

**RELATIONSHIP BETWEEN ACADEMIC  
WORKLOAD, PHYSICAL ACTIVITY AND  
FITNESS AMONG UNDERGRADUATES IN  
THE UNIVERSITY OF BENIN**

**BY**

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# CERTIFICATION

This dissertation by OLUDARE AYOMIDE SAMUEL is accepted in its presented form as satisfying the dissertation requirement of the degree of Bachelor of Physiotherapy of the School of Basic Medical Sciences, College of Medical Sciences of the University of Benin.

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## DEDICATION

I dedicate this project to my parents which without their support I wouldn't have been able to complete this project

# ABSTRACT

**Background of the Study:** University students frequently contend with demanding academic schedules that can limit their opportunities for physical activity and affect their overall physical fitness. A heavy academic load may contribute to prolonged sedentary behaviour, increased mental fatigue, and the development of long term health issues. Consequently, understanding the ways in which academic pressures shape students' physical activity patterns and fitness levels is essential for fostering both well being and academic effectiveness within higher education settings.

**Aim:** This research examined the association between academic workload, physical activity, and physical fitness among undergraduate students at the University of Benin, Edo State, Nigeria. The specific objectives were to ascertain the extent of academic workload, determine the prevalence of physical activity, assess physical fitness status, and explore the interconnections among these factors in relation to gender and faculty differences.

**Method:** A descriptive cross sectional design was adopted for the study. Data were gathered from a representative sample of undergraduate students using validated self administered questionnaires to assess academic workload across four subscales (mental, physical, temporal, and performance) and to measure levels of physical activity. These were supplemented by standardised physical fitness assessments. Descriptive statistics were employed to summarise demographic and activity related data, while inferential techniques, including Pearson's correlation and independent t tests, were used to examine relationships and differences between variables. The threshold for statistical significance was established at  $p < 0.05$ .

**Results:** The results indicated that students experienced a relatively high academic workload, with the mental and performance subscales recording the highest scores, reflecting substantial cognitive demands and task related pressures. Most students participated in moderate physical activity, primarily through routine movements associated with navigating the campus environment, such as walking between lecture venues. Overall physical fitness was rated as good, with participants demonstrating high levels of muscular strength and favourable body composition metrics, though lower levels of endurance and flexibility were observed. Statistical analysis revealed no significant relationship between academic workload, physical activity, and physical fitness, suggesting that the intensity of academic demands did not directly influence students' physical activity or fitness outcomes. Minor gender differences were noted, with female students reporting slightly higher perceived workload.

**Conclusion:** The study concludes that, although undergraduate students at the University of Benin face considerable academic demands, they sustain moderate levels of physical activity and acceptable fitness, likely owing to the inherently active nature of campus life. The weak associations found among workload, activity, and fitness imply that alternative lifestyle and environmental factors may exert a stronger influence on students' health behaviours. Accordingly, it is recommended that universities implement balanced workload management strategies and facilitate structured physical activity opportunities to support student health and academic performance.

**Keywords:** Academic workload; physical activity; physical fitness; undergraduate students; University of Benin; student health; workload stress; exercise participation.

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# CHAPTER ONE

## INTRODUCTION

### 1.1 Background of the study

Academic activities refer to any tasks or engagements associated with a student's formal education and curriculum, intended to support learning, cultivate competencies, and fulfill educational objectives ([educate.au.dk](https://www.educate.au.dk), 2024).

Students participate in a wide array of such activities, including debates, group discussions, assignments, projects, reports, competitions, events, fieldwork, seminars, and workshops (Dr. Radhika Kapur, 2022).

These academic endeavors demand considerable investment of cognitive, emotional, and physical resources. When the academic workload becomes excessive, it can result in diminished academic performance (Adeyemi, 2018, cited in Baba et al, 2024). An overload of academic tasks and commitments also exerts a noticeable impact on physical health, leading to bodily discomfort and greater difficulty in sustaining a healthy lifestyle (Mary, 2024). Research involving 350 students revealed a consensus among participants that they encountered stress related to academic demands and time management within the school environment (Lator, 2023).

Academic workload is understood as the amount of time a student requires to effectively master a course and complete all associated tasks (Dahl, 2019). A study conducted with 290 students in Slovenia found that 43 percent of respondents devoted an average of three to six hours per day to study, while 40 percent spent more than seven hours daily on academic pursuits, thereby leaving limited time for other activities (Vesna, 2023). It has been observed

that first year university students spend approximately 13.50 hours per week attending classes, 11.11 hours studying, and 3.18 hours engaged in student organizations (Nathan, 2012). These figures amount to a total of roughly 27.79 hours per week dedicated to school related activities. According to Resto (2023), preclinical medical students commit between 45 and 100 hours weekly to lectures and other academic obligations, whereas those in clinical rotations devote 60 to 80 hours per week. Such extensive time commitments generate significant academic pressure on students. Prolonged exposure to high volumes of academic activity can adversely affect both mental and physical health (Yangdon et al, 2021). Although students who engage in regular physical activity tend to achieve better academic outcomes (Anjali, 2024), research indicates that physical activity levels decline during periods of intense academic pressure, such as during examinations and when approaching assignment deadlines (Brown et al, 2024).

Physical activity is defined as any bodily movement produced by skeletal muscles that results in energy expenditure beyond resting levels (National Heart, Lung and Blood Institute, 2024; WHO, 2024). It encompasses a broad spectrum of actions, including walking, cycling, wheeling, sports, leisure pursuits, household chores, active recreation, and play (WHO, 2025). Globally, 31.1 percent of adults are classified as insufficiently active, with a higher prevalence observed among women at 34 percent compared to men at 28 percent (Goje, 2014). In 2014, the World Health Organization estimated that approximately three million deaths worldwide were attributable to physical inactivity. Current guidelines recommend that young adults engage in at least 150 minutes of moderate intensity activity or 75 minutes of vigorous intensity

activity spread across four to five days per week (NHS, 2024). Young adults, as a distinct subgroup, are particularly prone to prolonged periods of sitting (Alex and Simonton, 2023), which contributes to declining physical activity levels and the rise of sedentary behavior.

Although 78 percent of Nigerian adults achieve sufficient physical activity levels (Wikipedia, 2024), many university students fall short of these standards due to academic pressures and sedentary habits (Ekpenyong, 2013). A negative correlation has been identified between academic stress and physical activity, meaning that higher stress levels are associated with lower activity levels among students (Rojas et al, 2024). Students often perceive that engagement in physical activity adds to their pressure, leaving them with minimal time for exercise (Kljajevic, 2021). Research indicates that among the more than 2.3 million students who interact with universities annually, many are at risk of inactivity (Oscar, 2024). A study with 470 participants identified a busy schedule and lack of time as the most significant barrier to physical activity participation (Oluyinka, 2019). Another study involving 361 participants revealed that while up to 50 percent of students engage in physical activity, the remainder are either minimally active or completely inactive (Anuar, 2021). Physical inactivity is recognized as a common risk factor among students, and those who are more physically active tend to experience lower levels of academic stress. Despite the well established benefits of regular physical activity, participation among adults tends to decline during their college years, leading to an increase in sedentary behavior (Calestine et al, 2017).

Moreover, research has demonstrated that certain forms of physical activity, such as aerobic training, can strengthen cardiac muscle, improve pulmonary

capacity, lower the risk of cardiovascular disease, and enhance oxygen transport, thereby collectively contributing to improved physical fitness (Saefullah, Hidayana and Cahyandari, 2024).

Physical fitness is defined as the capacity to perform various tasks with ease, without undue fatigue, while retaining sufficient energy to enjoy leisure pursuits. The five fundamental components of physical fitness include muscular strength, muscular endurance, cardiovascular endurance, flexibility, and body composition ([pillarhealthcare.org](http://pillarhealthcare.org), 2018). Engaging in physical activity can aid in the prevention and management of numerous health conditions, including cardiovascular disease, while also alleviating symptoms of depression and anxiety, enhancing brain health, and improving overall well being (WHO, 2024). Sedentary lifestyle and its associated cardiovascular and metabolic risks are prevalent globally, particularly among university students, who are especially vulnerable due to academic demands and shifts in lifestyle habits (Guerriero, 2025).

## **1.2 Statement of the Problem**

A heavy academic workload combined with demanding school activities represents a common standard within universities across the globe. Evidence indicates that students devote considerable time to coursework, and the resulting lack of physical activity is becoming an increasingly prevalent issue among this population. Even with various initiatives designed to encourage movement, university students consistently fail to achieve the recommended levels of physical activity necessary for meaningful health outcomes (Brown, 2024). Observations show that students remain sedentary for approximately

half of their time on campus, largely due to attending classes, engaging in academic study, and fulfilling other scholastic obligations.

Growing concern has emerged regarding the equilibrium between academic responsibilities and physical engagement. Students frequently contend with substantial academic pressure and demanding workloads, which restrict their capacity to participate in physical activities and consequently diminish their overall fitness levels. As academic demands intensify, students may prioritize scholarly pursuits over physical well being, leading to reduced involvement in exercise. Research has documented a marked decrease in physical activity following entry into university (Kwan et al., cited in Kljajevic, 2021).

Students often place academic achievement above the pursuit of an active lifestyle, thereby perpetuating sedentary habits. This tendency can contribute to adverse health outcomes such as weight gain and reduced physical conditioning. Despite the well established advantages of regular activity for enhancing both physical and mental performance, many university students struggle to balance an active lifestyle with their academic commitments, citing time limitations and academic stress as significant barriers.

The researcher has identified a notable scarcity of empirical research examining how academic workload influences physical activity and fitness levels. While some studies have investigated the impact of physical activity on academic stress (Teuber, Leyhr, and Sudeck, 2024), less attention has been directed toward the inverse relationship: how academic workload affects physical activity among students. For students in Nigerian universities, including those at the University of Benin, the academic burden is substantial and continues to grow, encompassing long lecture hours, numerous

assignments, projects, and extensive study requirements. Although academic workload has been studied within Western contexts, research focused on the African student population remains limited. This scarcity creates a gap in understanding the experiences of African students in relation to this issue.

Furthermore, no studies have been identified that specifically investigate the relationship between academic workload, physical activity, and fitness among students at the University of Benin. Consequently, this study seeks to address this gap by evaluating the connections among these three elements and to offer insights into potential adjustments that could be implemented to reduce academic workload.

### **1.3 Research questions**

1. What is the level of academic workload among undergraduates in the University of Benin?
2. What are the physical activity levels of students in the University of Benin?
3. What is the physical fitness status of university of Benin?
4. Is there a significant relationship between academic workload and physical activity?
5. Is there any does correlation between with physical activity and physical fitness among students

### **1.4 Aim of study**

This research study aims to determine the relationship between academic workload, physical activity and fitness among undergraduate students in University of Benin

## **1.5 Specific Objectives**

- I. Determine the relationship between academic workload and the level of physical activities among undergraduates in the University Of Benin
- II. To assess the relationship of academic workload on the physical activity levels of students
- III. Assess the relationship of physical activity on physical fitness among undergraduates in the University Of Benin
- IV. Evaluate the role(s) academic workload plays on physical fitness among undergraduates in the University Of Benin
- V. To assess the relationship between physical fitness status of undergraduate and academic demands
- VI. To identify barriers to physical activity among students due to academic commitments

## **1.6 Hypotheses**

### **1.6.1 Main Hypotheses**

There will be no significant relationship between academic workload, physical activity and fitness among the students of the University of Benin

### **1.6.2 Sub - Hypotheses**

1. There would be no significant correlation between academic workload and physical fitness level among students of the university of Benin
2. There would be no significant association between gender and academic workload of students
3. There would be no significant association between physical activities and faculty/department
4. There would be no significant difference between students of high and low academic workload on the level of physical activity and fitness.

### **1.7 Significance of study**

This study seeks to examine how a high academic workload influences the physical condition and fitness levels of undergraduate students at the University of Benin. As academic pressure intensifies, students often find themselves adopting a sedentary lifestyle unintentionally, which can give rise to various physical health concerns.

A key objective of this research is to enhance student awareness regarding the value of an active lifestyle and to encourage the integration of healthy routines that incorporate physical exercise before, during, and after academic periods. Additionally, the findings aim to inform the development of strategic health programs designed to promote student well being.

This study further intends to cultivate a comprehensive understanding of the benefits associated with a more holistic approach to student support, recognizing the interconnected nature of academic workload and physical fitness. Ultimately, this research will contribute to the existing body of

literature on student physical health and academic stress, with a particular focus on the Nigerian context.

## **1.8 Scope of study and Delimitation**

This study is centered on examining the relationship between academic workload, physical activity, and fitness levels among undergraduate students at the University of Benin. The research is confined to full time undergraduates enrolled at the institution.

The investigation will assess the number of hours students allocate to academic responsibilities, including lectures, assignments, study sessions, and projects, and will explore how this correlates with the frequency of their physical activity and the types of exercise they engage in. Variations in physical activity patterns will also be analyzed according to academic year, faculty affiliation, and gender.

Postgraduate students, part time learners, and individuals from other higher education institutions are excluded from this research. Furthermore, fitness levels will be assessed using self reported data rather than clinical fitness evaluations.

## **1.9 Definition of Terms**

1. **Academic activity** : This is any assigned work or project used to determine academic credit including (but not limited to) an examination, writing projects or assignments which is sanctioned by the university in

which the student partakes in for the purpose of gaining academic knowledge

2. **Academic workload** : Academic workload can be defined as the time a student needs to efficiently learn a course and complete all its activities
3. **Physical Activity:** Physical activity can be defined as any bodily movement produced by skeletal muscles that results in energy expenditure.
4. **Physical fitness** : Physical fitness is the ability to perform daily activities with ease and without undue fatigue, while still having enough energy for leisure and emergencies
5. **Undergraduate students** : Individuals who are enrolled in a first degree program (such as B.sc, B.A, B.Eng., etc) at the university of Benin)

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Academic Activity and Workload**

Academic activity encompasses any engagement with learning and the acquisition of knowledge within a person's field of study, typically occurring in institutional environments such as universities. Academic workload refers to the temporal, practical, and cognitive investment required of students for their studies, including assignments, examinations, and associated responsibilities. This workload extends beyond formal instruction through lectures and seminars to include the hours dedicated to independent study and research (Adeyemi, 2018, cited in Baba, 2024). University students frequently encounter persistent academic stress, which has been shown to adversely affect both physical condition and body composition (Ikenna et al., 2022). Undergraduates often experience extended periods of such stress combined with substantial workloads, particularly those enrolled in demanding disciplines such as medicine and engineering (Akinpelu, 2020, cited in Baba, 2024). This situation influences lifestyle patterns, including engagement in

physical activity and overall fitness, with consequent implications for physical and psychological well being. Research indicates that students spend an average of 11 hours per day in sedentary behavior as a result of their academic commitments (Moulin et al., 2019).

A study conducted by Aktas, Casalone, and Aina (2024) involving students in STEM disciplines at the Università del Piemonte Orientale revealed that the three year degree program comprised 180 credits, with graduation requiring completion of 20 courses. Consequently, each course carried approximately 12 credits, necessitating that students absorb and be assessed on substantial quantities of material during classroom instruction. The findings indicated that the intensified workload per course compelled students to reorganize their study schedules, with some withdrawing due to an inability to cope with the demands. Research at the University of Ljubljana demonstrated that students in basic and pre clinical programs devoted roughly 130 hours to academic activities per course, representing a workload nearly 3.5 times greater than that required for elective or skills based courses (Pogacnik, 2006). A separate investigation involving architecture students found that they required 22.9 hours per day to balance academic responsibilities, sleep, personal time, and self care, suggesting an unsustainable workload imposed on this cohort (Bachman and Bachman, 2006).

At Alexandria University, students reported an average total workload of 89.9 hours per course. In contrast, academic staff estimated an independent workload of 55.45 hours per course, indicating a considerable underestimation of the actual time students invested (Alshamy, 2017). A study conducted at a South African university with 94 participants found that 65% of students

identified academic workload as the primary source of stress in their studies (Naidoo et al., 2014). Excessive academic workload has been associated with stress, anxiety, depression, and burnout. Students are prone to spending most of their waking hours engaged in coursework, assignments, and examination preparation, a pattern sufficient to induce fatigue and considerable stress (Aam, Sara, and Adamu, 2017).

### **2.1.1 Categories of Academic Activity**

Academic activities can be classified into three distinct categories.

**1) Core Academic Activities:** These constitute the fundamental academic pursuits and encompass the following:

i. **Classroom Based Activities:** These consist of organized instructional sessions conducted within an educational environment. They include lectures, during which instructors present or elucidate topics; seminars; workshops; group discussions, which facilitate collaborative learning through dialogue; and case studies.

ii. **Research Activities:** These initiatives are structured within educational institutions to foster critical thinking, investigative inquiry, and the development of knowledge construction skills. Research activities comprise research projects, which involve investigation into a specific topic; thesis or dissertation writing, entailing comprehensive exploration of a subject; literature reviews; field studies; and laboratory experiments.

iii. **Assessment Activities:** These are methods employed to measure and assess students, enabling them to apply their knowledge and demonstrate their comprehension. Assessment activities consist of homework, assignments,

essays, tests, quizzes, presentations, and examinations, all of which serve to evaluate student learning and academic progress.

**2) Co curricular Activities:** These are institutionally sponsored programs designed to supplement the formal academic curriculum, providing students with avenues for personal development. Their purpose is to enrich and reinforce academic learning. Examples of co curricular activities include debates, academic clubs, hackathons, and fairs and exhibitions.

**3) Extracurricular Activities:** These are pursuits undertaken beyond the scope of regular academic coursework. They may be organized by the institution or pursued independently. Examples include sports, clubs, hobbies, and artistic endeavors. At certain educational levels, participation in extracurricular activities is compulsory.

The interplay between academic workload, physical fitness, and physical activity constitutes a growing area of educational inquiry, particularly within higher education institutions such as the University of Benin. Research has been conducted to examine the connection and reciprocal effects among student fitness levels, academic demands, and engagement in physical activity.

## **2.2 Physical Activity**

According to the World Health Organization, physical activity is defined as any bodily movement generated by skeletal muscles that results in energy expenditure. This term encompasses all forms of movement, including those occurring during leisure time, for transportation to and from destinations, or as part of an individual's work or domestic duties. Physical activity includes a broad spectrum of actions that engage the body in diverse ways. Examples range from structured forms such as walking, running, and swimming to less

structured pursuits like dancing, gardening, and household tasks. Research has demonstrated that physical activity enhances cognitive function, leading to positive improvements in academic performance, as well as heightened attention and memory, all of which are essential for learning. According to Caspersen and colleagues in 1985, physical activity is characterized by several elements: bodily movement via skeletal muscles; the production of energy expenditure; energy expenditure that varies continuously from low to high levels; and a positive correlation with physical fitness.

Physical activity is categorized according to levels of intensity, which reflect how demanding the activity is. These levels are determined based on the rate of energy expenditure, heart rate, and muscular engagement. The classifications are as follows:

1. **Sedentary:** This level denotes a state involving little to no physical movement.
2. **Light Physical Activity:** This level requires minimal effort and does not result in a notable increase in heart rate or respiration. Examples include slow walking, stretching, and light household chores.
3. **Moderate Physical Activity:** These activities elevate the heart rate to between 50 and 60 percent above its resting rate. Examples include brisk walking, dancing, easy jogging, swimming, and cycling at a moderate pace.
4. **Vigorous Physical Activity:** These activities are marked by a substantial increase in heart rate and breathing. Such activities raise the heart rate to between 75 and 80 percent of its maximum. Examples include running, fast cycling, and participating in sports.

### **2.2.1 Classifications of Physical Activity**

1. **Aerobic Activities:** These involve rhythmic, continuous movements that elevate an individual's breathing and heart rate. Such activities are advantageous for improving cardiovascular health, building endurance, and facilitating weight management. Examples include walking, brisk walking, running, and cycling.
2. **Strength Training Activities:** These activities are designed to build and preserve muscular strength. They entail working the muscles against resistance, such as weights. The repeated contraction of muscles during exercise leads to muscle strengthening and growth over time. Examples include weightlifting, bodyweight exercises, and resistance band exercises.
3. **Flexibility Exercises:** These exercises enhance joint mobility and stretch the muscles. They gently lengthen muscles and tendons, which can alleviate stiffness. Examples include static stretching, Pilates, and yoga.
4. **Balance Exercises:** These activities are intended to improve balance and the range of motion within joints. They engage the core muscles, legs, and stabilizing muscles to enhance bodily control. Examples include Tai chi, using a wobble board, and standing on one leg.

### **2.2.2 Physical activity guidelines and recommendation**

The World Health Organization (WHO) created guidelines and recommendations of different levels of physical activity for different age groups, these include:

### **1. Children and Adolescents (5-17 years)**

- It is recommended that children should perform at least an average of 60 minutes per day of moderate to vigorous activity per day
- Vigorous activities should be performed at least three days a week
- Muscle and bone strengthening activities should be performed at least three times a week

### **2. Adults (18-64 year)**

- Adults should perform at least 150 - 300 minutes of moderate intensity aerobic activity per week or 75 - 150 minutes of vigorous intensity aerobic physical activity or an equivalent combination of moderate and vigorous intensity activity throughout the week
- Adults should also perform muscle strengthening activity at a moderate or high intensity, involving all major groups for at least two days per week
- Adults may increase moderate intensity aerobic activity to more than 300 minutes or more than 150 minutes of vigorous intensity aerobic physical activity

### **3. Older Adults (65+ years)**

- Older adults should perform at least 150 - 300 minutes of moderate intensity aerobic physical activities or 75minutes of vigorous intensity aerobic activity per week.
- Older adults should perform muscle strengthening activities at moderate or greater intensity that involves all muscle groups for at least 2 or more days a week.

- Older adults should also incorporate physical activities that emphasizes on functional balance and strength training at moderate or greater intensity on 3 or more days a week
- Older adults may increase moderate intensity aerobic physical activity to more than 300 minutes or more than 150 minutes of vigorous intensity aerobic physical activity or an equivalent combination of moderate and vigorous intensity activity throughout the week.

Individuals might reach the recommended activity guideline, but if they spend most of the time sitting or lying down throughout the day, can still be considered sedentary (Thomas, 2025)

### **2.2.3 Prevalence of physical activity and inactivity globally.**

The level of physical activity among individuals, has continued to get attention and various studies have been done on this topic. According to the World Heart Federation, The rapid urbanisation of cities, lack of leisure time and increasing popularity of sedentary leisure activities have caused a decline in the levels of physical level round the world A survey made by sport England between November 2022 and 2023 ,shows that for individuals aged 75 and over, over 42.8% are seen to be physically active. According to a study made by WHO, nearly one third of the world's population which is estimated to be about 1.8 billion adults are physically inactive. This study also points out the fact that physical inactivity levels will increase by 35% by the year 2030 if this trend continues. A study involving the prevalence of physical activity and inactivity among 17395 Saudi Arabians, it was discovered that the level of inactivity prevalence was very high, with 96.1% reported to be physically inactive (Nozha et al 2007). Countries with highest reported level of physical activity

include Sweden (77% in men) and Denmark with 81% in women, in contrast with some countries having 4% of physically active males in Brazil, 2% active females in Thailand and Arabia (Sisson & Katzmarzyk 2008)). An estimate shows that 77.6% boys and 84.7% of girls between the ages of 11 to 17 are seen to be physically inactive (Marques et al 2020). According to WHO, 81% adolescents between the ages of 11 and 17 years were seen to be physically inactive with the amount of activity level reducing among individuals above 60 years of age. A pooled prevalence study on the level of physical inactivity involving 17 countries in West Africa, 13% of the samples sizes were reported to be inactive (Abubakari et al 2009). According to WHO (2022), 17.3% of African adults (about 250million) aged 18+ were estimated to have insufficient physical activity. In a study involving 934 Nigerians, it was shown that 68.6% were seen to be sufficiently active (Oyeyemi et al 2013). According to WHO (2021), the pooled prevalence of physical inactivity was reported to be 52% in Nigeria. According to Adeloje et al (2022), roughly 52% of Nigerian adults were inactive, this translates to about 48 million inactive individuals, over half of adults Nigerians not meeting the WHO recommended physical levels of activity.

#### **2.2.4 Importance of physical activity**

Physical activity is essential for overall health and well-being at every stage of life. It essential for keeping a fit mental, physical and emotional health. In a study by it was seen that higher physical activity had an association with a low risk of developing cardiovascular diseases and mortality (Lear et al 2017). Physical activity is important for the following reasons:

1. **Enhanced mental health:** Physical activity reduces stress, anxiety and depression. During physical activities, brain chemicals such as serotonin and endorphins are released in the brain, this helps in the reduction of stress and prevent depression.  
  
Physical activity also work to enhance brain function by increasing memory, focus and ability to learn making a valuable addition to the academic success of students
2. **Enhanced cardiovascular health:** Physical activity improves cardiovascular health by strengthening the muscles of the heart, leading to the improvement of blood flow to different parts of the body. Regular physical activity leads to reduction in blood pressure and improvement in the blood cholesterol level.
3. **Weight management:** Taking part in physical activity helps burn calories, which is essential in losing weight.
4. **Stronger muscles and bones:** Physical activity plays a important role in building strong muscles and bones. Regular physical activity leads to increased muscle mass and increment in muscle fibre recruitment when contracting. Physical activity is also seen to increase endurance and bone density. the stress placed on the bones by physical activity, causes the bone to rebuild and therefore, become stronger. All these leads to reduction in the risk of fall and injury such as fracture.
5. **Increased cognitive function:** Regular Physical activity is related to an increment in improve memory, intellectual ability an focus among individuals. Physical activity can also reduce the risk of cognitive decline and improve brain function especially has we get older.

6. **Reduced risk of chronic disease:** It has been shown that daily physical activity can reduce the risk of developing chronic disease such as diabetes, heart disease, cancers and osteoporosis. Regular physical activity can improve immune system function making the body more resistant to illness and also help manage other existing conditions and improve their overall health.

### **2.2.2 Physical activity guidelines and recommendation**

The World Health Organization (WHO) has established guidelines and recommendations detailing appropriate levels of physical activity across different age demographics. These are outlined as follows:

#### **1. Children and Adolescents (5 to 17 years)**

- It is advised that children engage in an average of 60 minutes per day of moderate to vigorous physical activity.
- Vigorous intensity activities should be undertaken on at least three days each week.
- Activities that strengthen muscles and bones should be performed a minimum of three times per week.

#### **2. Adults (18 to 64 years)**

- Adults should aim for 150 to 300 minutes of moderate intensity aerobic activity per week, or 75 to 150 minutes of vigorous intensity aerobic activity, or an equivalent combination of both intensities throughout the week.
- Additionally, adults should perform muscle strengthening exercises at a moderate or high intensity, targeting all major muscle groups on at least two days per week.

- Adults may increase their activity levels beyond these recommendations, undertaking more than 300 minutes of moderate intensity aerobic activity or more than 150 minutes of vigorous intensity aerobic activity.

### **3. Older Adults (65 years and above)**

- Older adults should undertake at least 150 to 300 minutes of moderate intensity aerobic physical activities or 75 minutes of vigorous intensity aerobic activity per week.
- Muscle strengthening activities at moderate or greater intensity, involving all major muscle groups, should be performed on two or more days per week.
- Older adults should also incorporate physical activities that emphasize functional balance and strength training at moderate or greater intensity on three or more days per week.
- Older adults may increase their activity to exceed these recommendations, undertaking more than 300 minutes of moderate intensity aerobic physical activity or more than 150 minutes of vigorous intensity aerobic physical activity, or an equivalent combination of both.

It is important to note that an individual may meet these recommended activity guidelines; however, if they spend the majority of their day sitting or lying down, they can still be classified as sedentary (Thomas, 2025).

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### **2.2.3 Prevalence of physical activity and inactivity globally**

The level of physical activity among populations has continued to attract scholarly attention, with numerous studies conducted on this subject. According to the World Heart Federation, factors such as rapid urbanization, a lack of leisure time, and the growing popularity of sedentary pastimes have contributed to a global decline in physical activity levels. A survey conducted by Sport England between November 2022 and 2023 revealed that among individuals aged 75 and over, more than 42.8 percent were classified as physically active.

Research conducted by the WHO indicates that nearly one third of the world's population, estimated at approximately 1.8 billion adults, is physically inactive. This study also highlighted that if current trends persist, physical inactivity levels are projected to increase by 35 percent by the year 2030. An investigation into the prevalence of physical activity and inactivity among 17,395 Saudi Arabians found that inactivity levels were exceptionally high, with 96.1 percent reported as physically inactive (Nozha et al., 2007). Nations with the highest reported levels of physical activity include Sweden, with 77 percent among men, and Denmark, with 81 percent among women. In contrast, some countries reported much lower levels, such as 4 percent of physically active males in Brazil and 2 percent of active females in Thailand and Arabia (Sisson & Katzmarzyk, 2008).

Estimates suggest that 77.6 percent of boys and 84.7 percent of girls between the ages of 11 and 17 are physically inactive (Marques et al., 2020). According to the WHO, 81 percent of adolescents aged 11 to 17 years were found to be physically inactive, with activity levels declining further among individuals over 60 years of age. A pooled prevalence study examining physical inactivity

across 17 countries in West Africa reported that 13 percent of the sample populations were inactive (Abubakari et al., 2009). According to WHO data from 2022, an estimated 17.3 percent of African adults aged 18 and above, representing approximately 250 million individuals, had insufficient physical activity.

In a study involving 934 Nigerians, it was found that 68.6 percent were sufficiently active (Oyeyemi et al., 2013). However, according to WHO data from 2021, the pooled prevalence of physical inactivity in Nigeria was reported to be 52 percent. Similarly, Adeloje et al. (2022) noted that approximately 52 percent of Nigerian adults were inactive, a figure translating to around 48 million inactive individuals, meaning that over half of the adult population in Nigeria does not meet the physical activity levels recommended by the WHO.

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#### **2.2.4 Importance of physical activity**

Physical activity is fundamental to overall health and well-being across all stages of life. It plays a critical role in maintaining mental, physical, and emotional fitness. In a study by Lear et al. (2017), higher levels of physical activity were associated with a reduced risk of developing cardiovascular disease and lower mortality rates. The importance of physical activity can be understood through the following benefits:

1. **Enhanced mental health:** Physical activity contributes to the reduction of stress, anxiety, and depression. During exercise, brain chemicals such as serotonin and endorphins are released, which aid in alleviating stress and preventing depressive states. Physical activity also serves to

enhance cognitive function by improving memory, concentration, and learning capacity, making it a valuable contributor to academic success.

2. **Enhanced cardiovascular health:** Engaging in physical activity improves cardiovascular health by strengthening the heart muscle, which in turn enhances blood flow throughout the body. Regular physical activity leads to reduced blood pressure and improvements in blood cholesterol levels.
3. **Weight management:** Participation in physical activity facilitates calorie expenditure, which is essential for weight loss and management.
4. **Stronger muscles and bones:** Physical activity plays a significant role in developing strong muscles and bones. Regular exercise leads to increased muscle mass and greater muscle fiber recruitment during contraction. Physical activity is also associated with enhanced endurance and improved bone density. The mechanical stress placed on bones during activity stimulates bone remodeling, resulting in increased strength. These adaptations collectively reduce the risk of falls and injuries, such as fractures.
5. **Increased cognitive function:** Regular physical activity is associated with improvements in memory, intellectual capacity, and concentration among individuals. It can also reduce the risk of cognitive decline and support better brain function, particularly as people age.
6. **Reduced risk of chronic disease:** Daily physical activity has been shown to lower the risk of developing chronic conditions such as diabetes, heart disease, various cancers, and osteoporosis. Regular physical activity can also enhance immune system function, making the

body more resilient to illness, while also assisting in the management of existing health conditions and contributing to overall health improvement.

### **2.2.5 Consequences of Physical Inactivity**

According to the World Health Organization, physical inactivity ranks as the fourth leading risk factor for mortality globally. The consequences associated with a sedentary lifestyle include the following:

1. **Cardiovascular Diseases:** A sedentary lifestyle significantly elevates the risk of developing cardiovascular conditions, including stroke, hypertension, and heart failure.
2. **Mental Health:** Populations with low levels of physical activity exhibit higher incidences of depression and anxiety. Furthermore, those who do not participate in regular exercise often demonstrate poor stress management capabilities and diminished cognitive function.
3. **Obesity and Weight Gain:** Physical inactivity reduces caloric expenditure, which frequently leads to excessive weight gain. This condition subsequently increases the risk of developing Type 2 diabetes.
4. **Musculoskeletal Problems:** Individuals who do not engage in regular exercise often experience weakened bones and muscles. This makes them more susceptible to fractures, poor posture, and a heightened risk of developing osteoporosis.
5. **Compromised Immune Function:** Reduced physical activity levels are associated with a diminished immune response and an increased vulnerability to infections.

6. **Risk of Certain Cancers:** Research has established a correlation between physical inactivity and an elevated risk of specific cancers, such as breast and colon cancer.

### **2.2.6 Obstacles to Physical Activity Engagement**

While many individuals express a desire to maintain fitness and participate in physical activities, various obstacles often hinder or complicate regular engagement. These barriers can be categorized into three distinct groups: personal, environmental, and behavioral factors.

#### **1. Personal Factors**

These obstacles originate from internal or individual circumstances. They stem from a person's lifestyle, health status, or mindset, which can prevent or discourage consistent participation in physical activity. Examples include:

- **Time Constraints:** Busy schedules involving work, education, or family obligations leave little room for exercise.
- **Low Motivation:** A lack of internal drive or impetus to become more active.
- **Lack of Energy:** Conditions such as illness, fatigue, or general tiredness can make regular physical activity difficult.
- **Fear of Injury:** Concerns about the potential for harm during exercise can deter individuals from participating.
- **Perceived Lack of Skill:** Individuals attempting new forms of physical activity may feel deterred due to a perceived absence of experience or competence.

#### **2. Environmental Factors**

These are external and social elements beyond an individual's immediate control that can either facilitate or restrict their capacity and motivation to engage in regular physical activity. Examples include:

- **Inadequate Facilities:** A scarcity of accessible gyms, sports fields, or parks can diminish motivation.
- **Insufficient Support:** A lack of encouragement from friends or family can discourage participation.
- **Institutional Demands:** Academic workloads and school-related activities often promote prolonged periods of sitting, making physical activity challenging. Similarly, work environments frequently contribute to a sedentary lifestyle.
- **Adverse Weather:** Unfavorable or severe weather conditions can prevent outdoor activities such as walking or cycling.
- **Financial Cost:** The expense associated with gym memberships, equipment, or transportation to recreational facilities can serve as a significant demotivating factor.

#### 4. **Behavioral Factors**

These obstacles relate to lifestyle patterns and habits that complicate engagement in physical activity. Examples include:

- **Absence of Routine:** Many individuals lack structured schedules, which hinders effective planning for physical activity.
- **Lifestyle Choices:** Unhealthy habits such as smoking, poor nutrition, and alcohol consumption can reduce energy levels and motivation for exercise.

- **Past Experiences:** Previous unsuccessful attempts or negative experiences with exercise can discourage future efforts.
- **Conflicting Priorities:** Other commitments or interests may be deemed more important than participating in physical activity.
- **Low Willpower and Self-Efficacy:** Some individuals struggle to adhere to a routine and lack confidence in their ability to exercise successfully, presenting significant obstacles to both maintaining and initiating physical activity.

### **2.3 Physical Fitness**

Physical fitness represents a state of health and well-being that enables individuals to perform daily activities without experiencing undue fatigue while retaining sufficient energy for leisure pursuits. According to Ostenberg and colleagues (2022), physical fitness is defined as one's capacity to execute daily tasks and exercises with optimal performance. It encompasses the ability to move efficiently and sustain physical exertion without excessive strain. Essentially, physical fitness reflects the body's capacity to function effectively and efficiently. It involves accomplishing daily tasks with alertness and vigor, leaving ample energy for recreational activities. Over recent decades, there has been growing concern regarding levels of physical fitness (Terry, 1989). A study conducted at Tsinghua University in China examining the relationship between physical fitness and physical activity concluded that students who did not engage in regular activity demonstrated significantly poorer physical fitness scores (Wang, 2018). Corbin and colleagues (2008) assert that optimal physical fitness cannot be attained without consistent physical activity, though Blair and colleagues (2001) note that it is primarily, but not entirely,

determined by such activity. Garcia (2020) suggests that an individual's level of physical fitness can sometimes influence their participation in physical activity. Adequate physical activity forms the foundation of physical fitness for adolescents and young adults (Fang, 2017). It has been observed that fitness levels have been declining among university aged adults (Pribis, 2010).

### **2.3.1 Components of Physical Fitness**

The components of physical fitness are classified into two principal categories: health related fitness and skill related fitness.

#### **1. Health Related Fitness**

These components are essential for achieving and maintaining optimal health. They pertain to overall well-being and the effective capacity to perform activities with ease. Health related physical fitness, also known as physiological fitness, is divided into five components that determine how well an individual can carry out daily tasks with vigor.

- **Cardiovascular Endurance:** This refers to the body's capacity to sustain exercise over extended periods. It is the ability to perform moderate to high intensity activities for prolonged durations and is typically measured by assessing maximal oxygen uptake (VO<sub>2</sub>max).
- **Flexibility:** Defined as the ability to move a joint through its complete range of motion without pain or difficulty. This involves the lengthening of tendons, muscles, and periarticular structures surrounding the joint. Flexibility depends on variables such as the distensibility of the joint capsule and muscle viscosity, and it can be

measured using tools like goniometers, electrogoniometers, and inclinometers.

- **Muscular Endurance:** This involves engaging muscles in low to moderate intensity efforts sustained over a prolonged period. It is the capacity to perform repeated contractions or maintain a continuous application of force against a fixed resistance.
- **Muscle Strength:** This is the maximal amount of force a muscle can generate against resistance in a single, high intensity effort over a brief period. Muscle strength can be measured using a dynamometer or tensiometer.
- **Body Composition:** This describes the ratio of fat mass to fat free mass. It focuses primarily on the percentage of body fat relative to lean body mass, which includes muscle, bone, fluids, and organs. Body composition can be assessed through skin fold thickness measurements, body mass index (BMI), or waist to hip ratio.

## 2. Skill Related Fitness

Skill related fitness concentrates on performance abilities and is therefore often referred to as performance related fitness. While most commonly associated with athletic populations, these components are also relevant to overall individual fitness. They include:

- **Balance:** The ability to maintain the body's center of gravity over its base of support, whether in a static or dynamic position.
- **Coordination:** The capacity to direct, organize, and execute accurate, controlled, and smooth motor responses to accomplish a specific action.
- **Power:** The rate at which a person can exert maximal force.

- **Agility:** The ability to rapidly and precisely change the direction of the body while maintaining control.
- **Reaction Time:** The interval taken to respond to a stimulus, representing the time between stimulation and the initiation of a response.
- **Speed:** The ability to move the body or perform a movement swiftly within a short period.

### **2.3.2 Correlates and Determinants of Physical Fitness**

Physical fitness is influenced by a range of variables and contributing factors. A notable inverse relationship exists between age and cardiorespiratory fitness, with the latter tending to diminish as age increases (Zeiger et al., 2019). Research suggests that, beyond habitual engagement in exercise, elements such as individual mindset, encompassing beliefs about fitness and weight expectations, alongside healthy lifestyle practices and educational attainment, contribute to improved physical fitness outcomes (Atkins, 2016). A multitude of determinants, including age, sex, gender, and environmental conditions, affect an individual's fitness status. The degree of physical activity engagement demonstrates a direct positive correlation with physical fitness levels. Physical fitness also exhibits variation by gender, with males typically demonstrating higher fitness levels than females. Being female has been identified as a significant factor associated with lower physical fitness among children (Ojedoyin et al., 2023). Socioeconomic considerations, particularly education and income, also influence an individual's fitness level. Furthermore, environmental aspects such as the availability of recreational facilities, climatic

conditions, and an individual's perception of neighborhood safety can affect their capacity to engage in physical activity. As previously noted, physical fitness is intrinsically linked to the extent of participation in such activities (Garcia, 2020).

## **2.4 Research Gaps**

Existing literature offers limited exploration into the academic workload experienced by students. Specifically, insufficient attention has been directed toward understanding how this workload influences student participation in physical activities, which subsequently affects their physical fitness. Current studies concerning physical activity and physical fitness predominantly focus on health outcomes, mental health, or impacts on academic performance, thereby neglecting the critical role that academic demands play in shaping activity and fitness levels. The body of literature remains particularly sparse within the Nigerian context, especially at the University of Benin, where students contend with demanding academic schedules, prolonged classroom hours, and limited infrastructure for recreation and physical activity. The researcher has identified that the consequent impact on students' physical activity engagement and fitness levels represents a significantly under-researched area. While a small number of international studies have noted that heavy academic workloads can reduce students' available time and motivation for physical activity, there is a lack of focused inquiry into how academic workload impedes consistent participation in physical activity, whether variations in physical activity correlate with specific fitness indicators, and how these dynamics differ across academic faculties, year levels, or gender.

Achieving adequate physical fitness is essential for preventing chronic diseases and sustaining sound mental, physical, and emotional health. The current

| Study               | Title of study                                | Study objective  | Method  | Conclusion   |
|---------------------|---|--|---|--|
| Anuar et al, (2021) | Physical Inactivity among university students | To examine differences in attributes towards physical activity participation among university students | This study incorporated the use of snowball sampling. | The study identified key internal and external barriers impacting activity levels. |

scarcity of research data creates a challenge for policymakers and university administrators who seek to promote the comprehensive well-being of university students. The absence of empirical evidence and findings will likely hinder efforts to implement effective interventions aimed at increasing physical activity levels among university students.

|                         |  |   |  |  |
|-------------------------|--|---|--|--|
| Baba et al<br>2024      | Analysis of Academic Workload and Performance of Students of English Undertaking Dual-Course at NCE Level in North Central Nigeria: A Curriculum Redesign Approach | The aim of this study was to assess the current workload distribution and evaluate the correlation between workload and performance | This study includes 2,800 English students across NCE levels 1-3 sampled from multiple federal and state college of education                                    | Students reported imbalanced workload, time management issues and high stress levels     |
| Brown et al, (2024)     | "Key influences on university students' physical activity: a systematic review using the Theoretical Domains Framework and the COM-B model of human                | To identify and understand barriers and facilitators influencing physical activity among university students                        | A systematic review of studies involving four databases MEDLINE, PsycINFO, SPORTDiscus,  | The findings offer a research-based foundation for crafting theory-informed intervention |
| Calestine et al, (2017) | College work habits are related to physical activity and fitness   | To examine the relationship between physical fitness, physical activity, sedentary behaviour and academic outcome                   | This study is a cross sectional assessment of 512 undergraduates enrolled in fitness or nutrition related courses and fitness test were carried out and measured | Study time positively correlates with body fat, flexibility and sedentary behaviour      |

|                         |  |   |  |   |
|-------------------------|--|---|--|---|
|                         |  |   |  |   |
| Guerriero et al, (2025) | Relationship Between Sedentary Lifestyle, Physical Activity and Stress in University Students and Their Life Habits: A Scoping Review with PRISMA Checklist (PRISMA-ScR) | To evaluate how physical activity is used as a preventive and therapeutic intervention for stress and mental well being among university students | A scoping review was conducted which focused on peer reviewed research in which 61 studies were included in the final review | A consistent positive correlation was seen between physical activity and reduction in stress among students |
| Saefullah et al, (2024) | "The Role of Physical Activities in Enhancing Physical Fitness Among the Community   | To explore the impact of physical activity on community wide physical fitness   | .A comprehensive lieterature review with indepth case studies and thoroughly examined peer-reviewed sources.                 | Regular participation enhances cardiovascular health, muscular strenght and flexibility                     |

## **CHAPTER THREE**

### **MATERIALS AND METHODS**

#### **3.1 Materials**

##### **3.1.1 Study Population**

The target population for this study comprised male and female undergraduate students aged above 16 years who were enrolled at the University of Benin, located in Edo State, Nigeria.

##### **3.1.2 Selection Criteria**

Participants were recruited from multiple faculties across the University of Benin.

#### **3.1.2.1 Inclusion Criteria**

1. Students enrolled as full-time undergraduates at the University of Benin.
2. Undergraduates of both genders.
3. Students aged over 16 years.
4. Individuals from all academic levels of study.

#### **3.1.2.2 Exclusion Criteria**

1. Part-time undergraduate students.
2. Distance learning undergraduate students.
3. Students who did not provide consent to participate.
4. Undergraduates diagnosed with chronic medical conditions.

#### **3.1.3 Instruments Utilized**

Data collection was carried out using self-administered questionnaires that had undergone validity and reliability testing. These instruments were:

1. The NASA Task Load Index (NASA-TLX).
2. The International Physical Activity Questionnaire (IPAQ).

#### **3.1.4 Description of Instruments**

##### **3.1.4.1 NASA Task Load Index (NASA-TLX)**

This instrument represents a widely recognized subjective assessment tool designed to evaluate perceived workload, thereby facilitating the assessment of a task or system. Developed in 1988 by the Human Performance group at NASA, specifically by Hart and Staveland (Braarud, 2021), its creation spanned a three-year development period involving over 40 laboratory simulations. The tool was originally designed to ascertain the maximum

workload experienced by an individual during task execution. The NASA-TLX decomposes workload assessment into six distinct subjective dimensions:

1. **Mental Demand:** This dimension evaluates the cognitive effort associated with thinking, recalling information, and making decisions required to complete a task. It assesses the extent of mental or perceptual activity demanded and the overall difficulty of the task.
2. **Physical Demand:** This dimension appraises the level of physical activity required to accomplish the task.
3. **Temporal Demand:** This dimension assesses the time-related pressure experienced by an individual during task performance. It captures the individual's perception of the pace, whether slow or rapid.
4. **Own Performance:** This dimension measures the individual's self-assessment of their success in executing and completing the task.
5. **Effort:** This dimension gauges the level of exertion required by the individual to attain their performance standard.
6. **Frustration Level:** This dimension evaluates feelings of irritation, annoyance, stress, contentment, and complacency encountered during task performance.

Each of these dimensions is scored independently on a scale ranging from 0 (representing low or none) to 100 (representing high or extreme), with increments of 5 points. The aggregation of these individual scores yields the overall Task Load Index. The NASA-TLX has demonstrated good to excellent reliability, with intra-class correlation coefficients falling between 0.71 and 0.81 (Devos et al., 2020). Furthermore, this tool exhibits greater sensitivity in

distinguishing between different tasks and enjoys higher levels of user acceptance relative to alternative assessment methods.

### **3.1.4.2 INTERNATIONAL PHYSICAL ACTIVITY QUESTIONNAIRE (IPAQ)**

The International Physical Activity Questionnaire (IPAQ) is a standardized subjective instrument designed to evaluate physical activity across a broad range of life domains, including both leisure time and occupational pursuits. It functions as a self-report measure for assessing typical physical activity patterns (Maddison et al., 2007). Originally developed by the World Health Organization in 1988, the IPAQ is structured around three principal activity categories: walking, moderate-intensity activities, and vigorous-intensity activities. Each category is assessed according to frequency, recorded as days per week; duration, recorded as time per day; and the associated physical intensity. Scoring is conducted separately for each category, yielding distinct scores for walking, moderate-intensity, and vigorous activity, which can then be aggregated to generate a comprehensive measure of overall physical activity. All sections pertain to activity undertaken during the preceding seven days. Additionally, the IPAQ captures the amount of time an individual spends sitting each day.

A metabolic equivalent of task (MET) value is assigned to each section of the IPAQ. MET-minutes per week can be derived from the reported duration and frequency using the formula below:

$$\text{MET-min/week} = \text{MET value} \times \text{minutes/day} \times \text{days/week}$$

The MET values assigned are as follows:

- Walking: 3.3 METs
- Moderate activity: 4.0 METs
- Vigorous activity: 8.0 METs

Summing the MET-minutes per week from all activity categories yields a total physical activity score. The IPAQ serves as a method for classifying individuals into one of three levels based on their reported frequency, duration, and MET values:

1. **Inactive / Low:** This category represents the lowest tier of physical activity and is designated for individuals who do not satisfy the criteria for the subsequent levels. Such individuals are considered insufficiently active.
2. **Minimally Active / Moderate:** Individuals placed in this category fulfill at least one of the following conditions:
  - a) Engaging in vigorous activity for a minimum of 20 minutes per day on three or more days; OR
  - b) Engaging in moderate-intensity activity or walking for at least 30 minutes per day on five or more days; OR
  - c) Engaging in any combination of walking, moderate-intensity, or vigorous-intensity activities across five or more days, achieving a total of at least 600 MET-min/week (Physiopedia, 2004).
3. **HEPA Active / High:** This classification includes individuals whose physical activity surpasses recommended levels. Those in this category achieve either a minimum of 1500 MET-min/week through vigorous activity alone, or a minimum of 3000 MET-min/week through any combination of activities.

The IPAQ demonstrates acceptable reliability, with intra-class correlation coefficients ranging from 0.71 to 0.89 (Dinger et al., 2006). Criterion validity, assessed against accelerometer data, is fair to moderate, with correlation coefficients ( $r$ ) falling between 0.30 and 0.50. Furthermore, the IPAQ has been shown to effectively capture substantial variations in physical activity levels across diverse populations.

## **3.2 Methods**

### **3.2.1 Research Design**

A cross sectional design was adopted for this investigation. This approach offers a comprehensive snapshot of the variables under consideration, making it suitable for determining the prevalence of characteristics across a population. Such a design is particularly effective for evaluating the aspects of workload, physical activity, and fitness levels that form the central focus of this study.

### **3.2.2 Sampling Technique**

Participants were drawn from the student body of the University of Benin using a convenience sampling method.

### **3.2.3 Sample Size Determination**

The required number of participants for this study, which focused on students at the University of Benin, was determined through Cochran's formula:

$$n_0 = Z^2 p(1-p) / e^2$$

Where:

- $n_0$  = required sample size
- $Z$  = Z-score for desired confidence level
- $p$  = estimated proportion of the population
- $E$  = Desired margin of error

Using;

- $Z=1.96$  (for 95% confidence)
- $p = 0.5$
- $e = 0.05$

$$n_0 = \frac{(1.96)^2 * (0.5) * (1-0.5)}{(0.05)^2}$$

$$n_0 = 384.16$$

Therefore the minimum population sample for this study is 384 participants

### **3.2.4 Ethical Considerations**

Approval for this research was granted by the Research Ethics Committee of the University of Benin. All participants were required to provide informed consent prior to their involvement. The confidentiality of participant data was maintained to the highest standard, and individuals retained the right to withdraw from the study at any point without consequence.

### **3.2.5 Procedure for Data Collection**

Data collection took place at the University of Benin using a self administered questionnaire format. Eligible students were recruited from various faculties within the institution. Once completed accurately, the questionnaires were collected and stored on a password protected device accessible only to the researcher.

### **3.2.6 Data Analysis**

The data gathered were entered into the IBM Statistical Package for the Social Sciences (SPSS) for analysis. Descriptive statistics were employed to summarize the variables of academic workload, physical activity, and physical

fitness derived from the questionnaire responses. The relationships between these variables were examined using Pearson's correlation coefficient. A multiple linear regression analysis was conducted to assess the extent to which physical fitness could be predicted by academic workload and physical activity. A mediation analysis was also performed to explore whether physical activity served as a mediating factor in the relationship between academic workload and physical fitness. The threshold for statistical significance was established at  $\alpha=0.05$ .

## **CHAPTER FOUR**

### **RESULTS**

#### **4.1 Demographic Characteristics of Study Participants**

A total of 384 students took part in the study. The predominant age category was between 16 and 20 years, accounting for 49.2 percent of the respondents, while female participants constituted a slight majority at 54.2 percent. With regard to faculty distribution, the School of Basic Medical Sciences contributed

the largest proportion of participants, representing 32.3 percent of the sample, as illustrated in Figure 1. In terms of academic level, students in the 300 level formed the largest group, comprising 24.7 percent of the total, as shown in Table 1.

#### **4.2 Academic Workload**

As indicated in Table 2, a substantial proportion of participants, 67.3 percent, reported experiencing a high academic workload. The overall mean workload score was calculated to be 14.88. An examination of the workload subscales revealed that the highest mean scores were associated with performance demands, with a mean of 15.52 and a standard deviation of 4.70, followed closely by mental workload, which recorded a mean of 15.46 and a standard deviation of 3.91, as presented in Table 2.1.

**Table 1: Demographic characteristics of participants (n = 384).**

| <b>Variable</b>          | <b>Frequency (n)</b> | <b>Percentage (%)</b> |
|--------------------------|----------------------|-----------------------|
| <b>Gender</b>            |                      |                       |
| Male                     | 176                  | 45.8                  |
| Female                   | 208                  | 54.2                  |
| Total                    | 384                  | 100.0                 |
| <b>Age Range (Years)</b> |                      |                       |
| 16 – 20                  | 189                  | 49.2                  |

|                       |     |       |
|-----------------------|-----|-------|
| 21 – 25               | 179 | 46.6  |
| 26 – 30               | 13  | 3.4   |
| Above 30              | 3   | 0.8   |
| Total                 | 384 | 100.0 |
| <b>Level of Study</b> |     |       |
| 100                   | 56  | 14.6  |
| 200                   | 77  | 20.1  |
| 300                   | 95  | 24.7  |
| 400                   | 81  | 21.1  |
| 500                   | 66  | 17.2  |
| 600                   | 9   | 2.3   |
| Total                 | 384 | 100.0 |

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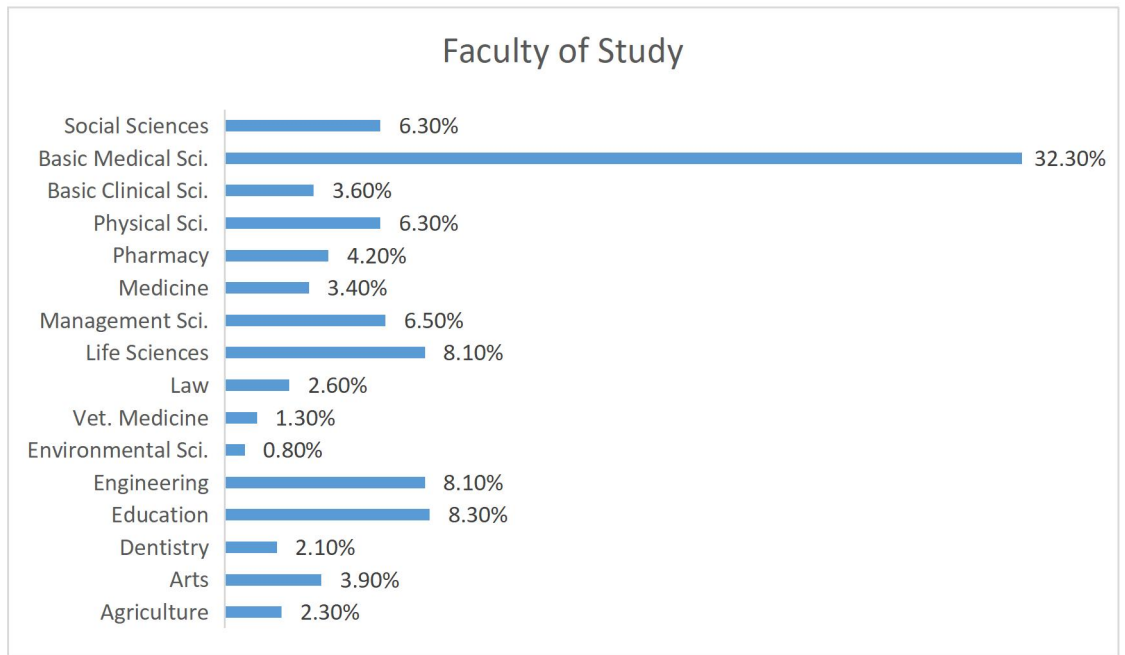


Fig. 1: Bar chart showing the distribution of participants based on faculty of study.

**Table 2: Academic workload for University students (n = 384)**

| <b>Academic Workload</b> | <b>Frequency (n)</b> | <b>Percentage (%)</b> |
|--------------------------|----------------------|-----------------------|
| Low workload (1 - 7)     | 9                    | 2.3                   |
| Medium workload (8 - 13) | 114                  | 29.4                  |
| High workload (14 - 20)  | 261                  | 67.3                  |

**Table 2.1: Sub-scales of academic workload for University students (n = 384)**

| <b>Subscale</b>                     | <b>Mean</b> | <b>Standard Dev.</b> |
|-------------------------------------|-------------|----------------------|
| Mental workload                     | 15.46       | 3.91                 |
| Physical demand                     | 15.00       | 4.18                 |
| Temporal demand                     | 13.85       | 4.73                 |
| Performance                         | 15.52       | 4.70                 |
| Effort                              | 15.21       | 3.93                 |
| Frustration level                   | 14.21       | 5.17                 |
| <b><i>Mean workload - 14.88</i></b> |             |                      |

### **4.3 Physical Activity Patterns**

Regarding vigorous physical activities, the most frequently reported number of days over the preceding week was two days, accounting for 19.3 percent of responses. For moderate intensity activities, the most common response was seven days, representing 38.4 percent, while walking yielded a modal frequency of seven days, cited by 64.2 percent of participants. The most commonly reported duration of daily walking fell within the range of 121 to 180 minutes, selected by 52.3 percent of respondents. With respect to sedentary behavior, a substantial majority, 95.9 percent, indicated spending more than 180 minutes sitting or reclining on a typical day. When queried about whether they considered themselves to be engaging in sufficient physical activity for their health, the most frequent response was "Maybe," chosen by 34.6 percent of participants, as detailed in Table 3.

### **4.4 Weekly Activity Level**

The predominant activity level category among participants was moderate activity, defined as accumulating between 180 and 360 minutes per week, which was reported by 60.8 percent of the sample, as illustrated in Figure 2.

**Table 3: Physical activity measurement (n = 384)**

|                     |  |                              |                              |                               |                               |                                |                                  |                          |                           |
|---------------------|--|------------------------------|------------------------------|-------------------------------|-------------------------------|--------------------------------|----------------------------------|--------------------------|---------------------------|
| Vigorous activities | How many days did you do vigorous physical activities the in the last seven days? (Running, football, swimming, aerobic and working out) | <b>0</b><br>68<br>(17.5)     | <b>1</b><br>71<br>(18.3)     | <b>2</b><br>75<br>(19.3)      | <b>3</b><br>58<br>(14.9)      | <b>4</b><br>23<br>(5.9)        | <b>5</b><br>40<br>(10.3)         | <b>6</b><br>23<br>(5.9)  | <b>7</b><br>26<br>(6.7)   |
|                     | How much time did you spend in performing these vigorous activities?   | <b>0-15</b><br>116<br>(30.7) | <b>16-30</b><br>74<br>(19.1) | <b>31-60</b><br>113<br>(29.1) | <b>61-120</b><br>34<br>(8.8)  | <b>121-180</b><br>23<br>(5.9)  | <b>Above 180</b><br>21<br>(5.4)  |                          |                           |
| Moderate activities | How many days did you perform moderate activities? (Brisk walking, chores, dancing)  | <b>0</b><br>3<br>(0.8)       | <b>1</b><br>16<br>(4.1)      | <b>2</b><br>32<br>(8.2)       | <b>3</b><br>52<br>(13.4)      | <b>4</b><br>27<br>(7.0)        | <b>5</b><br>64<br>(16.5)         | <b>6</b><br>41<br>(10.6) | <b>7</b><br>149<br>(38.4) |
|                     | How much time did you spend in performing these moderate activities?   | <b>0-15</b><br>49<br>(12.6)  | <b>16-30</b><br>61<br>(15.0) | <b>31-60</b><br>136<br>(35.1) | <b>61-120</b><br>55<br>(14.2) | <b>121-180</b><br>40<br>(10.3) | <b>Above 180</b><br>43<br>(11.1) |                          |                           |

|                  |  |                             |                            |                               |                               |                                 |                                   |                         |                           |
|------------------|--|-----------------------------|----------------------------|-------------------------------|-------------------------------|---------------------------------|-----------------------------------|-------------------------|---------------------------|
| Walking activity | How many days did you walk during the last seven days?   | <b>0</b><br>2<br>(0.5 )     | <b>1</b><br>4<br>(1.0)     | <b>2</b><br>16<br>(4.1)       | <b>3</b><br>22<br>(5.7)       | <b>4</b><br>15<br>(3.9)         | <b>5</b><br>42<br>(10.8)          | <b>6</b><br>32<br>(8.2) | <b>7</b><br>249<br>(64.2) |
|                  | How much time did you spend in walking per day?  | <b>0-15</b><br>0<br>(0.0 )  | <b>16-30</b><br>0<br>(0.0) | <b>31-60</b><br>5<br>(1.3)    | <b>61-120</b><br>59<br>(15.2) | <b>121-180</b><br>203<br>(52.3) | <b>Above 180</b><br>117<br>(30.2) |                         |                           |
| Sitting          | How many hours do you spend sitting or reclining on a typical day?(Sitting in class, studying, watching TV or using the computer)? | <b>0-15</b><br>0<br>(0.0 )  | <b>16-30</b><br>0<br>(0.0) | <b>31-60</b><br>1<br>(0.3)    | <b>61-120</b><br>1<br>(0.3)   | <b>121-180</b><br>10<br>(2.6)   | <b>Above 180</b><br>372<br>(95.9) |                         |                           |
|                  | Do you feel you are doing enough physical activity for your health?  | <b>Yes</b><br>119<br>(30.7) | <b>No</b><br>131<br>(33.8) | <b>Maybe</b><br>134<br>(34.6) |                               |                                 |                                   |                         |                           |

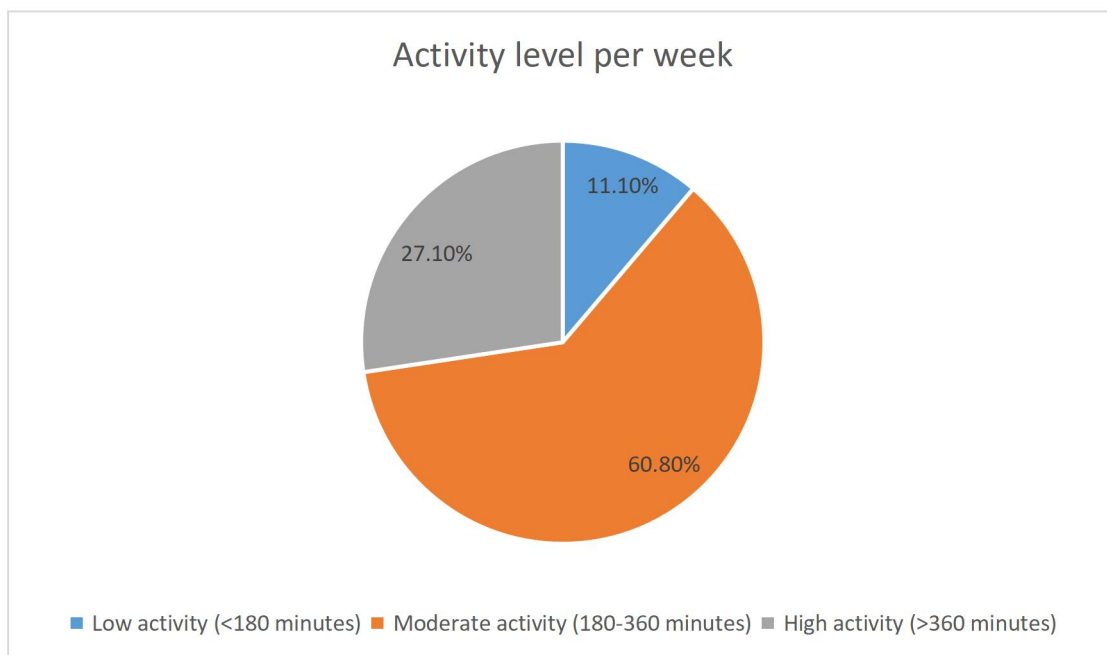


Fig. 2: Pie chart showing Activity level per week (n = 384)

#### 4.5 Physical Fitness Rating

An analysis of component level ratings revealed that the predominant category varied according to the fitness domain under consideration. For overall physical fitness, the most frequently selected category was Average, accounting for 33.1 percent of responses, with a mean score of 3.85 and a standard deviation of 0.93. In the domain of cardiorespiratory endurance, the modal response was likewise Average, representing 37.4 percent, with a mean of 3.63 and a standard deviation of 0.96. Muscular strength yielded a modal rating of Very Good, cited by 35.4 percent of participants, with a mean of 3.85 and a standard deviation of 1.03. For muscular endurance, the most common category was Average, comprising 39.0 percent, with a mean of 3.34 and a standard deviation of 1.06. Flexibility displayed a modal category of Good, selected by 34.6 percent, with a mean of 3.73 and a standard deviation of 0.95.

Regarding body composition, the largest proportion of respondents rated themselves as Very Good, representing 33.1 percent, with a mean of 3.87 and a standard deviation of 0.98. The overall mean across all fitness components was calculated to be 3.71, as presented in Table 4.

Additionally, when individual component scores were aggregated into broader overall level categories, the majority of participants, 58.0 percent, were found to fall within the Good physical fitness classification, as illustrated in Figure 3.

**Table 4: Physical fitness rating (n = 384)**

| <b>Variable</b>              | <b>Very poor (%)</b> | <b>Poor (%)</b> | <b>Average (%)</b> | <b>Good (%)</b> | <b>Very Good (%)</b> | <b>M</b>    |
|------------------------------|----------------------|-----------------|--------------------|-----------------|----------------------|-------------|
| Overall physical fitness     | 2<br>(0.6)           | 18<br>(5.1)     | 118<br>(33.1)      | 113<br>(31.7)   | 105<br>(29.5)        | 3.71 ± 0.05 |
| Cardio-respiratory endurance | 2<br>(0.6)           | 36<br>(10.1)    | 133<br>(37.4)      | 105<br>(29.5)   | 80<br>(22.5)         | 3.71 ± 0.05 |
| Muscular strength            | 1<br>(0.3)           | 36<br>(10.1)    | 105<br>(29.5)      | 88<br>(24.7)    | 126<br>(35.4)        | 3.71 ± 0.05 |
| Muscular endurance           | 16<br>(4.5)          | 52<br>(14.6)    | 139<br>(39.0)      | 91<br>(25.6)    | 57<br>(16.0)         | 3.71 ± 0.05 |
| Flexibility                  | 4<br>(1.1)           | 26<br>(7.3)     | 117<br>(32.9)      | 123<br>(34.6)   | 86<br>(24.2)         | 3.71 ± 0.05 |
| Body composition             | 2<br>(0.6)           | 25<br>(7.0)     | 107<br>(30.1)      | 104<br>(29.2)   | 118<br>(33.1)        | 3.71 ± 0.05 |

**Grand mean = 3.71**

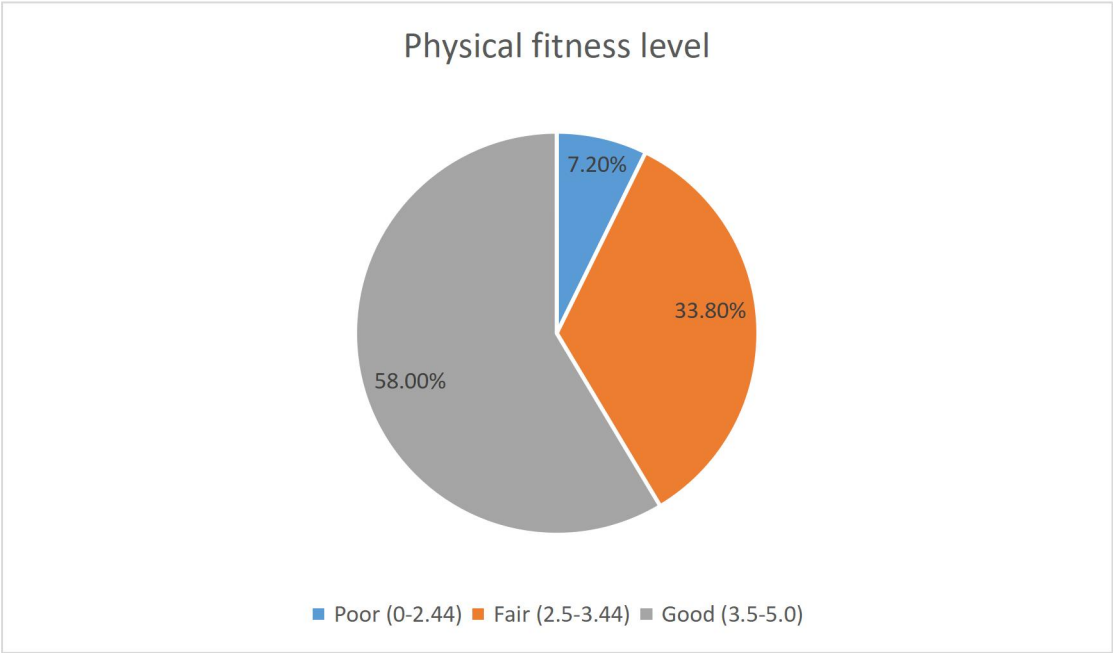


Fig.3: Pie chart showing the physical fitness level of participants (n=384)

#### **4.6 Relationship between Workload, Physical Activity, and Fitness**

As presented in Table 5, Pearson correlation analyses revealed no statistically significant relationships among the primary continuous variables. The correlation between academic workload and physical activity was negligible ( $r = 0.01$ ,  $p = 0.93$ ), while the association between academic workload and physical fitness was also minimal and inverse ( $r = -0.03$ ,  $p = 0.60$ ). Similarly, the relationship between physical activity and physical fitness was weak and did not reach statistical significance ( $r = 0.07$ ,  $p = 0.16$ ). These findings suggest that, within this sample, self-reported workload levels were not associated with corresponding differences in physical activity or fitness scores, and the observed positive relationship between activity and fitness was small in magnitude and not statistically meaningful.

#### **4.7 Cross Tabulation of Gender and Academic Workload among Participants (n = 384)**

A cross tabulation examining the distribution of gender across academic workload categories indicated that female students constituted a larger proportion of those classified under the high workload category, accounting for 58.2 percent. Conversely, male students were more prominently represented within the low workload category. A chi square test assessing the association between gender and workload yielded a result approaching conventional levels of statistical significance ( $\chi^2 = 5.97$ ,  $p = 0.05$ ), as detailed in Table 6.

**Table 5: Correlation between workload, physical activity, and fitness (n=384).**

|                          |                 | <b>Academic workload</b> | <b>Physical activity</b> | <b>Physical fitness</b> |
|--------------------------|-----------------|--------------------------|--------------------------|-------------------------|
| <b>Academic workload</b> | Pearson         | 1                        |                          |                         |
|                          | Correlation     |                          |                          |                         |
|                          | Sig. (2-tailed) |                          |                          |                         |
| <b>Physical activity</b> | Pearson         | 0.01                     | 1                        |                         |
|                          | Correlation     |                          |                          |                         |
|                          | Sig. (2-tailed) | 0.93                     |                          |                         |
| <b>Physical fitness</b>  | Pearson         | -0.03                    | 0.07                     | 1                       |
|                          | Correlation     |                          |                          |                         |
|                          | Sig. (2-tailed) | 0.60                     | 0.16                     |                         |

**Table 6: Cross-tabulation of gender and academic workload of students.**

|        | Academic Workload |                   |                 | X <sup>2</sup> | P-value     |
|--------|-------------------|-------------------|-----------------|----------------|-------------|
|        | Low<br>(n=9)      | Medium<br>(n=114) | High<br>(n=261) |                |             |
| Male   | 6 (66.7)          | 61 (53.5)         | 109 (41.8)      |                |             |
| Female | 3 (33.3)          | 53 (46.5)         | 152 (58.2)      |                |             |
|        |                   |                   |                 | <b>5.97</b>    | <b>0.05</b> |

#### **4.8 Cross Tabulation of Faculty and Activity Level**

Across the various faculties, the predominant activity level was classified as fairly active, accounting for 61.5 percent of respondents. Within this category, the School of Basic Medical Sciences contributed the largest proportion of fairly active students, representing 20.1 percent, and also accounted for the greatest share of very active students, at 10.2 percent. This indicates that participation from this faculty was a major contributor to the overall pattern of fairly active classification observed in the sample. The association between faculty affiliation and activity level was found to be not statistically significant ( $\chi^2 = 34.15$ ), as presented in Table 7.

#### **4.9 Cross Tabulation of Activity Level, Fitness Level, and Academic Workload among Participants (n = 384)**

Cross tabulation analyses examining the relationships between activity level and academic workload, as well as between fitness level and academic workload, revealed no statistically significant associations. The chi square value for activity level against academic workload was 3.88, with a corresponding p value of 0.40, while the analysis of fitness level against academic workload yielded a chi square value of 2.67 and a p value of 0.59, as shown in Table 8.

**Table 7: Cross-tabulation of faculty and activity level of students**

| Faculty                           | Activity Level |               |             | X <sup>2</sup> | P-value      |
|-----------------------------------|----------------|---------------|-------------|----------------|--------------|
|                                   | Not active     | Fairly active | Very active |                |              |
| Agriculture                       | 1              | 6             | 2           |                |              |
| Arts                              | 1              | 10            | 4           |                |              |
| Dentistry                         | 1              | 4             | 3           |                |              |
| Education                         | 6              | 16            | 10          |                |              |
| Engineering                       | 5              | 18            | 8           |                |              |
| Environmental Sciences            | 1              | 0             | 2           |                |              |
| Veterinary Medicine               | 0              | 4             | 1           |                |              |
| Law                               | 0              | 7             | 3           |                |              |
| Life Sciences                     | 7              | 20            | 4           |                |              |
| Management Sciences               | 3              | 15            | 7           |                |              |
| Medicine                          | 0              | 10            | 3           |                |              |
| Pharmacy                          | 4              | 8             | 4           |                |              |
| Physical Sciences                 | 1              | 13            | 10          |                |              |
| School of Basic Clinical Sciences | 1              | 12            | 1           |                |              |
| School of Basic Medical Sciences  | 8              | 77            | 39          |                |              |
| Social Sciences                   | 4              | 16            | 4           |                |              |
|                                   |                |               |             | <b>34.15</b>   | <b>0.275</b> |

**Table 8: Cross tabulation of activity level, fitness level, and academic workload of participants.**

|                       | Academic Workload |                   |                 | X <sup>2</sup> | P-value     |
|-----------------------|-------------------|-------------------|-----------------|----------------|-------------|
|                       | Low<br>(n=9)      | Medium<br>(n=114) | High<br>(n=261) |                |             |
| <b>Activity level</b> |                   |                   |                 |                |             |
| Not active            | 1                 | 15                | 27              |                |             |
| Fairly active         | 6                 | 75                | 155             |                |             |
| Very active           | 2                 | 24                | 79              |                |             |
|                       |                   |                   |                 | <b>3.88</b>    | <b>0.4</b>  |
| <b>Fitness level</b>  |                   |                   |                 |                |             |
| Poor                  | 0                 | 5                 | 23              |                |             |
| Fair                  | 4                 | 40                | 87              |                |             |
| Good                  | 5                 | 69                | 151             |                |             |
|                       |                   |                   |                 | <b>2.67</b>    | <b>0.59</b> |

## **4.2 Hypothesis Testing**

### **4.2.1 Main Hypothesis**

Statement: No significant relationship would exist between academic workload, physical activity, and physical fitness among students at the University of Benin.

Test Statistics: Pearson correlation analysis was employed, with results presented in Table 5. The correlation between academic workload and physical activity yielded a coefficient of 0.01 with a p value of 0.93. The relationship between academic workload and physical fitness produced a coefficient of  $-0.03$  with a p value of 0.60. The correlation between physical activity and physical fitness was 0.07 with a p value of 0.16. An alpha level of 0.05 was set for the analysis.

Judgment: All obtained p values exceeded the predetermined alpha threshold of 0.05. Consequently, the null hypothesis was retained. The findings indicate no statistically significant relationships among academic workload, physical activity, and physical fitness within this sample.

### **4.2.2 Sub Hypothesis 1**

Statement: No significant correlation would exist between academic workload and physical fitness level among students at the University of Benin.

Test Statistics: As shown in Table 5, Pearson correlation analysis revealed a coefficient of  $-0.03$  with a p value of 0.60, compared against an alpha level of 0.05.

Judgment: The p value of 0.60 surpassed the alpha level of 0.05. The null hypothesis was therefore retained, indicating no statistically significant correlation between academic workload and physical fitness level.

#### **4.2.3 Sub Hypothesis 2**

Statement: No significant correlation would exist between gender and academic workload among students.

Test Statistics: A cross tabulation and chi square test were conducted, with results presented in Table 6. The analysis yielded a chi square value of 5.97 with a p value of 0.05, evaluated against an alpha level of 0.05. The cross tabulation revealed that female students accounted for a larger proportion of those in the high workload category, representing 58.2 percent.

Judgment: The obtained p value of 0.05 was equivalent to the predetermined alpha level. Applying the conventional decision rule whereby a p value less than or equal to 0.05 indicates statistical significance, the null hypothesis was rejected at the 5 percent significance level. Thus, evidence supports the existence of an association between gender and academic workload, representing a borderline significant finding, with female students demonstrating a greater likelihood of reporting high workload in this sample.

#### **4.2.4 Sub Hypothesis 3**

Statement: No significant relationship would exist between physical activity and faculty or department affiliation.

Test Statistics: A cross tabulation and chi square test were performed, with results shown in Table 7. The chi square value was 34.15, with a corresponding p value of 0.275, assessed against an alpha level of 0.05.

Judgment: The p value of 0.275 exceeded the alpha level of 0.05. The null hypothesis was therefore retained, indicating no statistically significant relationship between physical activity level and faculty or department affiliation within this sample.

#### **4.2.5 Sub Hypothesis 4**

Statement: No significant difference would exist between students with high and low academic workload in terms of physical activity level and physical fitness level.

Test Statistics: Cross tabulation and chi square tests were conducted, with results presented in Table 8. The analysis of activity level against academic workload yielded a chi square value of 3.88 with a p value of 0.40. The analysis of fitness level against academic workload produced a chi square value of 2.67 with a p value of 0.59. An alpha level of 0.05 was applied.

Judgment: Both p values exceeded the alpha threshold of 0.05. The null hypotheses were therefore retained. The findings indicate no statistically significant differences between students categorized by academic workload level with respect to either their physical activity level or their physical fitness level.

# **CHAPTER FIVE**

## **DISCUSSION, CONCLUSION AND RECOMMENDATIONS**

### **5.1 DISCUSSION**

Engaging in regular physical activity yields diverse health advantages, including enhanced cardiovascular and cognitive function, improved musculoskeletal strength, and more effective weight management. Consistent participation in such activity serves as a preventive measure against numerous chronic illnesses, including cardiovascular disease, cerebrovascular accidents, hypertension, and several forms of cancer.

This investigation sought to determine the nature of the relationship between students' academic workload and the consequent impact on their level of physical engagement, and how this subsequently influences their physical fitness status. The study aimed to examine the interconnections among academic demands, physical activity, and physical fitness within the undergraduate population at the University of Benin. A total of 384 students were successfully surveyed, aligning with the predetermined sample size. The youngest participant was 16 years of age, consistent with the established inclusion criteria, and females constituted a slight majority of the sample. The School of Basic Medical Sciences contributed the highest number of participants, with students in their third year representing the largest cohort by academic level.

Among the workload subscales, performance and mental demands recorded the highest scores, indicating that students found the cognitive and achievement

related aspects of their academic responsibilities to be exceptionally demanding. This observation corroborates the work of Adedeji and Ogunleye (2019), who found that university students in Nigeria frequently contend with significant mental and time based academic pressures stemming from dense curricula, frequent examinations, and insufficient time for rest. The predominance of these specific subscales implies that students experience cognitive strain rather than feeling solely constrained by a lack of time. Regarding physical activity patterns, a moderate level of engagement was the most commonly reported category, with over half of participants indicating this as their weekly norm. For vigorous activities, a frequency of two days per week was most frequently cited, while daily walking was reported by the majority. However, extended periods of sedentary behavior, defined as sitting or reclining for more than 180 minutes daily, were also widespread. In terms of fitness, most participants rated their cardiovascular endurance and muscular endurance as "Average," while self assessments for muscular strength and body composition were predominantly "Very good," and flexibility was most often rated as "Good."

The observation that students report high academic demands yet sustain moderate activity levels may indicate an adaptive response; they might integrate walking into their daily routines, such as moving between classes, while avoiding more time consuming activities like organized sports or gym sessions. A systematic review by Brown and colleagues (2024) on factors that facilitate or hinder physical activity among university students identified time scarcity, inadequate resources, and environmental constraints as common obstacles. The predominance of moderate intensity activity in this study also

aligns with research by Oyeyemi and colleagues (2017), who studied health professional students at the University of Maiduguri in Nigeria. Their work revealed that while 85.3 percent of students met the guideline of 150 minutes per week of moderate to vigorous physical activity, only 2.9 percent met the guideline for vigorous activity specifically, defined as 75 minutes or more per week.

This finding suggests that adherence to activity guidelines is largely driven by moderate intensity pursuits. Although students at the University of Benin engage in routine mobility, such as walking, few participate in structured vigorous exercise, likely due to time limitations and restricted access to sports facilities. This indicates that while students may not engage in formal exercise regimens, they remain active through incidental movement associated with campus life. The perception data, where many students responded "Maybe" regarding their physical fitness, further suggests uncertainty or a lack of awareness about whether their current activity levels meet recommended health standards. This ambiguity highlights the need for focused health education to clarify what constitutes sufficient physical activity. The majority of participants reported sitting or reclining for over 180 minutes daily, indicating prolonged sedentary habits. This observation aligns with global trends reported by the World Health Organization in 2020, which noted increasing sedentary time among young adults, even in the presence of moderate physical activity. Gender based analysis revealed a borderline association between sex and perceived academic workload, with female students more inclined to report higher levels. This disparity may reflect gender differences in coping strategies, tendencies toward multitasking, or approaches to academic tasks, consistent

with findings from Aihie and Ohanaka, who noted in their study that perceptions of academic stress among undergraduate students are influenced by sex, field of study, and academic year.

The study further revealed that while most students maintained generally satisfactory physical fitness levels, their endurance and cardiorespiratory capacities were comparatively lower, a trend that may be attributed to limited participation in sustained physical exertion. In assessing physical fitness, many students were classified within a "Good" fitness category, with notably higher scores for muscular strength and body composition, yet lower average scores for muscular endurance. This pattern suggests that although students possess adequate general fitness, their capacity for sustained endurance may be underdeveloped, likely because many routine movements they perform, such as walking and stair climbing, contribute more to strength maintenance and body composition than to cardiovascular endurance.

Within this sample, no statistically significant relationship was identified among academic workload, physical activity, and physical fitness. This absence of a significant relationship may be due to students incorporating movement, such as walking to classes and running campus errands, which establishes a baseline level of activity that mitigates the potential negative effects of workload on overt exercise. Additionally, academic workload tends to be episodic in nature, coinciding with examinations and project deadlines, whereas physical fitness develops over more extended periods. A cross sectional study by Edelman and colleagues (2024) involving German university students found that study related factors, including course load, were associated with increased sedentary time and reduced physical activity levels.

Research by Calestine and colleagues (2017) on college work habits revealed that study habits interact with physical activity, underscoring the complexity of the relationship between academic demands and physical engagement. Furthermore, a systematic review by Kljajevic and colleagues (2021) on physical activity and fitness among university students indicated that this population typically exhibits moderate levels in both domains.

Analysis of the collected data revealed evidence of an association between gender and academic workload, with female students more likely to report experiencing high workload. This finding correlates with a study by Reder and colleagues (2024), who observed that female participants perceived higher workloads and required more time to complete tasks. Similarly, Roh, Jang, and Issenberg found that female nursing students reported higher intrinsic cognitive load, suggesting that female students perceived a greater burden associated with their tasks.

The analysis also indicated no significant relationship between physical activity level and faculty or department of study. Although cross tabulation did not reveal a statistically significant association between faculty affiliation and activity levels, a discernible pattern suggested that students enrolled in medically or health related faculties tended to engage in higher levels of physical activity. A comparative study by Sun and colleagues (2024) found notable differences across faculties, with students from humanities disciplines exhibiting weaker physical fitness metrics compared to their peers in other faculties. Higher fitness levels were observed among students in more physically oriented or health focused faculties. A study conducted at Niğde Ömer Halisdemir University in Turkey reported statistically significant

differences, with students in Sports Sciences demonstrating higher physical activity levels than those in Fine Arts. Data analysis further showed no statistically significant difference between students across various academic workload categories in terms of their activity levels or fitness status.

### **5.3 CONCLUSION**

This research finds that, despite facing considerable academic demands, undergraduate students at the University of Benin do not exhibit a direct or substantial decline in their physical activity levels or physical fitness as a result. Their engagement in physical activity remains moderate, primarily sustained through daily movement associated with routine mobility, and they demonstrate satisfactory fitness levels, particularly in terms of muscular strength and body composition. Additionally, the study reveals that perceptions of academic workload differ by gender, with female students reporting greater strain; however, this perceived disparity does not correspond to notable differences in actual physical activity or fitness outcomes.

In summary, students appear to have developed adaptive strategies within their academic environment that enable them to reconcile mental exertion with a foundational level of physical engagement. Nevertheless, the considerable amount of time spent in sedentary behaviour points to potential health concerns in the long term, suggesting a need for proactive measures.

### **5.3 RECOMMENDATIONS**

Drawing from the outcomes of this research, the following recommendations are proposed:

1. **Curriculum and Workload Management:** Academic departments should conduct regular evaluations of course requirements and examination schedules to mitigate instances of excessive academic burden. Introducing periodic breaks and offering flexible learning arrangements can provide opportunities for rest and physical activity.
2. **Physical Activity Promotion:** The institution should implement wellness initiatives, including organised fitness challenges, group aerobic activities, and campus walking groups, to encourage students to engage in physical activity beyond their usual daily routines.
3. **Awareness and Education:** Awareness campaigns should focus on educating students about the importance of achieving recommended physical activity levels and the health consequences of extended periods of sitting. Practical guidance on daily exercise should be delivered through seminars and orientation sessions.
4. **Infrastructure Enhancement:** Greater investment is required to develop safe and accessible recreational facilities, such as sports pitches, exercise centres, and pedestrian paths. Such improvements would support consistent participation in physical activity, particularly among students with demanding academic schedules.
5. **Gender Specific Interventions:** Given that female students report higher levels of academic stress, wellness and counselling services

should be designed to address their specific circumstances, with an emphasis on stress management and the cultivation of active lifestyles.

6. **Curriculum Integration:** Physical activity and health education should be embedded within general studies programmes for all undergraduates, reinforcing the role of regular exercise in managing stress and sustaining physical fitness.
7. **Further Research:** Subsequent studies should employ longitudinal methodologies and objective measures of fitness, such as assessments of aerobic capacity and activity tracking through accelerometers, to more accurately capture the evolving relationships among academic workload, physical activity, and fitness outcomes.

#### **5.4 Implications for Further Study**

The findings of this research underscore the importance of pursuing investigations that are more nuanced, multidimensional, and methodologically varied to explore the connections between academic workload, physical activity, and fitness among undergraduate students. Future research should extend beyond correlational analysis to explore causal relationships, mediating factors, and contextual variables. Such inquiries would not only advance theoretical perspectives on student health behaviours but also inform the development of evidence based strategies aimed at fostering wellness and academic achievement within higher education settings.

## REFERENCES

- Aarhus University (n.d.) Academic activities and workload. Available at:  
<https://educate.au.dk/en/focus-areas/pedagogical-themes/course-planning/academic-activities-and-workload>.
- Alibekova, S. et al. (2023) 'Association between academic pressure and physical inactivity in students', *BMC Public Health*, 23, 17621.
- Alkhaldeh, A. et al. (2024) 'University students' physical activity: perceived barriers and benefits to physical activity and its contributing factors', *SAGE Open Nursing*. Available at:  
[https://www.researchgate.net/publication/379143884\\_University\\_Students'\\_Physical\\_Activity\\_Perceived\\_Barriers\\_and\\_Benefits\\_to\\_Physical\\_Activity\\_and\\_Its\\_Contributing\\_Factors](https://www.researchgate.net/publication/379143884_University_Students'_Physical_Activity_Perceived_Barriers_and_Benefits_to_Physical_Activity_and_Its_Contributing_Factors)
- Amadi, E.O. et al. (2022) 'University autonomy and academic freedom in the administration of state owned universities in Rivers State, Nigeria'. Available at:  
[https://www.researchgate.net/publication/359518872\\_University\\_Autonomy\\_and\\_Academic\\_Freedom\\_in\\_the\\_Administration\\_of\\_State\\_Owned\\_Universities\\_in\\_Rivers\\_State\\_Nigeria](https://www.researchgate.net/publication/359518872_University_Autonomy_and_Academic_Freedom_in_the_Administration_of_State_Owned_Universities_in_Rivers_State_Nigeria)

- Azam, S. and Hamzah, Z. (2017) 'Academic workloads: evidence for student stress', *Education in Medicine Journal*, Early View: 2017, pp. 1–10.
- Baba, T., Ekundayo, A., & Akintunde, I. (2024) The Influence of Stress on Academic Performance of Undergraduates: A Case Study of Human Kinetics and Sports Science Students, University of Benin. *Global Journals – Education Research*, 24(1), pp. 1–14. Available at: <https://www.gjournals.org/2024/12/14/120424186-baba-et-al/#> .
- Bennett, D. J., Paluch, A. E., & Bonin, K. (2017) 'Physical activity and mental health in school-aged children', *Journal of School Health*, 87(8), pp. 478–486. Available at: <https://pmc.ncbi.nlm.nih.gov/articles/PMC5685070/> .
- Brown, C.E.B. et al. (2024) 'Key influences on university students' physical activity: a systematic review using the Theoretical Domains Framework and the COM-B model of human behaviour', *BMC Public Health*, 24(1), 418. doi:10.1186/s12889-023-17621-4
- Calestine, J. et al (2017) 'College student work habits are related to physical activity and fitness', *International Journal of Exercise Science*, 10, pp. 1009–1017. Available at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5685070/>
- Concepts of Physical Fitness & Active Lifestyles (2019) 14th edition. Available at: [https://d1wqtxts1xzle7.cloudfront.net/59473010/concepts\\_of\\_physical\\_fitness\\_active\\_lifestyles\\_for20190531-...](https://d1wqtxts1xzle7.cloudfront.net/59473010/concepts_of_physical_fitness_active_lifestyles_for20190531-...)

- Correlates of Workload (2017) *International Journal of Education and Evaluation*, 3(9). Available at: <https://www.iiardjournals.org/get/IJEE/VOL.%203%20NO.%209%202017/Correlates%20of%20Workload>.
- Doré, J., Mathieu, E., & Marcotte, G. (2020) 'Effect of parental involvement on high-school students' academic achievement: a meta-analysis', *Higher Education Pedagogies*, 5(3), pp. 1–16.
- Edelmann, D. et al (2022) 'Physical activity and sedentary behavior in university students – the role of gender, age, field of study, targeted degree and study semester', *Frontiers in Public Health*, 10:821703. doi:10.3389/fpubh.2022.821
- Edwards, A. (2024) 'The role of physical activities in enhancing physical fitness among the community', *ResearchGate*. Available at: [https://www.researchgate.net/publication/383537020\\_The\\_Role\\_of\\_Physical\\_Activities\\_in\\_Enhancing\\_Physical\\_Fitness\\_Among\\_the\\_Community](https://www.researchgate.net/publication/383537020_The_Role_of_Physical_Activities_in_Enhancing_Physical_Fitness_Among_the_Community).
- Genn, J. et al. (2013) 'Stress and learning in medical education', *Studies in Higher Education*, 28(5), pp. 617–632.
- Harris, R. et al. (2000) 'Physical activity and academic performance in primary school children: a pilot study', *Friede's Journal of Education*, 40, pp. 345–356. Available at: <https://pmc.ncbi.nlm.nih.gov/articles/PMC11505733/>.

Impact of BMI on health outcomes (2008) *International Journal of Obesity*, 32, pp. 678–684. Available at:

<https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1467-789X.2008.00506.x>

Johnston, R. et al. (2013) ‘The privilege of ease: social class and campus life at highly selective private universities’, ResearchGate. Available at: [https://www.researchgate.net/publication/257658075\\_The\\_Privilege\\_of\\_Ease\\_Social\\_Class\\_and\\_Campus\\_Life\\_at\\_Highly\\_Selective\\_Private\\_Universities](https://www.researchgate.net/publication/257658075_The_Privilege_of_Ease_Social_Class_and_Campus_Life_at_Highly_Selective_Private_Universities).

Journal of Physical Fitness Study (Sage, date n.d.) ‘Effects of exercise on physical fitness,’ *Perceptual and Motor Skills*, 98(3), pp. 927–943. Available at: <https://journals.sagepub.com/doi/abs/10.2466/pms.98.3.927-943> .

Lee, J. et al. (2022) ‘Sedentary behaviours among university students and academic outcomes’, *International Journal of Environmental Research and Public Health*, 19(3). Available at: <https://pmc.ncbi.nlm.nih.gov/articles/PMC9244168>.

Liu, H. et al. (2024) ‘Examining student workload: a quantitative study’, *Journal of Educational Measures*, 52, p. 45.

Loprinzi, P.D. and Cardinal, B.J. (2010) ‘Measuring physical activity and nutrition knowledge: psychometric testing of a new instrument’, *Nutrients*, 2(10), pp. 1075–1085. doi:10.3390/nu2101075. Available at: <https://www.mdpi.com/2072-6643/2/10/1075>

Martínez, R. et al. (2023) 'Sedentary lifestyles in university populations: a global review', *Brains*, 15(1), p. 78..

Michalski, B., & Nguyen, L. (2023) 'The impact of physical activity on academic performance: a meta-analysis of research findings', ResearchGate. Available at: [https://www.researchgate.net/publication/383373830\\_The\\_Impact\\_of\\_Physical\\_Activity\\_on\\_Academic\\_Performance\\_A\\_Meta-Analysis\\_of\\_Research\\_Findings](https://www.researchgate.net/publication/383373830_The_Impact_of_Physical_Activity_on_Academic_Performance_A_Meta-Analysis_of_Research_Findings).

Misra, R. and McKean, M. (2000) 'College students' academic stress and its relation to their anxiety, time management, and leisure satisfaction', *Education Psychology Journal*, 20(2), pp. 63–75. Available at: [https://www.researchgate.net/publication/209835950\\_College\\_students\\_%27\\_academic\\_stress\\_and\\_its\\_relation\\_to\\_their\\_anxiety\\_time\\_management\\_and\\_leisure\\_satisfaction](https://www.researchgate.net/publication/209835950_College_students_%27_academic_stress_and_its_relation_to_their_anxiety_time_management_and_leisure_satisfaction).

Okeke, F. and Bello, M. (2024) 'Analysis of Academic Workload and Performance: NCE-level dual-course students in North Central Nigeria', ResearchGate. Available at: [https://www.researchgate.net/publication/387058859\\_Analysis\\_of\\_Academic\\_Workload\\_and\\_Performance\\_of\\_Students\\_of\\_English\\_Undertaking\\_Dual-Course\\_at\\_NCE\\_Level\\_in\\_North\\_Central\\_Nigeria\\_A\\_Curriculum\\_Redesign\\_Approach](https://www.researchgate.net/publication/387058859_Analysis_of_Academic_Workload_and_Performance_of_Students_of_English_Undertaking_Dual-Course_at_NCE_Level_in_North_Central_Nigeria_A_Curriculum_Redesign_Approach)

Oyediran, K., Adebayo, A., & Nwankwo, P. (2024) 'Mental and physical stressors contributing to dropout rates among college students',

Educational Research and Reviews, 19(7), pp. 1–12. Available at:  
<https://academicjournals.org/journal/ERR/article-full-text/316F97B68217>.

Patel, V. et al. (2023) ‘Student workload and mental health outcomes’, BMC Psychology, 11, 150. Available at:  
<https://pmc.ncbi.nlm.nih.gov/articles/PMC9942129/>

Paulsen, M. B. (2000) ‘An attempt to estimate students’ workload’, Journal of College Student Development, 41(2), pp. 201–217. Available at:  
[https://www.researchgate.net/publication/8207566\\_An\\_Attempt\\_to\\_Estimate\\_Students%27\\_Workload](https://www.researchgate.net/publication/8207566_An_Attempt_to_Estimate_Students%27_Workload).

Reder, S.R. et al. (2024) ‘Gender differences in self-assessed performance and stress in interventional radiology training’, European Radiology, (online). doi:10.1007/s00330-023-09993-

Reston Medical Center (n.d.) How many hours a week is medical school?. Available at: <https://www.restonyc.com/how-many-hours-a-week-is-medical-school>

Roh, Y. S., Jang, K. I. and Issenberg, S. B. (2022) ‘Gender differences in psychological safety, academic safety, cognitive load, and debriefing satisfaction in simulation-based learning’, Nurse Educator, 47(5), E109–E113. doi:10.1097/NNE.0000000000001179.

Smith, L. et al. (2021) ‘Physical inactivity among university students’, ResearchGate. Available at:

[https://www.researchgate.net/publication/355102254\\_Physical\\_Inactivity\\_among\\_University\\_Students](https://www.researchgate.net/publication/355102254_Physical_Inactivity_among_University_Students)

Sun, J., et al. (2024) 'A comparative study on the physical fitness of college students from different grades and majors in Jiangxi province', PLoS ONE, 19(10), e0308483. doi:10.1371/journal.pone.0308483.

ToKnowPress (n.d.) Academic Activities and Workload, in ISBN 978-961-6914-30-7. Available at: <https://toknowpress.net/ISBN/978-961-6914-30-7/68>.

University of Stavanger (2022) Guideline on calculating student workload. Available at: <https://www.unis.no/wp-content/uploads/2022/11/guideline-on-calculating-student-workload.pdf>.

WHO (2020) Physical activity: Fact sheet. Available at: <https://www.who.int/news-room/fact-sheets/detail/physical-activity> (Accessed: 22 June).

Shamaa Journal (2017) 'Tjhe Vol 4 No 2 Y2017', Journal of Human Education, 4(2), pp. 277–309. Available at: [https://search.shamaa.org/PDF/Articles/FC/SPTjhe/TjheVol4No2Y2017/tjhe\\_2017-v4-n2\\_277-309\\_eng\\_authsub.pdf](https://search.shamaa.org/PDF/Articles/FC/SPTjhe/TjheVol4No2Y2017/tjhe_2017-v4-n2_277-309_eng_authsub.pdf).

Secondary Physical Activity and Fitness Review (n.d.) 'Physical activity versus fitness,' Journal of Preventive Medicine and Hygiene. Available at: <https://onlinelibrary.wiley.com/doi/10.1155/2017/9314026>.

Springer Medical Study (2012) 'Physical movement and health outcomes,' Environmental Health, 11(7). Available at:

<https://link.springer.com/article/10.1186/1478-7954-11-7> (Accessed: 22  
June 20

Springer Sports Science Review (2019) 'Exercise improves fitness reviews,'  
Sports Medicine, 49, pp. 1–10. Available at:  
<https://link.springer.com/article/10.1186/s40798-019-0211-2> .

Taylor & Francis Article (JACH) (2012) 'Workload and teenage health,'  
Journal of Adolescent Health, 56(1), pp. 37–42. Available at:  
<https://www.tandfonline.com/doi/abs/10.3200/JACH.56.1.37-42> .

Taylor & Francis Journal (2015) Journal of Sports, Physical Training, 4(2), pp.  
277–309. Available at:  
[https://search.shamaa.org/PDF/Articles/FC/SPTjhe/TjheVol4No2Y2017  
/tjhe\\_2017-v4-n2\\_277-309\\_eng\\_authsub](https://search.shamaa.org/PDF/Articles/FC/SPTjhe/TjheVol4No2Y2017/tjhe_2017-v4-n2_277-309_eng_authsub).

## APPENDICES

### APPENDIX 1: RESEARCH QUESTIONNAIRE

Title:

The Relationship between academic workload, physical activities and physical fitness among undergraduates in the University of Benin.

#### SECTION A: Demographic informatio

1. Age: \_\_\_\_\_
2. Gender :  Male  Female
3. Faculty of Study: \_\_\_\_\_
4. Level of Study: 100L 200L 300L 400L 500L   
600L

#### SECTION B: NASA- Task Load Index

INSTRUCTION: Answer these questions truthfully and honestly

1. Mental workload

How much was your academic work mentally demanding?

(Think about how much thinking remembering, calculating and deciding you had to do.)

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17  
18 19 20

2. Physical demand.

How much was your academic work physically demanding?

(Consider efforts of walking to class, sitting for hours in lecture hours, commuting to class and carrying books and laptops).

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17  
18 19 20

3. Temporal demand.

How much time pressure did you feel due to deadlines for assignment or tight class schedules?

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17  
18 19 20

4. Performance

How satisfied were you after completing your academic tasks?

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17  
18 19 20

5. Effort

Consider how much physical and mental effort you put into achieving your level of academic performance.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17  
18 19 20

#### 6. Frustration level

How insecure, annoyed, irritated and stressed did you feel when performing these academic tasks?

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17  
18 19 20

### SECTION C: Physical Activity Measurement

**INSTRUCTION:** Think about all the time you partook in physical activities the last seven days and answer the question based on your usual routine and activity.

1. How many days did you do vigorous physical activities the in the last seven days? (Running, football, swimming, aerobic and working out)

1 2 3 4 5 6 7

2. How much time did you spend in performing these vigorous activities?

(Write your answer in hours; 15mins = 0.25hr; 30min = 0.5hours; 45min = 0.75hours; 60min = 1hour)

\_\_\_\_\_

3. How many days did you perform moderate activities? (Brisk walking, chores, dancing)

1 2 3 4 5 6 7

4. How much time did you spend in performing these moderate activities?

(Write your answer in hours; 15mins = 0.25hr; 30min = 0.5hours;  
45min = 0.75hours; 60min = 1hour )

---

5. How many days did you walk during the last seven days?

<sub>1</sub>   <sub>2</sub>   <sub>3</sub>   <sub>4</sub>   <sub>5</sub>   <sub>6</sub>   <sub>7</sub>

6. How much time did you spend in walking per day? (Write your answer

in hours; 15mins = 0.25hr; 30min = 0.5hours; 45min = 0.75hours;  
60min = 1hours)

---

7. 7. How many hours do you spend sitting or reclining on a typical day?

( Sitting in class, studying, watching TV or using the computer)?

(15mins = 0.25hr; 30min = 0.5hours; 45min = 0.75hours; 60min =  
1hour)

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8. Do you feel you are doing enough physical activity for your health?

YES    NO    MAYBE

#### SECTION D: Physical Fitness Rating

INSTRUCTION: Answer these questions according how you would rate your  
ability to perform various activities.

1. Overall physical fitness

How would you rate your ability to perform everyday tasks without easily getting tired?

- Very Poor     Poor     Average     Good     Very Good  
 Excellent

2. Cardiorespiratory endurance.

How would you rate the ability of your lungs and heart to keep up when performing tasks like jogging, running, cycling or swimming?

For example running 2km without getting tired or fatigued

- Very Poor     Poor     Average     Good     Very Good  
 Excellent

3. Muscular strength.

How would you rate your ability to push, pull, lift and carry heavy things?

For example your ability to carry two bags of water comfortably.

- Very Poor     Poor     Average     Good     Very Good  
 Excellent

4. Muscular Endurance

How would you rate your ability to keep your muscles to keep going for a long time without getting tired?

For example how many minutes can you perform push-ups without getting tired?

Very Poor     Poor     Average     Good     Very Good  
 Excellent

5. Flexibility

How would you rate your ability stretch and move your joint easily without feeling any restriction when performing tasks?

Very Poor     Poor     Average     Good     Very Good  
 Excellent

6. Body Composition.

Are you satisfied with your current body weight, in relation to your health?

Very Poor     Poor     Average     Good     Very Good  
 Excellent

Thank you for participating in this study.

## **APPENDIX 2**

### **INFORMED CONSENT FORM**

My name is OLUDARE AYOMIDE SAMUEL, and I am conducting a study on the THE RELATIONSHIP BETWEEN ACADEMIC WORKLOAD, PHYSICAL ACTIVITY, AND PHYSICAL FITNESS AMONG UNDERGRADUATES IN THE UNIVESRITY OF BENIN. This study aims to explore how academic workload influences students' levels of physical activity and physical fitness. Understanding this relationship will help identify ways to promote better health and academic balance among university students. You will complete a short questionnaire containing questions about your academic workload, physical activity habits, and general physical fitness. The questionnaire will take about 10–15 minutes to complete. You may choose to skip any question you do not wish to answer. There are no known risks involved in this study. Some questions may prompt you to reflect on your study habits or activity levels, but you may skip any question that makes you uncomfortable. Although you may not receive any direct benefit, your participation will contribute to research that may help universities promote healthier and more balanced student lifestyles.

**CONSENT STATEMENT:**

Please read the statement below carefully:

I have read and understood the information provided above about this study. I understand that my participation is voluntary and that I can withdraw at any time without penalty. I consent to take part in this research study.

I agree to participate in this study

I do not agree to participate in this study

Participant's Signature: \_\_\_\_\_

Date: \_\_\_\_\_

Researcher's Signature: \_\_\_\_\_

Date: \_\_\_\_\_

## **APPENDIX 3**

### **Ethical Approval**



**RESEARCH ETHICS COMMITTEE**  
**COLLEGE OF MEDICAL SCIENCES**  
**UNIVERSITY OF BENIN, BENIN CITY, NIGERIA.**



**Chairman:** Prof. F. A. Imarhiagbe  
MBChb, FMCP  
Cert Clin Res and ethics (NIH), MD.  
0803449092

**Email:** researchethics.cms@gmail.com

P.M.B 1154, BENIN CITY

**Our Ref:** CMS/REC/01/VOL.2/037

**Date:** 5<sup>th</sup> September, 2025

**Re: RELATIONSHIP BETWEEN ACADEMIC WORKLOAD, PHYSICAL ACTIVITY AND FITNESS AMONG UNDERGRADUATES IN THE UNIVERSITY OF BENIN**

**Name of Principal Investigator:** OLUDANI AYOMIDE SAMUEL  
Department Of Physiotherapy,  
School of Basic Medical Science  
College of Medical Sciences,  
University of Benin

**REC Approval No:** CMS/REC/2025/037

This is to inform you that the research described in the submitted proposal, the Informed Consent Forms and other participant information materials have been reviewed and approved by the College Research Ethics Committee, University of Benin.

This approval dates from 5<sup>th</sup> September, 2025 to 4<sup>th</sup> September, 2026. In multi-year research, Endeavour to submit your annual report to the REC early in order to obtain renewal of your approval and avoid disruption of your research.

The National Code of Health Research Ethics requires you to comply with all institutional guidelines, rules and regulations and with the tenets of the code including ensuring that all adverse events are reported promptly to the REC. No, changes are permitted in the research without prior approval by REC except in circumstances outlined in the code. REC reserves the right to conduct compliance visit to your research site without prior notice. Thank you.

**PROF. F.A. IMARHIAGBE**  
Chairman, REC