagree</b>	<b>Strongly Disagree</b>
12	As a student teacher, I have been thinking on when to exercise					
13	I have no much time to be able to do exercise.					
14	I have been worried about my inability to partake in Physical activity.					
15	I have not been thinking about my ability to exercise.					
16	There is no fitness programme in my College to make me physically active.					
17	I have no exercise equipment in my College to use.					
18	My family or friends do not encourage me to Physical activity.					
19	My College gave academic success priority over Physical activity.					
20	I have no time for planned Physical activity because of my busy schedules.					
21	I have no time for exercise because of my social and academic responsibilities.					
23	I have been thinking about other recreational activities that are more entertaining than exercise.					
24	Exercise have no positive effects on my health.					
25	The College curriculum does not allow for more Physical activity and sports.					

### Health implications of physical inactivity

For items 26-32, please tick (✓) only one response against each of the items provided.

	Question	Yes	No	Not Sure
26	Do you get adequate amount of sleep each night?			
27	Are you happy most of the time?			
28	Do you have sound studies in School?			
29	Do you generally feel stressed?			
30	Are you physically fit?			
31	Are you able to perform your daily physical tasks?			
32	Are you physically able to perform leisure activities?			

### Barriers of physical activity

33. Do you have any limitations that prevent you from exercising? Yes [ ] No [ ]

34. If yes, what are the limitations?

---

### Recommended solutions to physical inactivity

35. Which of the following would you recommend as remedies to physical inability?

*(Please, circle as many as you wish).*

- a) Making use of available facilities in one's community (including sports clubs and fitness centres).
- b) Support from instructors
- c) Policy and legislation on "exercise for fitness".



d) Others (*specify*): \_\_\_\_\_

**Extent of regular physical activity performance**

35. Do you usually exercise alone? Yes [ ] No [ ]

Where do you normally exercise?

a. Hostel

b. Gym

c. Fitness club

d. Others (*specify*): \_\_\_\_\_

Do you exercise regularly? Yes [ ] No [ ]

If yes, how many times on average in a month do you exercise? \_\_\_\_\_

*For items 43-45, please tick (✓) only one response against each of the items provided.*

	<b>Item</b>	<b>Strongly Agree</b>	<b>Agree</b>	<b>Uncertain</b>	<b>Disagree</b>	<b>Strongly Disagree</b>
40	I can easily be self-motivated for physical exercise.					
41	I can participate in physical activities without easily getting fatigued					
42	I feel extremely disappointed about my inability to maintain regular physical exercise					

**Thanks, and much appreciation on your participation in this study.**

## APPENDIX 'B'

### INTRODUCTORY LETTER



UNIVERSITY OF EDUCATION, WINNEBA

FACULTY OF SCIENCE EDUCATION

DEPARTMENT OF HEALTH, PHYSICAL EDUCATION, RECREATION AND SPORTS

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*Our ref:* FSE/ DHPERS /I.3/VOL.2.10

*Date:* 27<sup>st</sup> April 2022

TO WHOM IT MAY CONCERN

Dear Sir/ Madam,

#### LETTER OF INTRODUCTION

We humbly write to introduce to you **ISSAH RICHARD BUKARI** an MPhil student in the Department of Health, Physical Education, Recreation and Sports (HPERS) the University of Education, Winneba with index number **202113905**.

He is researching on the topic: **Investigating barriers to providing effective physical activity to student teachers of colleges of education in the Northern Region.**

This letter is for you to grant him the necessary assistance to collect this data on the above topic to help him complete his academic work.

Thank you.

Yours faithfully,

A handwritten signature in blue ink, appearing to read 'Munkaila Seibu'.

Mr. Munkaila Seibu.  
Ag. Head of Department

