EFFECT OF EXERCISE ON AMNESIA AMONG UNDERGRADUATE STUDENTS IN NIGERIA

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Abstract

The study investigates the effect of exercise on amnesia among undergraduate Students in Kogi, Nigeria. Proportionate sampling techniques was used to choose eighty (80) undergraduates from four (4) faculties; Arts and Humanities, Education, Management Sciences and Social Sciences. Questionnaires were used to collect the data for analysis. Time series design was used to place the participant in training for eight (12) weeks. Participants were selected using a probability sampling procedure in which they are systematically drawn from the complete student list with the faculty Dean. The descriptive statistic of mean, standard deviation (SD) was used to describe the data collected and Pearson product-moment correlation coefficient (PPMC) was used to analyze the work and a significant level of .05 alpha to test the hypothesis. There was a significant influence of exercise on the cognitive performance of undergraduate students with amnesia in Nigeria; it was also found that there was significant type of exercises that influences amnesia among undergraduate students with amnesia in Nigerian. From the findings made, the following conclusions were drawn: exercise influences cognitive performance of undergraduate students in Nigeria. Exercises such as games, Puzzles and Sudoku promotes healthy cognitive aging of undergraduate students in Nigerian. It is recommended amongst others that undergraduates should participate in physical activities early in the morning and later in the evening after their classes to help improve their cognitive.

Key words: amnesia, exercise, undergraduate students

INTRODUCTION

Amnesia is a selective memory disorder, characterized by the inability to recall past experiences or to acquire new knowledge; it originates in the limbic system, section of the brain (composed of a series of parts including the hippocampus, the amygdala, the hypothalamus etc.), which among its functions has that of maintaining memory. Amnesia can be divided into diverse categories, two of

which are based on the proximal cause of the weakening or impairments: organic amnesia and psychogenic amnesia. The biological instance of the amnesia, organic amnesia, is usually caused by brain disorders, tumors, strokes, degenerative diseases, chronic usage of selected drugs, temporal lobe surgery or electroconvulsive therapy (DANA Foundation 2007).

Amnesia is commonly caused by memory loss due to some specific circumstance, particularly brain injury, illness, or psychological trauma (passer & smith, 2007). Many people believe that memory disorder affect memory as a whole. However, this is not the case as memory is not a unitary faulty of the mind (Szpunar & Tulving (2011). Memory disorder does not actually affect all of memory, rather they only weaken selected memory system. Depending on the cause of damage, it may result in partial or complete memory loss. Amnesia can also occur either due to damage to some areas of the brain or due to some substance abuse. It may also be present in some individual at times of birth (Gazzaniga., Ivry., and Mangun 2009). According to (Budson & Price, 2005), "memory loss is often the most disabling feature of many disorders", weakening the normal daily activities of the patients and profoundly affecting the families. Classically, Amnesia is when "a person has problem recalling information from the past" (DANA foundation, 2007), however, there is many other possible memory weakening or impairments. Amnesia is a temporary or permanent state of decreased memory. Depending on the cause of damage, it may result in partial or complete memory loss. Amnesia can also occur either due to damage to some areas of the brain or due to some substance abuse. It may also be present in some individual at times of birth (Gazzaniga et.al, 2009). For those with mild cognitive impairment, exercise will still allow them to gain improved cognitive function. Exercise has been shown to improve brain flow, increase hippocampus volume and improve neurogenesis (Cass, 2017).

Exercise is physical activity that is planned, structural and repetitive for the purpose of conditioning any part of the body used to improve health and maintain fitness. There are various ways to achieve those recommended levels of physical activity including jogging, lifting weights, going to aerobic classes and swimming. It is important to differentiate types of activity as many daily activities are not strenuous enough to qualify as moderate intensity and therefore would not count towards weekly recommendation. Jogging is commonly recommended as a form of exercise due to its relatively low cost to participate and scalability (Zeblisky, 2019).

For those with mild cognitive impairment, exercise will still allow them to gain improved cognitive function it has been shown to improve brain flow, increase hippocampal volume and improve neurogenesis (Cass, 2017). The psychological memory disorders, psychogenic amnesia are much rarer occurrences than organic amnesia and are categorized by a loss or dissociation of one's identity and past experiences (Simons & Graham 2000).

According to (Windy & Gabriel, 2014), evidence shows that exercise is helpful for maintaining healthy brain functioning, other work has sought to determine more immediate benefits of exercise on cognitive functioning. Most of this research has focused on executive functioning. Lambourne et al (2010), Madan, 2011 argue that the influence of exercise on cognition may depend on the type of exercise, its duration and type of cognitive task being done. They also emphasized that exercise improves performance on task that measure response time per second, although not all response time tasks reviewed shows an exercise benefit.

Physical exercise has helpful effects on neuroplasticity and cognitions. Not only chronic effect of exercise interventions lasting for months up to years have been reported, but also a single bout of exercise has been revealed to increase performance on a large variety of cognitive task. Exercise can be considered as a physical stressor, which activates the hypothalamic – pituitary-adrenal axis (Hotting, schickert, Kaiser, Roder & schmidt- Kassow, 2016).

Amnesia can vary greatly between youths and general population. This can be explained by attributing different memory systems to the various anatomical brain regions that have come to be associated with the amnesia syndrome. The many disorders that give rise to Amnesia, including herpes encephalitis, severe hypoxia, certain vascular lesions, head injury, deep midline tumours, basal forebrain lesions and Digital amnesia which was the over-reliance on the digital devices may negatively affect an individual's memory that would raise the spectre of digital amnesia (Kopelman, 2002; Madan, 2011 & Robert & Kadhiravan, 2022), also are associated with differences in the resulting symptoms.

Stern, 2012 finding suggest that engagement in specific cognitive activities may promote healthy cognitive ageing and thereby help prevent or delay Alzheimer disease for some individuals. Another way to exercise and challenge the brain is through number puzzle (Sudoku) (Brooker, Wesnes, Ballard, Hampshire, Aarsland, Khan, Stenton, Megalogeni & Corbett; 2019).

One of the best ways to expand your learning is to teach a skill to another person. Learning and teaching of dance skills or moves can increase your brain's processing speed and memory (Sara & Lindberg, 2019). According to Klimova & Dostalova (2020), who talked about; the impact of physical activities on cognitive performance among healthy older individuals, finds that almost any physical activities might have a positive impact on the maintenance or improvement of cognitive performance among healthy students with slight memory impairment. Another researcher who talked about mind racing: the influence of exercise on long –term memory consolidation, who finds that exercise can improve long –term memory on both declarative and procedural memory tasks (Windy & Gabriel, 2014). Kramer and colleagues in 2006, also showed that even relatively short-term aerobic training (6months), prevents the Brian volume from the process of aging.

The aim of this research work is to examine the effect of exercise on Amnesia among undergraduate students. It was hypothesized through the null that there is no significant effect of exercise on cognitive performance of undergraduates, there is no significant type of exercise that influences amnesia among undergraduate. This could suggest a consideration of additional strategy by stake holders in Exercise physiology and Human Kinetics in reducing the risk of Amnesia and possibly unveil which exercise or physical activity will be most beneficial to help prevent Amnesia among the undergraduate students in Kogi state, Nigeria.

The significance of this research work could be seen in the improvements of students' performances and also to promote the need for excellent performances of undergraduates. This research could be useful in knowing the effect of exercise on amnesia among undergraduates in Nigeria. This study tends to help undergraduates with amnesia to perform some selected exercise and improve their academic participations and physical performances.

METHODS

Participants consisted of a total of eighty (80) apparently healthy students of Kogi State University. Time series design was used to place the participant in training for twelve (12) weeks. Participants were selected using probability sampling procedure in which they are systematically drawn from the complete student list with faculty Dean. Written informed consent to the dean of their faculty and assent of students were obtained before participation. All test was conducted between 8:00 am and noon, the research protocol was conducted in accordance with the principles of declaration of Helsinki and approved by the Ethics Review Board of Kogi State University, Nigeria before data

collection commenced. Throughout the duration of the project, all tests were performed in the same order by the same member of the testing team to ensure consistency.

The study was conducted at the University stadium located in Dekina Local Government Area (LGA), Kogi State of Nigeria. Exercise protocol was held for eight weeks starting from simple to complex which includes jogging, weight lifting, walking and aerobic exercise for every five days in a week. Mini Mental State Questionnaires (MMSQ) was adopted to test the participant level of cognitive before the commencement of the exercise protocol to know their baseline measurement. The exercise testing continues till after first four weeks of exercise protocol, the result was not encouraging and later proceed to eight weeks, the result was a bit better than fourth weeks, the test was also administered in the tenth (10th) weeks and was much improved. It was lastly administered and the purpose and the procedure of the test were fully examined. There was great improvement compared to eight and ten weeks respectively.

Selection of Undergraduates with Amnesia

FACULTIES	N
EDUCATION	20
ARTS AND HUMANITIES	20
SOCIAL SCIENCES	20
MANAGEMENT SCIENCES	20
TOTAL	80

Data Analysis

Descriptive statistics (mean ± SD) of measure and derived variables were used to categories the sample. Data were checked for normality of distribution before analysis and transformation were made where necessary. All categorical variables were dummy- coded before statistical analyses. Pearson product moment Correlation Coefficient was used to examine influence in the cognitive and types of exercise in University Undergraduates. All statistical analysis was performed using the Statistical Package for the Social Sciences (Window version 20; SPSS Inc, Chicago IL, USA) at an alpha level of .05 or less.

Table 1: Analysis on influence of exercise on cognitive performance of Undergraduates with Amnesia.

Variable	N	Mean	SD	r-cal	Crit. R	Remark
Exercise on cognitive performance	80	2.192	.241	.221	.217	reject
Amnesia understanding	80	3.303	.362			

P≥.217≥0.05

Table 1 shows mean, standard deviation and r-value of exercise on cognitive performance. 2.192±.241 and r value of .203. This shows that calculated r value was greater than the critical table value of (.217). The hypothesis was rejected, meaning the hypothesis is not true. This implies that exercise improve the cognitive performance of undergraduates.

Table 2: Analysis showing significance of exercise that influences Amnesia among Undergraduates

Variable	N	Mean	SD	r-cal	Crit. R	Remark
Exercise and amnesia	80	2.791	.241	.432	.217	reject
Amnesia understanding	80	3.303	.362			

P≥0.05≥.217

Table 2 shows mean, standard deviation and r value of types of exercise. 2.791±.636 and r value of .432. This shows that calculated value was greater than the critical table value. The hypothesis was rejected, meaning the hypothesis is false. This implies that the types or selected exercises such as; playing cards, swimming, dancing and walking have impact or influence on Amnesia.

DISCUSSIONS

The result of findings was presented below based on the observed hypothesis formulated.

Hypothesis one that says there is no significance influence of exercise on cognitive performance of undergraduates with Amnesia was greater than the critical r value which shows that the hypothesis is not true. This shows that exercise influence or improve the cognitive performance of undergraduates. This study was in line with that of Klimova & Dostolova, (2020) who said the molecular mechanism through which physical exercise might raise brain performance is not clear. The ageing process considerably influences almost all sectors of society including labor, finances, the procurement of goods and services (such as transportation), social protection and medical care. Older people thus seem to act as significant contributors to societal development. There might be

positive effect of physical exercise on cognitive functions, particularly on attention, verbal memory and episodic memory, regardless of the intervention and control groups.

The study equally supports that of Sara (2009) who said the brain is involved in everything we do and like any other part of the body, it needs to be cared for too. Exercise the brain to improve memory, focus or daily functionality is a top priority for many people especially as they get older.

Hypothesis Two that says that there is no significant type of exercise that influences Amnesia among undergraduates was also rejected since the calculated r value was greater than the critical r value which shows that the hypothesis is also false. This shows that selected exercises such as; dancing, number puzzle (Sudoku) and card games (whot) has significant influence on Amnesia among undergraduates. This study supports that of Sara, (2009); who said one of the best way to expand your learning is to teach a skill to another person, learning and teaching of dance skills or move can increase your brain's processing speed and memory. Equally that of Klimova et al (2020) which said dancing as a physical activity, might have the biggest effect on the enhancement of cognitive performance in healthy older individuals.

CONCLUSION

The research was based on the study of the perceived influence of exercise on amnesia among undergraduates. From the findings made, the following conclusions were drawn:

1. Exercise influences cognitive performance of undergraduate students in Nigeria.
2. Exercises such as games, Puzzles and Sudoku promotes healthy cognitive aging of undergraduate students in Nigerian.

Implication of the study

The implication of this study was to enable the participants (undergraduates) foresee the importance of exercise to the human body, memory and to prevent amnesia. It aims at preventing amnesia and putting the body in good shape.

RECOMMENDATIONS

From the observed findings, the under listed are some recommendations made for this study:

1. Participants should register and become a member of any Body fitness team; dance team, handball team, table – tennis team, volleyball team or basketball team to help improve their cognitive performance.

2. Participants should participate in physical activities early in the morning and later in the evening after their classes to help improve or shaped their physical appearance.

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