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# EFFECT OF PHYSICAL EXERCISE PARTICIPATION ON SELECTED INDICES OF MENTAL HEALTH BETWEEN STUDENT ATHLETES AND NON-ATHLETES OF OBAFEMI AWOLOWO UNIVERSITY, ILE-IFE, NIGERIA

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**Abstract:**
Participation in physical exercise is regarded as a healthy behaviour that promotes both physical and mental health among students. It is a preventive and therapeutic measure for mental health illness. However, despite the positive relationship between participation in physical exercise and mental health, many students of the Obafemi Awolowo University, Ile Ife, Nigeria still engage in sedentary life style which increases their vulnerability to mental health issues. Several studies have been carried out on students and mental health, behavioural health risks such as substance use, unsafe sexual behaviour, violence and increased risk of communicable and non-communicable diseases, injury and mortality and anxiety as the most prevalent disorder found in men and women but little research effort has been directed towards the influence of exercise participation on these selected indices of mental health between student athletes and non-athletes of Obafemi Awolowo University. Correlation survey research design was used for this study. Data obtained were coded and analyzed using descriptive statistics of frequency count, simple percentage, mean, standard deviation and bar chart for the demographic variables and research questions. Chi square (CRAMMER V) and multiple regression were used to test hypotheses at 0.05 alpha level of significance. The population for this study comprises of male and female student athletes and non-athletes of Obafemi Awolowo University, Ile-Ife, as participants. Multi-stage sampling technique was used to select Two hundred (200) respondents from five (5) faculties. A standardised questionnaire on depression and anxiety scale was used as instrument for data collection

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with reliability co-efficient (r) of 0.71. Two research questions were answered and five hypotheses tested at 0.05 level of significance. Findings from this study showed significance on depression between student athletes and non-athletes ($X^2$=58.791, df=12, p<0.05), anxiety disorder ($X^2$=50.974, df=12, p<0.05), gender difference (F=12.67, df=198, p< 0.05), joint contribution of exercise, gender and course of study ($F_{(3,195)}$= 19.877) and independent contributions of Exercise 55.5% (ß=.555, t=29.452, p<0.05), gender 30.8% (ß=.308, t=15.616, p<0.05) and study 19.9% (ß=.199, t=14.519, p<0.05). It was concluded that those students who participate in exercise (athletes) show better mental health in terms of depression and anxiety disorder than non-athletes. Also, it was recommended that the Obafemi Awolowo University, Ile Ife must see it as a point of importance to give students ample opportunity to engage in physical exercise.

**Keywords:** exercise, mental health, depression, anxiety disorder, athletes

## 1. Introduction

The efficacy of physical exercise participation in treatment and prevention of mental illness and in the promotion of wellbeing cannot be over-emphasised. Exercise participation and its benefits in human life cannot just be limited to physical dimension of health, but also to the mental dimension and other dimensions. Although there is positive relationship between exercise and mental health, the adoption of physical activity as a treatment option for mental health as against the use of antidepressant and psychological therapy in developing countries like Nigeria, remains a gap to be filled.

The desire to live healthy calls for the need to engage in exercise in order to expend some energy for both physical and mental health. According to World Health Organization (2003) exercise is any bodily movement carried out by the skeletal muscles that requires energy expenditure. Exercises such as swimming, jogging, brisk walking, gym workout, track and field, football and taekwondo among others have major positive impact on health. Some effects are well established; as a major component of energy expenditure, exercise has a great influence on energy balance and body composition. It is also recognised that physical activity is a major independent modifiable risk factor which has a protective effect on cardiovascular disease (CVD), stroke, Type 2 diabetes, colon and breast cancer. Exercise is not limited to body movements; it includes the full range of human movement from competitive sport and exercise to hobbies or activities involved in daily living. Exercise is not just beneficial to physical health alone but also to mental health. According to Mostafai (2012), exercise is for mental health as well as physical health, because human beings are physical and psychological creatures: there is a great need to create a balance.

In the area of mental health, exercise participation has been identified to have a positive relationship, as it has been proposed as a complementary, if not complete treatment, for individual with mental health challenges. Exercise is generally linked to reduced anxiety, resilience to stress, better sleep, improved mood and cognition, and

enhanced self-esteem through improved self-perceptions. According to Bratman, Hamilton and Daily (2012), exercise can improve cognitive functioning. It was also reported that at the end of an exercise programme, statistically significant decrease was found in the following areas of symptomology: somatisation, interpersonal sensitivity and anxiety among participants (Acil, Dogan and Dogan, 2008). More so, exercise helps improve reaction time, post work mood, irritability, enhanced attention, memory retention, treatment of schizophrenia and management of both positive and negative symptoms of mental health.

Among some of the selected indices of mental health identified in researches, depression and anxiety are predominant among student and the general population (Global Burden of Disease Study, 2010). Study identifies depression to be second leading cause of disability worldwide and a major contributor to the burden of suicide and ischemic disease. This finding was corroborated by Viner and Booy (2005): they stated that some of the leading mental health problems are depression, anxiety and eating disorders especially among the young individuals. According to WHO (2014), over 450 million people live with a form of mental illness or the other globally. Mental challenges account for about 160 million lost years of healthy life, of this at least 30% can be easily averted with existing interventions, making mental health illness to be estimated to contribute 15% of the global burden of disease by 2020 (Biddle, Gorely and Stensel, 2004). The disability associated with mental health illness in a community could be reduced to half with adequate care provided. More worrisome is that depression alone accounts for 4.3% of the global burden of disease and is among the largest single causes of disability worldwide (11% of all years lived with disability globally), particularly in women (WHO, 2010). In another study conducted among truck drivers in the United States, the following breakdown of their mental health status was as follows: loneliness (27.9%), depression (26.9%), chronic sleep disturbances (20.6%), anxiety (14.5%), and other emotional problems (13%) (Shattell, Apostolopoulos, Collins, Sönmez and Fehrenbacher, 2012). In the United Kingdom, between 10 and 20% of doctors become depressed at some point in their career and have a higher risk of suicide than the general population (Firth-Cozens, 2006). Miller (2008) found that respondents had a diagnosis of depression; others reported diagnoses of bipolar disorder, anxiety, eating disorders and addictions. Suicide levels are also high for doctors (Firth-Cozens, 2006), particularly female doctors (Hawton, Clements, Sakarovitch, Simkin and Deeks, 2001). The economic consequences of these health losses are equally large: a recent study estimated that the cumulative global impact of mental disorders in terms of lost economic output will amount to US$ 16.3 million between 2011 and 2030 (WHO, 2013).

Youths are not exempted from the challenges of mental health. On a global level, it is estimated that approximately 20 percent of youth, namely, well over one billion youth, experience a type of mental-health challenge or the other each year (Patel, Flisher, Hetrick and McGorry, 2007; United Nations Children's Fund, 2012). Young people are at the greatest risk of a range of mental-health challenges such as Depression, Anxiety, Suicide, Obsessive compulsive Disorder, Bipolar Disorder and a whole lot more

conditions during their transition from childhood to adulthood, these mental health challenges have been attributed to physical, psychological and emotional changes that occur during the period (Kessler, Berglund, Demler, Jin and Walters 2005). Kessler and his colleagues further conducted an Epidemiological research which suggested that the majority of individuals with mental-health challenges first experience symptoms prior to age 24. Fisher and Cabral de Mello (2011) submit that mental-health illness has been identified to negatively impact youths' development, quality of life and ability to fully participate in their community chores. College students are more likely to suffer from various forms of mental health problems than same-aged non-student populations due to multiple extra stressors, such as academic challenges, competition and achievement (Kitzrow, 2003)

Gallagher, Sysko, and Zhang (2000) reported in a survey that mental health challenges faced by students is on the increase in recent times. The survey report showed that university students display severe type of mental health illness, in which 71% students have learning problems, 38% eating disorder, 45% alcohol problems, 33% sexual assault concerns on campus, and 49% drug abuse. Overall, approximately 16% of counseling center clients had severe mental health illness problems. In a similar survey by Shiels, Gabbay, and Exley (2008), it was discovered that about half of the participants (47%) had anxiety while about 10% scored positively for depression. Depression and anxiety have wildly been researched upon among university student and among young people at different level of their education.

According to Ibrahim, Kelly, Adams and Glazebrook (2013) research findings reported depression rate among university students is high. Similarly, Miller and Chung (2009) found that university students had such severe depressive symptoms that functioning within the academic setting was a challenge. The finding stated that of the 3,200 university students reported being diagnosed as having depression, with 39.2% of those students diagnosed in the past 12 months, 24.2% currently in therapy for depression, and 35.8% taking antidepressant medication. This was supported by the survey conducted by Field, Deigo, Palaez, Deeds and Delgodo (2012), as many as 86% of universities surveyed within the United States identified increasing rates of depression within academic institutions. They further concluded that depressive symptoms led to poorer academic performances among affected students and increased their vulnerability for experiencing additional mental health challenges, including anxiety, intrusive thoughts, controlling intrusive thoughts and sleep disturbances (Field, Diego, Pelaez, Deeds and Delgado, 2012).

According to research finding by Schaal, Tafflet, Nassif, Thibault and Pichard (2011) anxiety was identified as the most prevalent disorder found in men and women. However, there is a significant gender difference showing that women are more likely to have suffered from any anxiety disorder over their lifetime than men. A large majority of men diagnosed with generalised anxiety disorder had no other anxious disorders, while women were concomitantly diagnosed with Obsessive Compulsive Disorder (OCD), agoraphobia or panic disorder significantly more often (Schaal, Tafflet, Nassif, Thibault

and Pichard 2011). Schaal and his group went further to reveal that relative to the total number of women and men diagnosed with anxiety, depression, or an eating disorder, the occurrence of all 3 of these disorders over the lifetime was identified significantly more often in women than men. In a related study by the Anxiety and Depression Association of America (2007), anxiety disorder is widely prevalent and one of the most common types of mental health problems among college students. They indicated that 75% of 40 million American students diagnosed with anxiety reported they experience their first episode of anxiety at age 22 years. Eisenberg, Gollust, Golberstein and Hefner (2007) reported that the prevalence of depression and anxiety was high among undergraduates than graduate students. The study found that panic disorder and anxiety disorder were less prevalent among undergraduates and graduate students. The researchers concluded that based on their findings the rate of anxiety disorders among females doubled that of male students.

In Africa, research findings on mental health were not different from the rest of the world. As among Egyptian university students 37% scored above the threshold for moderate depression (Ibrahim, Kelly, Adams and Glazebrook, 2013). Ethiopian university students showed symptoms of depression (Terasaki, Gelaye, Berhane and Williams, 2009). Aniebue and Onyema (2008) found among medical students from the University of Nigeria a high prevalence of depression. In a similar study among Nigeria university students met the criteria for depressive disorder, having both minor and major depressive disorder (Adewuya, Ola, Aloba, Mapayi, and Oginni, 2006). However, Oku, Oku, Owoaje and Monjok (2015) reported a higher level of poor mental health among undergraduates in Nigeria compared to previous studies prevalence rate.

Mental health problems, if left unattended to and untreated could lead to students dropping out of University, poor academic performance, low productivity, attempting or committing suicide, or engaging in other dangerous behaviors such as drug and substance abuse, violence and lots more. It is estimated that only a minority of university students with mental health problems seek and receive adequate help (Hunt and Eisenberg, 2010). One major reason for this behaviour is the fear of societal stigmatisation and discrimination. But for there to be any meaningful intervention programme, it is imperative to identify some of the predisposing factors that bring about mental health challenges among university students. Studies have identified factors that increase the vulnerability of students to poor mental health to include the following: change in life style, negative or harmful effect of overuse of technology, limited accessibility to higher education, financial burden and academic pressure.

Physical exercise is any bodily movement produced by the contraction of skeletal muscle that increases energy expenditure above a basal level. Exercise is defined as 'bodily movement that is produced by the contraction of skeletal muscle and that substantially increases energy expenditure' (US Department of Health and Human Services, 1996). The term therefore includes the full range of human movement from competitive sport and exercise to hobbies or activities involved in daily living. Everyone performs physical activity in order to sustain life; however, the amount is largely subject

to personal choice and may vary considerably from person to person as well as for a given person over time.

Physical exercise has numerous beneficial physiological effects. Experts agree that for improved health and well-being, individuals should perform physical activity at least 30 minutes on most, if not all, days of the week (Centers for Disease Control, 2001). It went further to acknowledge that for most individuals, greater health benefits can be obtained by engaging in physical activity of comparatively more vigorous intensity and/or of longer duration. Low levels of exercise are a major risk factor for morbidity and mortality from all causes (WHO, 2008).

Physical exercise can be categorised in a variety of ways. A commonly used approach is to segment physical activity on the basis of the identifiable portions of daily life during which the activity occurs. The simplest categorisation identifies the physical activity that occurs while at work, and during leisure time. Leisure-time physical activity can be further subdivided into categories such as sports, conditioning exercises, household tasks for example, yard work, cleaning, and home repair and other activities (Folsom, Kushi and Hong, 2000). Exercise can also be categorised in terms of the frequency, duration and intensity of the activity.

An athlete is a person who is good at a sport and competes in one or more sports that involve physical strength, speed or endurance. The word "athlete" in Greek means, one who participates in a contest or feat. Athletes may be professionals or amateurs. Most professional athletes have particularly well-developed physiques obtained by extensive physical training and strict exercise accompanied by a strict dietary regimen.

The primary focus of this study was to investigate the influence of exercise participation on selected indices of mental health (depression and anxiety) between student athletes and non-athletes of Obafemi Awolowo University. Exercise which is characterised with muscular movement to produce energy for the purpose of improving fitness, agility and balance plays a very significant role in the prevention and treatment of mental health among not just the student population alone but also on the general populace. Exercise has been found to be of immense benefits to the mental health service delivery due to the vital role it plays in the functioning of the human body.

Despite the overwhelming findings of positive influence of exercise on mental health, there is still poor participation on exercises among students. Obiyemi, Oyerinde, Oniyangi, Abu, and Adeoye (2013) reports that participation in physical activity is low among collegiate students in Nigeria. The decline in exercise among the adolescents and youth in the higher institutions has been identified to be a major cause of upward epidemiology pattern of sedentarily associated diseases. More alarming is that exercise levels decline remarkably among girls during adolescence into adulthood. As identified by National College Health Assessment (2009), less than 60% of college students achieve the minimal recommendation of 30 minutes per day of moderately intense exercise.

Sedentary lifestyle is associated with lower exercise and poor nutrition. It has also been linked to obesity, diabetes, low self-esteem, less life satisfaction, cardiovascular

problems, and premature death. Studies have affirmed that physical inactivity has become one of the world's leading problems (WHO, 2013). According to Hallal, Andersen, Bull, Guthold, Haskell and Ekelund (2012), in overall, the prevalence of physical inactivity around the world is 31.1%. In Africa, it is estimated as 27.5%, in Southeast Asia it is 17.0%, in America it is 43.3%, 34.8% in Europe and 43.2% in Eastern Mediterranean. Goodwin (2003) analysed data from The United States National Comorbidity Survey and found that a diagnosis of major depression, anxiety, social phobia, agoraphobia, and specific phobia were all associated with very low levels of exercise activity. Also, when comparison was made between athletes and non-athletes students, study shows that there was significant difference on the Beck depression scale, where non-athletes scored higher than athletes (Zare'por, Kamali, Alagheband, Gheisari and Sarlak, 2012). Fakhkhari (2002) concluded that the number of depression cases and the rate of contagion of this disorder were revealed more in the non-athletic student population under survey.

Sansone and Sansone (2012) discovered that generally, adherence to antidepressant medications is often poor and patients often prematurely discontinue their antidepressant therapy; it has been said that approximately 50% of psychiatric patients and 50% of primary care patients are non-adherent when assessed 6-months after the initiation of treatment Also, attendance at psychological intervention sessions can be poor since many depressed adults who may benefit from such treatments choose not to attend mental health clinics due to the perceived stigma of psychological therapies as such there has been an increasing interest in the role of physical activity as an alternative treatment and intervention for mental health challenges.

## 2. Statement of Problem

As against general opinion, students are more likely to experience mental health illness than the general population. What is more worrisome and a basis for this study is that mental health illness could go undetected among the youth. More often, it is attributed to normal adolescent behaviour that is marked by both up and down mood swing due to hormonal changes. Students are prone to anxiety and depression as a result of the challenges and stress attached to academic activities. A depressed student is at risk for many co-morbidities and behavioural health challenges such as conduct problems, personality disorders, substance abuse, obesity, interpersonal conflict, unfulfilling social relationships, academic and occupational underachievement.

Several studies have been carried out on students and mental health. Patel, Araya Chatterjee, Chisholm, Cohen, De Silva and van Ommeren (2007) worked on behavioural health risks such as substance use, unsafe sexual behaviour, violence and increased risk of communicable and non-communicable diseases, injury and mortality, Schaal, Tafflet, Nassif, Thibault and Pichard (2011) also studied and identified anxiety as the most prevalent disorder found in men and women. However, little research effort has been directed towards the effect of exercise participation on selected indices of mental health

between student athletes and non-athletes of Obafemi Awolowo University Ile-Ife with emphases on depression and anxiety disorders. These disorders have limited university students from achieving their full potentials thereby leading to drug and alcohol abuse, risky sexual behaviour, poor academic performance, low productivity, undue aggression which could translate to violence, social withdrawal, obesity and eventually death. It is in the light of these that this study intends to investigate the influence of exercise participation on selected indices of mental health (depression and anxiety) among student athletes and non-athletes of Obafemi Awolowo University Ile-Ife, Osun State, Nigeria.

### 2.1 Research Questions

The following questions were answered in this study:

1. What is the prevalence of selected indices of mental health (depression and anxiety) among students of Obafemi Awolowo University?
2. Is there difference between the mean scores of female and male students on selected indices of mental health (depression and anxiety) of Obafemi Awolowo University?

### 2.2 Hypotheses

The following hypotheses were tested for significance:

1. There will be no significant influence of exercise participation on selected indices of mental health (depression) between student athletes and non-athletes of Obafemi Awolowo University, Ile-Ife.
2. There will be no significant influence of exercise participation on selected indices of mental health (Anxiety disorder) between student athletes and non-athletes of Obafemi Awolowo University, Ile-Ife.
3. There will be no significant gender difference on selected indices of mental health (depression and anxiety disorder) between student athletes and non-athletes of Obafemi Awolowo University, Ile-Ife.
4. There will be no significant joint contribution of exercise participation, gender and course of study on selected indices of mental health (depression and anxiety disorder) between student athletes and non-athletes of Obafemi Awolowo University, Ile-Ife.
5. There will be no significant relative contribution of exercise participation, gender and course of study on selected indices of mental health (depression and anxiety disorder) between student athletes and non-athletes of Obafemi Awolowo University, Ile-Ife.

## 3. Methodology

Correlation survey research design was used for this study. The coded data were analyzed using descriptive statistics of frequency count, simple percentage, mean,

standard deviation and bar chart for the demographic variables and research questions. Chi square (CRAMMER V) and multiple regression were used to test hypotheses at 0.05 alpha level.

The population for this study comparises of male and female student athletes and non-athletes of Obafemi Awolowo University, Ile-Ife, as participants. Multi-stage sampling technique was used to select Two hundred (200) respondents from five (5) faculties. A standardized questionnaire of Center for Epidemiology Study-Depression Scale (CES-D) and Beck Anxiety inventory on Mental health (BAI) as instrument for data collection with reliability co-efficient (r) of 0.71. Two research questions were answered and five hypotheses tested at 0.05 Alpha level of significance. Frequency counts, percentages, mean scores, regression and crammer V were used for data analysis. The sample size for this study was Two Hundred (200) student athletes and non-Athletes of Obafemi Awolowo University, Ile-Ife. Multistage sampling technique was adapted to select athletes and non-athletes for this study. The multi-stages are as follows: Stage one was simple random sampling technique of Fish bowl with replacement which used to select five faculties. Stage two: Simple random technique of fish bowl with replacement to select two departments from each faculty. Stage three, purposive sampling technique was used for sampling 10 athletes and 10 non-athletes from each department, making a total of 200. Stage Four, purposive sampling technique was used to sample respondents from each department.

## 4. Results and Discussion

### 4.1 Demographic Information of the Respondents

**Table 1:** Distribution of Respondents by Age

| Gender | Frequency | Percent |
|---|---|---|
| Male | 152 | 76.0 |
| Female | 48 | 24.0 |
| Total | 200 | 100.0 |

Table 1 above shows the distribution of respondents according to gender. The table revealed that 152 (76.0%) were male while 48 (24.0%) were female. This shows that majority of the respondents were male.

**Table 2:** Distribution of Respondents by Exercise Participation

| Class | Frequency | Percent |
|---|---|---|
| Yes | 100 | 50.0 |
| No | 100 | 50.0 |
| Total | 200 | 100.0 |

Table 2 above shows the distribution of respondents according to participation in exercise. The table revealed that 100 (50.0%) do participate in exercise while 100 (50.0%) do not participate in exercise.

**Table 3:** Distribution of Respondents by Level

| Level | Frequency | Percent |
|---|---|---|
| 100level | 36 | 18.0 |
| 200level | 52 | 26.0 |
| 300level | 38 | 19.0 |
| 400level | 59 | 29.5 |
| 500level | 15 | 7.5 |
| Total | 200 | 100.0 |

Table 3 above shows the distribution of respondents according to their levels. Out of the 200 respondents, 36 (18.0%) were in 100level, 52 (26.0%) were in 200level, 38 (19.0%) were 300level, 59 (29.5%) were 400level while 15 (7.5%) were in 500level. This shows that majority of the respondents were 400level.

### 4.2 Research Questions

The following research questions were answered:

**Research Question 1:** What is the prevalence of selected indices of mental health (depression and anxiety) among students of Obafemi Awolowo University?

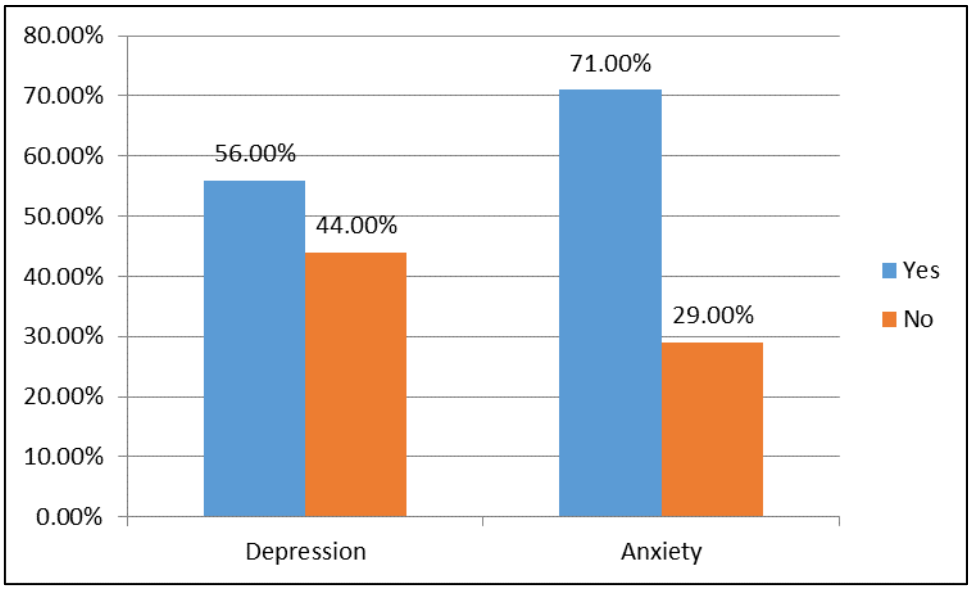


**Figure 1:** Prevalence of Depression and Anxiety

The chart above shows the prevalence of both depression and anxiety among students of Obafemi Awolowo University Ile-Ife. The chat shows that 112 (56.0%) have experienced depression while 88 (44.0%) have not. On anxiety, 142 (71.0%) experienced

anxiety while 58 (29.0%) do not. This shows that anxiety and depression has a high prevalence among students of Obafemi Awolowo University Ile-Ife.

**Research Question 2:** Is there difference between the mean scores of female and male students on selected indices of mental health (depression and anxiety) of Obafemi Awolowo University?

**Table 4:** t-test table showing difference in mean scores of female and male on selected indices of mental health (depression and anxiety disorder) among students of Obafemi Awolowo University

| | Gender | N | Mean | Std. Deviation | Mean difference | F | Df | P |
|---|---|---|---|---|---|---|---|---|
| **Indices of mental health** | Male | 152 | 32.631 | 5.1969 | 4.27 | 12.67 | 198 | .000 |
| | Female | 48 | 36.901 | 4.9826 | | | | |

Table 4 above revealed that there is difference in mean scores of female and male on selected indices of mental health (depression and anxiety disorder) among students of the Obafemi Awolowo University, Ile-Ife. The table shows a mean difference of 4.27 between male and female. The table also shows that female had a higher mean score (36.901) while male had a mean score of (32.631).

### 4.3 Hypotheses Testing

This section presents the result of the tested hypotheses.

**Hypothesis one:** There will be no significant influence of exercise participation on selected indices of mental health (depression) between student athletes and non-athletes of Obafemi Awolowo University, Ile-Ife.

**Table 5A and 5B:** Chi-square (crammer V) showing the magnitude and direction of influence of physical activity on indices of mental health (depression)

| | Value | Df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 58.791[a] | 9 | .000 |
| Likelihood Ratio | 58.221 | 9 | .000 |
| Linear-by-Linear Association | 5.172 | 1 | .023 |
| N of Valid Cases | 200 | | |

| | | Value | Approx. Sig. |
|---|---|---|---|
| Nominal by Nominal | Phi | .471 | .000 |
| | Cramer's V | .372 | .000 |
| | Contingency Coefficient | .426 | .000 |
| Interval by Interval | Pearson's R | .154 | .023[c] |
| Ordinal by Ordinal | Spearman Correlation | .120 | .076[c] |
| N of Valid Cases | | 220 | |

The tables 5A and 5B above show that exercise participation significantly influence selected indices of mental health (depression) between athletes and non-athletes of Obafemi Awolowo University, ($X^2$=58.791, df=12, p<0.05. The crammer V result shows that the influence between exercise participation and indices of mental health was moderate and positive (V=0.372, p<.05, therefore the hypothesis was rejected.

**Hypothesis two:** There will be no significant influence of exercise participation on selected indices of mental health (Anxiety disorder) between student athletes and non-athletes of Obafemi Awolowo University, Ile-Ife.

**Table 6A and 6B:** Chi-square (crammer V) showing the magnitude and direction of influence of physical activity participation on indices of mental health

| | Value | Df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 50.974[a] | 12 | .000 |
| Likelihood Ratio | 67.633 | 12 | .000 |
| Linear-by-Linear Association | 5.309 | 1 | .021 |
| N of Valid Cases | 220 | | |

| | | Value | Approx. Sig. |
|---|---|---|---|
| Nominal by Nominal | Phi | .481 | .000 |
| | Cramer's V | .368 | .000 |
| | Contingency Coefficient | .434 | .000 |
| Interval by Interval | Pearson's R | .156 | .021[c] |
| Ordinal by Ordinal | Spearman Correlation | .098 | .149[c] |
| N of Valid Cases | | 220 | |

Tables 6A and 6B above show that exercise participation significantly influence selected indices of mental health (anxiety) between athletes and non-athletes of University of Ibadan ($X^2$=50.974, df=12, p<0.05). The crammer V result shows that the influence between exercise and indices of mental health is moderate and positive (V=0.368, p<.05, therefore the hypothesis was rejected.

**Hypothesis three:** There will be no significant gender difference on selected indices of mental health (depression and anxiety disorder) between student athletes and non-athletes of Obafemi Awolowo University, Ile-Ife.

**Table 7:** t-test table showing gender difference in selected indices of mental health (depression and anxiety disorder) between student athletes and non-athletes of the Obafemi Awolowo University, Ile-Ife

| | Gender | N | Mean | Std. Deviation | Mean difference | F | Df | P |
|---|---|---|---|---|---|---|---|---|
| **Indices of mental health** | Male | 152 | 32.631 | 5.1969 | 4.27 | 12.67 | 198 | .000 |
| | Female | 48 | 36.901 | 4.9826 | | | | |

The table above revealed that there was a significant gender difference on the selected indices of mental health (depression and anxiety) between student athletes and non-athletes of the Obafemi Awolowo University Ile-Ife (F=12.67, df=198, p< 0.05). The table also shows that the mean difference between the groups was high (4.27) therefore, the null hypothesis was rejected. The table also shows that female had a higher mean score (36.901) than male with a mean score of (32.631).

**Hypothesis 4:** There will be no significant joint contribution of exercise participation, gender and course of study on selected indices of mental health (depression and anxiety disorder) between student athletes and non-athletes of Obafemi Awolowo University, Ile-Ife.

**Table 8:** Table showing the joint contribution of exercise participation, gender and course of study on selected indices of mental health (depression and anxiety disorder) between student athletes and non-athletes of Obafemi Awolowo University, Ile-Ife

| | | | | | |
|---|---|---|---|---|---|
| R = .868<br>$R^2$ = .754<br>Multiple $R^2$ adjustment = .753<br>**Analysis of Variance** | | | | | |
| **Model** | **Sum of square** | **Df** | **Mean square** | **F** | **P** |
| Regression | 543.494 | 3 | 181.164 | 19.877 | .000 |
| Residual | 1777.28 | 195 | 9.1142 | | |
| Total | 2320.77 | 198 | | | |

Table 8 above revealed that there was a significant joint contribution of exercise participation, gender and course of study on selected mental health indices ($F_{(3,195)}$= 19.877). The independent variable also yielded a coefficient of multiple regression ($R^2$) of 0.754 indicating that about 76% of the variation is accounted for by the independent variables. Hence, the null hypothesis was rejected.

**Hypothesis 5:** There will be no significant relative contribution of exercise participation, gender and course of study on selected indices of mental health (depression and anxiety disorder) between student athletes and non-athletes of Obafemi Awolowo University, Ile-Ife.

**Table 9:** Table showing the relative contribution of exercise participation, gender and course of study on selected indices of mental health (depression and anxiety disorder) between student athletes and non-athletes of Obafemi Awolowo University, Ile-Ife

| **Model** | | **Unstandardized Coefficients** | | **Standardized Coefficients** | **T** | **Sig.** |
|---|---|---|---|---|---|---|
| | | **B** | **Std. Error** | **Beta** | | |
| 1 | (Constant) | 9.938 | 1.515 | | 6.558 | .000 |
| | Exercise | 2.294 | .078 | .555 | 29.452 | .000 |
| | Gender | 2.098 | .134 | .308 | 15.616 | .000 |
| | Course of study | 1.277 | .088 | .199 | 14.519 | .000 |

Table 9 above shows for each independent variables, the unstandardised regression weight (ß), the standardised error of estimate (SEß), the standardized coefficient, the t-ratio and the level at which the t-ratio is significant. As indicated in the table, the three variables were independently significant. Exercise participation has the highest contribution of 55.5% (ß=.555, t=29.452, $p<0.05$), followed by gender with a contribution of 30.8% (ß=.308, t=15.616, $p<0.05$) while course of study contributed the least 19.9% (ß=.199, t=14.519, $p<0.05$). The hypothesis was therefore rejected.

## 5. Discussion of Findings

This study investigated the influence of exercise participation on selected indices of mental health between student athlete and non-athlete of Obafemi Awolowo University, Ile-Ife. The indices used in this study to assess the mental health of the students were depression and anxiety disorder. However, the independent influence of gender and course of study and their joint influence with exercise participation, on the selected indices of mental health (depression and anxiety disorder) between the student athletes and non-athletes of the Obafemi Awolowo University were also evaluated. The findings of the research showed generally, a clear disparity in the levels of the selected mental health indices between the student athletes and non-athlete in the University.

Both mental health indices (depression and anxiety disorder) were found to be prevalent among the two categories of students; although non-athlete students were found to be more vulnerable to these disorders than the athletes. This is in line with the study of Sedlacek and Adams-Gaston (1992) who noted that student-athletes have their own unique culture with accompanying problems in relation to their university system. The result from this study showed that the students suffer more anxiety disorder (71%) than depression (56%). However, it has been reported that mental health concerns are the most serious and prevalent health problems among students in higher education. American College of Health Association (2015) revealed that the number of college students struggling with mental illnesses such as depression and anxiety disorders is growing Association for university and college counseling (2011) reported that approximately 20% of student population contact for the counseling. In the United States of America, Kerr (2012) reported that one out of every four college students suffers from some forms of mental illness. However, reports have maintained that the best available information on the prevalence of mental illness comes from surveys at four-year colleges and universities, where approximately one in three students experience common mental health problems including depression and anxiety (Eisenberg, Hunt and Speer 2013).

## 6. Conclusion

Based on the findings of this study, it was concluded that those who participate in physical exercise (athletes) show better mental health in terms of depression and anxiety disorder than non-athletes. Also, it was concluded that male students had better mental

health than female. Further, conclusion made by the study was that physical exercise participation, gender and course of study all jointly and independently contributed to influence mental health.

## 7. Recommendations

The following recommendations were made based on the findings of this study:

1. Government policies must be taken into consideration that there is prevalence of psychological symptoms such as depression and anxiety in a lot of students and so must find a way to incorporate mental health check-ups alongside regular health check-ups of this important group.
2. The Obafemi Awolowo University, Ile Ife must see it as a point of importance to give students ample opportunity to engage in regular physical exercise regimen.
3. Sports administrators in the universities should employ the use of social media of combined efforts of teacher-led, peer-driven physical exercise to improve the mental health of the university students.

**Conflict of Interest Statement**
There is no conflict of interest in any way in this study.

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