Research Article

IT Medical Team
https://www.itmedicalteam.pl/

Health Science Journal
ISSN 1791-809X

2023
Vol. 17 No. 3: 1002

Sex Differentiation, Sport Skill Intervention and Physical Fitness Status of in-School Adolescents in Two Selected High Schools in Nigeria

Aderonmu Kehinde Adebayo[1], Ogundiya Olaniyi*[2]

1 Department of Kinesiology, Health Education and Recreation Faculty of Education Obafemi Awolowo University

2 PVG Training and Educational Consult Limited Manchester, United Kingdom

***Corresponding author:**
Ogundiya Olaniyi

Ogundiya2@yahoo.com

PVG Training and Educational Consult Limited Manchester, United Kingdom

Citation: Adebayo AK, Olaniyi O (2023) Sex Differentiation, Sport Skill Intervention and Physical Fitness Status of in-School Adolescents in Two Selected High Schools in Nigeria. Health Sci J. Vol. 17 No. 3: 1002.

Abstract

This The purpose of the study was to examine the effect of sport skill acquisition in two selected sports on the physical fitness status of male and female in-school adolescence in secondary schools. Experimental research design was adopted for the study. The American Alliance for Physical, Health Education, Recreation & Dance (AAPHERD) Youth Fitness Test (1976). A battery test designed to measure both the performance-related and health-related components of physical fitness respectively was administered on 160 participants who took part in an eight-week structured exercise intervention using the pre-post- test method. The result revealed a significant effect of the sport skill training intervention on physical fitness status of participants. Thus, it could be concluded that basketball and badminton skill training had a significant effect on the physical fitness of adolescent based on their sex.

Keywords: Sport Skill; Skill Acquisition; Training; Physical Fitness; Performance-Related Components; Health-Related Components; Sex

Received: 16-Feb-2023, Manuscript No. Iphsj-23-13501; **Editor assigned:** 20-Feb-2023, Pre-QC No. Iphsj-23-13501 (PQ); **Reviewed:** 06-Mar-2023, QC No. Iphsj-23-13501; **Revised:** 13-Mar-2023, Manuscript No. Iphsj-23-13501 (R); **Published:** 20-Mar-2023, DOI: 10.36648/1791-809X.17.3.1002

Introduction

Physical fitness is the capacity to perform physical activity and making reference to a full range of physiological and psychological qualities. It also can be thought of as an integrated measure of most, if not all, the body functions. Posited that, this is the reason why nowadays, physical fitness is considered one of the most important health makers, as well as a predictor of morbidity and mortality for cardiovascular diseases and for all causes. Enhanced physical fitness levels are thought to help an individuals' mental state of mind. According to Neeser (2005) improvement in body tone and composition promote physical self-worth and therefore contribute to self-esteem in conjunction with this is the feeling of belonging and affiliation with others [1, 2]. Physical fitness is important throughout life, but it is particularly crucial during childhood and adolescence. Physical fitness can be thought of as an integrated measure of most, if not all the body functions involved in the performance of daily activities and /or physical exercise. Physical fitness is considered a multidimensional construct, including different components such as cardiovascular endurance, muscular strength/power, flexibility, and motor coordination. Furthermore, fitness is generally defined with a focus on two goals; performance and health. Performance-related fitness refers to the components of fitness that are central for optimal work or sport performance (e.g., agility, balance, coordination, power, reaction time, and speed), whereas health-related fitness refers to the components that more directly relates to health status such as cardiorespiratory fitness, muscular strength and endurance, flexibility, and body composition. Generally, strength training and aerobic training have been proposed as two of the most important types of physical activities to have beneficial effect on self-esteem [3].

Fox (2000) suggests that weight and resistance training may be superior to endurance training in improving body image and self-esteem. Enhanced physical fitness usually leads to an increase in lean body mass and physical abilities and a decrease in body fat mass, which in turn may affect the way adolescents perceive their physical self. Childhood and adolescence are crucial periods of life; since dramatic physical and psychological changes take place at these ages. Likewise, lifestyle and healthy / unhealthy behaviours are established during these years. Physical fitness is important throughout life, but it is particularly crucial during childhood and adolescence. A study carried out by Schneider, Dunton & Cooper (2008) involving 146 (n=79 experimental; n =67 control) although only 120 females were finally analysed – n= 61 (intervention); n = 59 (control). Intent to treat analyses showed that nine month improvement in cardiovascular fitness were significantly larger for the intervention group than the control or comparison group. Participants who increased their fitness did experience enhanced

global physical self-concept. In another study, on how perceived sport competence mediates the relationship between childhood motor skill proficiency and adolescent physical activity and physical fitness, involving 276 students. For male and female combined fitness was significantly positive. Goudas, Dermitzaki, Leondari & Danish (2006) employed a wait-list control group design and how physical Education students tested in seat and reach, seat-up test, results showed gains in physical fitness. To test this hypothesis, students in badminton and basketball training groups were assigned rate based on their performances in each of the performance related components measured, i.e. (power, speed, agility and strength). The minimum score for power as determined by the maximum vertical jump scores were 10m and 58m. The mean for vertical jump was 35.54m. Vertical jump performance ranging from 10m-24m, 25m-42m and 43-58m was assigned one point, two points and three points respectively. The average speed of the sampled adolescents was 10.92 seconds with a minimum and maximum speed of 7.65sec and 14.40 sec respectively. Speed performance ranging from 7.65sec - 10.00sec, 10.01sec-12.00sec and 12.01sec - 14.40sec was also assigned scores ranging from one, two and three points respectively. This same scoring procedure was repeated for Agility and Sit- up performances. Participant's score in each of the components were cumulated to generate physical fitness score [4]. The difference in the mean scores for physical fitness in each of the groups for pre and post- training test of male and female were analyzed using two way ANOVA statistics. The results are summarized in. Hypothesis: There will be no significant effect of participating in badminton and basketball skill training on the physical fitness status of adolescents based on and sex.

Methodology

The study employed the pre-test and post-test experimental design. The population for this study consisted of all in- school adolescents in junior and senior secondary schools in Osun State. The sample size comprised 160 students. The stratified random (intact class) sampling technique was adopted in the selection of samples for the study. A Local Government Area (LGA) was selected randomly using balloting method [5]. Out of the nine schools in the LGA, two co-educational secondary schools were selected purposively for the study. The purpose sampling technique was used because of their proximity to the intended facilities and the multi-representation of students from different background and age brackets which fully represents the target participants drawn from the Junior Secondary School class 2 (JSS2) and the Senior Secondary School 2 (SSS2) classes respectively. The experimental groups were 40 participants each from Atakumosa High School Osu (Basketball), and Ibodi Grammar School, Ibodi (Badminton). The control groups (80 boys and girls) were 40 participants each from another intact-class from the same selected schools. Sex differentiation was put into consideration in the selection and these two classes needed for the study. All participants were novice or adolescents that have no knowledge of the skills of the selected sports. The research instrument for the study was the American Alliance for Physical, Health Education, Recreation & Dance (AAPHERD) Youth Fitness Test (1976). A battery test designed to measure both the performance-related and health-related components of physical fitness respectively [6].

The Physical Fitness Inventory comprises the following performance-related components; muscular power, muscular strength, agility and speed were selected for the study. The following fitness tests were adapted to measure each; Muscle power (Vertical jump test); Muscle endurance (sit-up test) speed (20 metres sprint test) and Agility (T-Test). Equipment such as stop watches, measuring tape, traffic cones and a wall was used in conducting the tests. The following are the procedures that were used for each of the fitness tests i. The Vertical Jump Test: The participant stood in a 50cm-by-50cm square with right side near a wall and stretched his or her right hand in preparation for an initial measurement. The tester marked the height with a chalk (coloured) and then asked the participant to squat down and performed a maximum vertical jump and touched the marked area with his middle finger [7].

The participant was allowed to repeat the jump for three times and the difference between highest jump and the marked area was recorded. ii. Sit-up test: is a test of muscle endurance and the participant will sit on the floor/mat with the knees flexed at 90 degree and feet are fixed on the floor/mat manually by the tester (research assistant), arms are crossed over the chest. The participant performed sit-up as many as possible in one minute. One sit-up is completed as the scapulae are back and contacted the floor/mat after elbows had touched the thigh.

I. Sprint Test: this is a test for speed of participants; the test instrument consisted of a starting line 2.44m broad, two 1.22m wide lanes, a finish line, and 20m from the starting line. The participants ran together in twos. The pair stood behind the starting line. The sprint-start commands "On your mark", "Set" were given and at the last command "Go" the starter dropped his arm so that the timers at the finish line could start the timing. Participants ran at full speed across the finish line. The watches were stopped at the instance of the runners getting to the finish line. The elapsed time from the starting signal until the runner crossed the finished line was measured to the nearest tenth of a second. A runner would be disqualified if he or she set out before the "Go" command, or crossed to the other runner's lane. The runner will re-run the race again after adequate rest.

II. T-test: is a test of agility for participants and includes forward, lateral, and backward running. Set out four (5 yards = 4.57 m, 10 yards = 9.14 m). The participant starts at cone A. On the command of the timer, the subject sprints to cone B and touches the base of the cone with their right hand. They then turn left and shuffle sideways to cone C, and also touch its base, this time with their left hand. Then shuffling sideways to the right to cone D and touching the base with the right hand. The participants then shuffle back to cone B touching with the left hand, and run backwards to cone A. The stopwatch is stopped as they pass cone A. Each participant was allowed three successful trials and the best time of the trials to the nearest 0.1 seconds was recorded. The trial will not be counted if the participants cross one foot in front of the other while shuffling, fails to touch the base of the cones, or fails to face forward throughout the test. Apart from the V-jump in which height attained shall be measured in metres; time would be used to measure other tests.

Results

Table 1 present the mean pre and post-treatment physical fitness score of male and female students in basketball, badminton and control. To test if there were significant effects of training on physical fitness status of male and female participants, a two way analysis of variance was attempted (**Table 2**).

Data in Table 2 showed that there was significant effect of training on physical fitness status of students in pre and post groups of basketball, badminton and control ($F=3.46$, $P < 0.05$) and ($F= 20.36$, $P < 0.05$) respectively. Post hoc analysis was carried out to determine the location of the significant effect observed among groups. Result of the post hoc analysis is summarized in Table 3 (**Table 3**).

Data in Table 3 showed that there was significant effect of physical fitness training on gender between pre- treatment basketball and badminton ($F = .911$, $P < 0.05$), pre- treatment basketball and control ($F = .695$, $P < 0.05$), post- treatment basketball and control ($F = .696$, $P < 0.05$) and post treatment badminton and control ($F = .982$, $P < 0.05$). The significant differences noticed between the basketball/ control and badminton/ control at the post- treatment stage suggested that the physical fitness status of the experimental groups of basketball and badminton improved with training while the control group remained at baseline. Thus it could be concluded that basketball and badminton skill training had a significant effect on the physical fitness of male and female adolescents [8].

Thirdly, the result of the analyses showed that there was significant effect of the skill training of badminton and basketball on the physical fitness of adolescents who participated than their counterparts who did not participate in any skill training. This result is consistent with the findings of a study carried out by Schneider, Dunton & Cooper (2008) involving 146 (n=79 experimental; n= 67 control) although only 120 females were finally analyzed – n= 61 (intervention); n = 59 (control) [9-11]. Intent to treat analyses showed that nine month improvement in cardiovascular fitness were significantly larger for the intervention group than the control or comparison group. Also, significant

Table 1. Descriptive statistics of pre and post-treatment physical fitness status based on sex.

			Pre-treatment		Post-Treatment	
Groups	sex	N	X	SD	X	SD
Basket ball	Male	22	7.3182	83873	8.6364	78954
	Female	18	7	1.19523	8.8333	85749
	Total	40	7.1892	99549	8.725	81610
Badminton	Male	24	8.1667	96309	9.1667	86811
	Female	16	8	73030	8.875	71880
	Total	40	8.1	87119	9.05	81492
Control	Male	46	8.0435	59466	8.2826	71997
	Female	34	7.6562	86544	7.7941	1.03805
	Total	80	7.8846	73821	8.075	89690
Total	Male	92	7.9022	82622	8.5978	85240
	Female	68	7.5873	97773	8.3235	1.05719
	Total	160	7.7742	90129	8.4813	95148

Table 2. ANOVA summary table showing difference in physical fitness status of students in basketball, badminton and control groups by sex.

	Sum of squares		Df	Mean Square		F		Sig
Corrected Model	Pre	Post		Pre	Post	Pre	Post	
Intercept	21.859a	34.385a	5	4.372	6.877	1.573	9.666	>.05*
Groups	7921.267	10382.54	1	7921.264	10382.54	3.07E+04	1.46E+04	>.05*
Students sex	17.473	28.97	2	8.736	14.485	3.466	20.36	<.05*
Groups Students-Sex	2.824	1.327	1	2.824	1.327	895	1.865	>.05
	310	3.096	2	155	1.548	701	2.176	>.05*
Total	9493	11653	155					
Corrected Total	125.097	143.944	154					

* Sig = $P < 0.05$

Table 3. Summary of post hoc statistics comparing effects of sports skill training on pre and post-treatment groups' physical fitness status.

		Pre-Treatment			Post-Treatment		
Students	Students	Mean Difference	Std. Error	Sig	Mean Difference	Std. Error	Sig
Groups	Groups	-9108	18986	*000	-286	191	136
Basketball	Badminton	-6954	16616	*000	696	165	*000
	Control						
Badminton	Basket ball	9108	18986	*000	286	191	136
	Control	2154	16188	415	982	166	*000
Control	Basketball	6954	16616	*000	-696	165	*000
	Badminton	-2154	16188	415	-982	166	*000

improvement in cardiovascular fitness between intervention groups was reported. Participants who increased their fitness did experience enhanced global physical self-concept.

Conclusion

The present study established the fact that participation in basketball and badminton sport programs leading to the acquisition of basic skills resulted in improved physical fitness status of adolescents' male and female secondary school students.

Recommendation

Adolescents should be encouraged to acquire basic skill in sport so as to improve their self-image, and the sport program in whatsoever form should be to ensure the development of positive self- esteem in the participants. Individuals with low self-esteem and distorted body image should be made to participant regularly in organized programs for sports e.g. basketball and badminton. This implies that the school authorities should encouraged through the provision of adequate facilities and equipment, mass participation of student in sport skill training program and sports that have the capacity to generate objective and observable feedback effects(e.g. badminton and basketball) should be concentrated on.

It is also recommended that the practical aspect of physical education and sport should be emphasized in school as this will induce an unconscious display in hidden characteristics in participants. As the true self of an adolescent is better seen in situation of practical participation in games. To achieve that, adequate caution should be exercised in inculcating knowledge of sport skills and in reacting to participants responds to learning processes, teachers should guard against leading the youths to develop negative concept. Finally, a public awareness campaign should be carried out using the media, social networks (Facebook, twitters, Whatsapp, Tik Tok, blogging etc.) and the Parent Teacher Association and social institutions to enlighten the populace especially parents of the positive benefit that participation in exercise, physical activity and sport will impact on the physical, educational, emotional, social and psychological well-being of adolescents and to allow them participate fully in organized school sports.

References

1 American Alliance of Physical, Health Education, Recreation and Dance (AAPHERD) (1976). Youth fitness test manual. Washington D.C.

2 Barnett LM, Morgan PJ, Van-Beurden E, Beard JR (2008) Perceived sport competence mediates the relationship between childhood motor skill proficiency and adolescent physical activity and fitness: a longitudinal assessment. Int J Beh Nut Phy Act 5: 40.

3 Fox KR (2000) Self-esteem self-perception and exercise. Int J Sport Psych 31: 228-240.

4 Goudas M, Dermitzaki E, Leondari A, Danish S (2006) The effectiveness of teaching a life skills programme in a physical education context. European J Psych Edu 21: 429-438.

5 Hallal PC, Victora CG, Azevedo MR, Wells JC (2006) Adolescent physical activity and health: A Systematic Review. Sport Medicine 36: 1019-1030.

6 Larun L, Nordheim LV, Ekeland E, Hagen KB, Heian F (2006) Exercise in prevention and treatment of anxiety and depression among children and young people. Cochrane DbSyst Rev 4.

7 Myers JE, Sweeney TJ, Zitmer JM (2000) the wheel of wellness. Counselling for wellness: A holistic model for treatment planning. J Couns Dev 78: 251- 266.

8 Nesser KJ (2005) Aging studies. School of sport science, Chulaonkom University, Bangkok, Thailand.

9 Ortega EB, Ruiz JR, Castillo MJ, Sjostrom M (2008) Physical fitness in childhood and Adolescent: a powerful maker of health. Int J Obes 32: 1-11.

10 Schneider M, Dunton GF, Cooper DM (2008) Physical activity and physical self-concept among sedentary adolescent females: an intervention study. Psychol. Sport Exerc 9: 1-14.

11 Vanhees L, J Lefevre R, Philippaerts (2005) How to assess physical activity and how to assess physical fitness? Euro J Card Res 12:102-114.