



Determining the Role of Physical Exercise on Health Promotion and Coping Strategies for Physically Challenged Students in Secondary Schools in Imo State

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Abstract

This study was aimed at investigating the role of physical exercise on health promotion of physically challenged students in secondary schools in Imo State. The study was guided by three research questions and three null hypotheses tested at 0.05 level of significance. The study was a quasi-experimental non-equivalent control group design involving a pre-test and post-test. A total sample of 94 physically challenged students (46 males and 48 females) drawn from a total population of 942 physically challenged students in senior secondary class two (SS 2) in Imo State through multistage sampling technique was used for the study. A 41 item structured instrument titled Physical Health Promotion Test (PHPT) was used for the study. The PHPT was validated by three experts (one measurement and evaluation, educational psychology and health and physical education). Cronbach Alpha method was used to determine the reliability of Physical Health Promotion Test (PHPT) and reliability index of 0.82 was obtained. Mean and standard deviation were used to answer the research questions while Analysis of Covariance (ANCOVA) was used in analysing the hypotheses. Findings of the study revealed that physical exercise affects the physical, emotional and social wellbeing of health promotion of physically challenged students in secondary schools in Imo State. The study also revealed that. Intervention using physical exercises significantly enhanced health promotion scores of physically challenged students: Gender as a factor in the study has no significant influence on health promotion scores of physically challenged students: Gender has no significant interaction effect on the mean health promotion scores of physically challenged students who were exposed to physical exercise and those not exposed. Among recommendations made were that physically challenged should be encouraged in the field of physical exercise and teachers should be interested in helping physically challenged students to participate in physical exercise for their health promotion.

Keywords: Physical Exercise, Health Promotion, Physically Challenged

Introduction

Physical activity has been identified as one of the factors that improve one's physiological functioning. For instance, (Bouchard, Blair & Haskell, 2006) defined physical activity as any bodily movement produced by skeletal muscles that results in energy expenditure. It comprises of all types of muscular activities that increase energy expenditure substantially (Shephard, 2003). World Health Organization (WHO, 2005) reported that physical inactivity is one of the factors responsible for an estimated 1.9 million annual deaths worldwide. Physical inactivity significantly is seen as one of the risk factors for non-communicable diseases (NCDs), which with the help of physical exercise could be prevented (WHO, 2005). Most people spend most of their working hours sitting down and performing some other activities which do not aid health and good living. Inability to participate in physical activity affects individuals of all ages and sexes from all walks of life in countries all over the world (Odo, Ogbu and Onuoha, 2018). The authors observed that women of all ages even the physically challenged are mostly discouraged in participating in any physical exercise.

A study which followed over 50,000 middle age women for six years and it was found out that even among women who were arid exercisers, the more television they watched, the more likely they were to gain weight regardless of how much physical exercises they did. Agu (2017) One has to play his day's or daily tasks by not only considering to increase that time one spends in exercising but also to try to reduce ones sitting time.

Participation in physical exercise aids health promotion which is the ability of the people to take control over their health and its determinants through personal intervention to improve health (Terris, 2012).

Health promotion is the enablement of the individuals, families and communities to develop their full health potential (Park, 2012). WHO (2016) indicated that health operates in three dimensions of human makeup namely: physical, emotional and social. As a result of this, issues on health promotion demands that the three aspects of human life be considered, as was done in this study. Health promotion is the process of enabling people to increase control over, and to improve their health (Ogbalu, 2018). Health promotion practices consist of activities directed towards increasing the level of well-being and actualizing the health potentials of individuals, families, communities and the society at large (Babar, 2008). The author further explained that health promotion activities aid people to move towards a state of optimal health by improving the functioning of the body systems and this enhances the psycho-social wellbeing of individuals. The scope of health promotion goes beyond the prevention and treatment of disease (Park, 2012). The main risk factor for most chronic disease is related to today's lifestyle (habits) and the highest consumption of fattening food associated with lack of time and other modern technologies that have replaced much of the basic physical activities which have caused individuals to get fatter and sick (Odo, Ogbu & Onuoha, 2018). Regular physical exercise as habit prevents the individual's vulnerability to many diseases even the physically challenged.

Physically challenged students are those students who are not capable to function in the same pace and manner other students do. Physically challenged can also be referred to as those persons who are unable to perform some or all the tasks of daily life or medically diagnosed to find it difficult to engage in activities of daily life, (Lawal-Solarin 2010). Therefore, people who experience some physical challenges are physically challenged or disabled persons. Hence, students who are physically challenged are described as physically challenged students (PCS). Physically challenged students may in some ways or the others be limited by his impairment to participate in normal school activities (Aggarwal 2014). Physically challenged could be classified as the cripple, the blind, the near blind or the partially blind, the deaf, hard of hearing, the language handicapped, cerebral palsy sufferers and orthopedically handicapped.

The education of the physically challenged children has to be organized not merely on humanitarian ground, but also on grounds of utility (Aggarwal, 2014). The author further stated that proper education generally enables a physically challenged student to largely overcome his challenges, and makes him a useful citizen. International Union for Health Education and World Health Organization (1991) reported that it is presently of great focus of the public health campaigns that individual person, even the disabled regularly participate in exercises such as swimming, table tennis, lawn tennis, badminton, aerobics exercise, golf and so on.

The effect of physical inactivities for both physically challenged and normal persons is too much in Nigeria (Abba, 2007). World Health Organization (WHO, 2016) reported that chronic diseases as a result of physical inactivities accounted for 24% of the total deaths. The WHO further reported that Nigeria lost 400million US dollars in national income to premature deaths as a result of diabetes, stroke, heart disease, and all these diseases would have been prevented in regular participation in physical activities. Abba (2007) supported that regular participation in physical activities could prevent deaths that could result from this non communicable diseases. This worrisome situation of physical inactivities deserves attention and therefore necessitated this study to determine the role of physical exercise on health promotion and coping strategies of physically challenged students of secondary schools in Imo State. Inactivity is deadly for it leads to chronic dead diseases. This is considered timely and significant in that it would make the teachers to know how to manage the physically challenged students for their health promotion.

Purpose of the study

The main purpose of the study was to find out the role of physical exercise on health promotion of physically challenged students of secondary schools in Imo State. Specifically, the study sought to:

1. Examine the difference in mean health promotion scores of physically challenged students exposed to physical exercise and those not exposed to the physical exercise.
2. examine the influence of gender on the mean health promotion scores of physically challenged students exposed to physical exercise.
3. determine the interaction effect of treatment using physical exercise and gender on the mean health promotion scores of physically challenged students.



Research Questions

The following research questions guided the study:

1. What is the difference in mean health promotion scores of physically challenged students exposed to physical exercise and those not exposed to the physical exercise?
2. What is the influence of gender on the mean health promotion scores of physically challenged students exposed to physical exercise?
3. What is the interaction effect of treatment using physical exercise and gender on the mean health promotion scores of physically challenged students?

Hypotheses

The following null hypotheses were tested at 0.05 level of significance

- HO₁: There is no significant difference in mean health promotion scores of physically challenged students exposed to physical exercise and those not exposed to the physical exercise.
- HO₂: Gender does not have significant influence on the mean health promotion scores of physically challenged students exposed to physical exercise.
- HO₃: There is no significant interaction effect of treatment using physical exercise and gender on the mean health promotion scores of physically challenged students.

Methodology

The study adopted a quasi-experimental non-equivalent control group design involving a pre-test and post-test. A total sample of 94 physically challenged students (46 males and 48 females) drawn from a total population of 942 physically challenged students in senior secondary class two (SS 2) in Imo State through multistage sampling techniques was used for the study. A Preliminary survey was conducted to identify physically challenged students in Imo State. The researcher visited the government owned secondary schools in the state and met with the class teachers and guidance counsellors in the schools. These class teachers and counsellors helped to identify students with physical challenges based on previous records in their classes and in the school. The identified students were also given the students' physically challenged identification instrument, as a confirmation or non-confirmation of their class teachers' and school counsellors' identification of them. Any student that scored 50 marks and above was identified as being a physically challenged student.

Four schools with the highest number of physically challenged students were purposively drawn. In each school, one intact class was randomly selected and the intact classes were also randomly assigned to experimental and control conditions. The identified students with physical challenge were in the same class with normal students in each of the four selected classes for the study. This was so in order not to sensitize the students with physical challenge about the experiment. However, the identified students were differentiated with a green coloured ribbon (interpreted as "you are the best") while the others had red coloured ribbon (interpreted as you are excellent). They wore the ribbon to the sessions. This helped to rule out any form of bias. At the end of the study, only the data collected from the students with physical challenge were analysed. The choice of senior secondary class two (SS 2) students was guided by assumption that the students were in the middle class of senior secondary classes. They were neither adjusting to senior secondary school syllabus as the SS 1 students were doing nor were they be preparing for external examination as the senior secondary class three (SS 3) were doing.

One instrument titled Physical Health Promotion Test (PHPT) with two training programme titled "Selected Regular Physical Activities Lesson Plan" and one "Conventional Counselling on the need for physical fitness" were developed, validated and used for the study. Crombach Alpha method was used to determine the reliability of Physical Health Promotion Test (PHPT) and reliability index of 0.82 was obtained. The Physical Health Promotion Test (PHPT) was used to identify students with physical challenge was used to ascertain the physical health of the students at pre-test and post-test. The "Selected Regular Physical Activities Lesson Plan" was used for the experimental group while the control group received "Conventional Counselling on the need for physical fitness". The data obtained were analysed using mean scores, standard deviation and Analysis of Covariance (ANCOVA).

Results

The results of the study are presented below

Research Question One

What is the difference in mean health promotion scores of physically challenged students exposed to physical exercise and those not exposed to the physical exercise?

Table 1: Pre-test-Post-test Mean Health Promotion Scores and Standard Deviation of Physically Challenged Students Exposed to Physical Exercise and Those not exposed to the Physical exercise

Groups	Pre-test		Post-test		Mean Gain Scores	Mean Gain Difference
	N	Mean	SD	Mean		
Experimental Group (SRPA)	27	19.93	3.73	28.56	3.38	8.63
Control Group	21	19.62	3.63	22.53	6.90	2.91

Result in Table 1 shows the mean health promotion scores of physically challenged students exposed to physical exercise and those not exposed to the physical exercise. The experimental groups had mean health promotion score of 19.93 with standard deviation of 3.73 at pre-test and 28.56 with standard deviation of 3.38 at post-test. The mean gain score of physically challenged students exposed to physical exercise was 8.63. On the other hand, physically challenged students who were exposed to Conventional Counselling on the need for physical fitness had mean health promotion score of 19.62 with standard deviation of 3.63 at pre-test and 22.53 with standard deviation of 6.90 at post-test. The mean gain scores of the physically challenged students who were exposed to Conventional Counselling on the need for physical fitness was 2.91. The mean gain difference of 5.72 was recorded for the two groups in favour of the experimental group that was exposed to physical exercise. The standard deviation of each group from the mean ranged from 3.38 – 6.90; indicating that the respondents were not too far from the mean and from one another in their achievements, adding further validity to the mean. The result suggests that the use of physical exercise enhances health of physically challenged students. This can be seen from the gain score of 5.72 in favour of the experimental group. The research question was further subjected to inferential testing.

Hypothesis One

There is no significant difference in mean health promotion scores of physically challenged students exposed to physical exercise and those not exposed to the physical exercise.

Table 2: Summary of the 2-Way Analysis of Covariance (ANCOVA) of Mean Health Promotion Scores and Standard Deviation of Physically Challenged Students Exposed to Physical Exercise and Those not exposed to the Physical exercise

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	561.076 ^a	4	140.269	5.392	.001
Intercept	425.589	1	425.589	16.360	.000
Pre-test PHP	120.554	1	120.554	4.634	.037
Treatment	424.077	1	424.077	16.302	.000
Gender	1.719	1	1.719	.066	.798
Treatment * Gender	13.734	1	13.734	.528	.471
Error	1118.591	43	26.014		
Total	33920.000	48			
Corrected Total	1679.667	47			

Result of the analysis in Table 2 revealed that physical exercise as a factor in the study has a significant effect on the mean health promotion score of physically challenged students. This is because the calculated F-value of 16.302 in respect of the treatment as main effect has a probability value of .000 and therefore significant at .05 level of significance. This implies that exposing physically challenged students to physical exercise significantly increased their health. Therefore, the null hypothesis of no significant difference in mean health promotion scores of physically challenged students exposed to physical exercise and those not exposed was not accepted. Therefore, the researcher concludes that there is a significant difference in mean health promotion scores of physically challenged students exposed to physical exercise and those not exposed to the physical exercise.



Research Question Two

What is the influence of gender on the mean health promotion scores of physically challenged students exposed to physical exercise?

Table 3: Pre-test-Post-test Mean Health Promotion Scores and Standard Deviation of Physically Challenged Students Exposed to Physical Exercise Based on Gender

Gender	N	Pre-test		Post-test		Mean Gain Scores	Mean Gain Difference
		Mean	SD	Mean	SD		
Male	27	19.52	3.85	25.83	5.57	6.31	.47
Female	21	20.21	3.38	26.05	6.70	5.84	

Result in Table 3 shows that at the pre-test, male physically challenged students had mean health promotion score of 19.52 with standard deviation of 3.85 while female physically challenged students had mean health promotion score of 20.21 and standard deviation of 3.38. At the post-test, male physically challenged students had mean health promotion score of 25.83 and standard deviation of 5.57 while their female counterpart recorded mean health promotion score of 26.05 with standard deviation of 6.70. The results therefore, show that both male and female students had an increased post-test mean health promotion score. However, male physically challenged students had slightly higher mean health promotion score than their female counterpart. This can be seen from a very slight mean gain difference of .47 in favour of the male physically challenged students. The standard deviation of each group from the mean ranged from 3.38 – 6.70; indicating that the respondents were not too far from the mean and from one another in their health promotion score, adding further validity to the mean.

The research question was further subjected to inferential testing.

Hypothesis Two

Gender does not have significant influence on the mean health promotion scores of physically challenged students exposed to physical exercise.

Data in Table 2 revealed that gender as a factor in the study has no significant effect on mean health promotion scores of physically challenged students in the experimental group exposed to physical exercise. This is indicated by the fact that the F-value of .066 which has a probability value of .798 is not significant at 0.05 levels. This implies that the null hypothesis of no significant gender influence on the mean health promotion scores of physically challenged students exposed to physical exercise was accepted. The researcher therefore, concludes that there is no significant influence of gender on the mean health promotion scores of physically challenged students exposed to physical exercise.

Research Question Three

What is the interaction effect of treatment using physical exercise and gender on the mean health promotion scores of physically challenged students?

Table 4: Mean and Standard Deviation of Interaction Effect of Treatment and Gender on Mean Health Promotion Scores of Physically Challenged Students

Groups	Gender	N	Mean	Std. Dev.
Experimental Group (ITS)	Male	16	28.19	2.97
	Female	11	29.09	3.99
Control Group	Male	13	22.92	6.70
	Female	8	21.88	7.64
Difference in Treatment and Control Group by Gender	Males		5.27	
	Females		7.21	

Result of the analysis in Table 4 revealed that male physically challenged students exposed to treatment using physical exercise had a higher mean health promotion score of 28.19 and a standard deviation of 2.97 as against their male counterparts in the control group that were not exposed to treatment that had a mean health promotion score of 22.92 with standard deviation of 6.70; giving a mean difference of 5.27. On the other hand, female physically challenged students exposed to treatment using physical exercise had a higher mean health promotions core of 29.09 and a standard deviation of 3.99 while their female counterparts in the control group had

a mean health score of 21.88 with standard deviation of 7.64; giving a mean difference of 7.21. The results do not suggest ordinal interaction effect between treatment and gender on health promotion scores of physically challenged students. This was because at all the levels of gender, the mean health promotion scores were higher for physically challenged students in the experimental group than those in the control group.

The research question was further subjected to inferential testing.

Hypothesis Three

There is no significant interaction effect of treatment using physical exercise and gender on the mean health promotion scores of physically challenged students.

The result of the analysis in Table 2 was also used to test hypothesis three. The Table shows that there is no significant interaction effect of treatment using physical exercise and gender on the mean health promotion scores of physically challenged students. This is shown by the F-value of .528 which has a probability value of .471 and therefore not significant at 0.05 levels. The null hypothesis of no significant interaction effect of treatment using physical exercise and gender on the mean health promotion scores of physically challenged students was therefore not rejected. Therefore, gender has no significant interaction effect on the mean health promotion scores of physically challenged students who were exposed to treatment using physical exercise.

Summary of Findings

The major findings of the study were that:

1. Intervention using physical exercise significantly enhanced health promotion scores of physically challenged students. This is evident from the fact that physically challenged students exposed to training using physical exercise had higher health promotion mean score than those not exposed to physical exercise.
2. Gender as a factor in the study has no significant influence on the health promotion scores of physically challenged students. This implies that both male and female physically challenged students exposed to physical exercise benefited uniformly.
3. Gender has no significant interaction effect on the mean health promotion scores of physically challenged students who were exposed to physical exercise and those not exposed. This implies that the improvement in the health promotion scores of physically challenged students was caused by the intervention using physical exercise and no other factors.

Discussion of the Findings

The results of this study indicated that instructional technique via regular exercise on selected physical activities generally improves physical well-being as an aspect of health promotion of physically challenged students. This finding is in conformity with Carmen (2011), Ogunijimi, Akpan & Ikoro (2012), and Suoke & Amidu (2007) whose studies revealed that physical exercise plays vital roles in life prevention and management of overweight or obesity.

The results of the study also indicated that regular exercise affects emotional well-being of physically challenged students. This agrees with Haworth (2008) whose study noted that physical exercise reduces depression and anxiety of physically challenged students. Introduction of exercise has positive effect on social well-being of the physically challenged students. The finding is in line with Park (20012) who observed that physical exercise has positive effect on social well-being of physically challenged students.

Conclusion

There is a significant difference in the mean healthy promotion score between physically challenged students who participated in exercise and those who received conventional method of instruction. Hence the analysis of these results revealed that the exercise has a high and a better effect on health promotion of physically challenged students than the conventional approach. There is no significance difference in the mean health promotion between boys and girls participating in exercise and therefore participation in exercise is not gender biased during instructional process. There is a significant difference in the mean health promotion scores of physically challenged boys and girls who were exposed to physical exercise and those not exposed. Physical exercise improves health promotion of physically challenged students but not significant enough to show gender differences by the intervention of regular physical exercise.



Recommendations

Based on the findings of this study, it is recommended that:

- I. Health and physical educators should devise alternative method of instruction to influence health promotion of physically challenged students owing to the degree of inadequacies associated with conventional method of instruction.
- II. Physical exercise improves health promotion of physically challenged students and teachers should incorporate regular physical exercise in their instructional delivery.
- III. School administration, government and cooperate bodies should invest and support physical exercise of physically challenged students for its potentials in promoting health.
- IV. Training should be provided for health and physical education teachers who do not have prior knowledge of physical exercise for physically challenged students.
- V. Since physical exercise is not gender biased during instructional process, it should be used to bridge the gender gap often envisaged in the conventional teaching method to physically challenged students.

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