

EFFECT OF AGILITY AND STRENGTH ON ACADEMIC ACHIEVEMENTS OF SECONDARY SCHOOL STUDENTS IN PHYSICAL EDUCATION IN CALABAR, CROSS RIVER STATE, NIGERIA

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Abstract

This study investigates the effect of agility and strength on academic achievement of secondary school students in physical education in Calabar, Cross River State, Nigeria. To achieve the objective of this study, two hypotheses were formulated to guide the study. Literature was reviewed according to the hypotheses directing the study. The survey research design was adopted for the study. Total samples of two hundred (200) respondents were randomly selected for the study. The selection was done through the simple random collection. A questionnaire instrument was constructed by the researchers with the help of some measurement experts that gave it face and content validity. To test the hypotheses and to ascertain whether to accept or reject them, Pearson Product Moment Correlation Analysis was considered appropriate because of the nature of the variables involved. The 0.05 level of significance was used for the statistical testing of each hypothesis with critical values and degrees of freedom. The results showed that, there is significant effect of agility and strength on academic achievement of secondary school students in physical education. Based on the findings of the study, recommendations and suggestions for further studies were made.

Introduction

Physical education is education through the physical and it is concerned with all the experiences which come to man through movement for the development of physically, socially, mentally, morally, skillfully and emotionally balanced individuals in the society (Oki, 2003). According to Akpong (2000), hunting, fishing, warfare, dancing and playing evolve as a result of general physical education tendencies and to some extent why primitive people and all persons in general have been likely to engage in motor activities whether they want or not. Whether these activities should be characterized as “work” or “play” depends on the motive behind the participation in the activity. Work is characterized by need and necessity and is more or less compulsory. On the other hand, he said, “play” is spontaneous, internally driven and utilized for fun and relaxation.

The researchers in their own opinion said, physical education may be new to a beginner taking a course on the subject but the practice is as old as man. In the primitive times, the various types of physical activities known today were all in practice, but the increased dependency on automation and mechanization has drastically reduced man’s daily physical activities. Akintunde (2001) saw physical education as a process of training the mind and the body through the use of carefully selected physical activities. It is an education that recognizes that learning is made easier through practicals than through words. According to him, it is the



process of developing an individual to become a full and a good citizen (that is, developing the whole man).

According to Agbede (2002) the mind and the body are developed together, neither the body nor the mind can be dismembered from each other. It is the interaction of the two that produces a physically educated individual. Afuekwe (1999) identified physical education as an important factor that has a beneficial value on the child's academic achievement both in physical education and in other areas in school. Among these values include the following that; physical activities contribute to physical fitness through the intensive training provided during the activity. Various components of physical fitness such as flexibility, agility, strength, speed, endurance and co-ordination are developed. Jackson (1994) supported that, the participants or students, who avail themselves in advanced training programmes that are essential, perform excellently in physical education activities.

Literature Review

Agility and Academic Achievement in Physical Education

According to Moses (1996), agility is the ability to change body position in space efficiently and easily. Agility is necessary for the hurdlers, divers, gymnasts etc. Specifically in sports, agility is characterized by fast feet, body coordination during change of direction, sports skill performance and reaction time. Students of physical education who take active part in physical activities perform excellently in activities that are agility related as mentioned above.

Nkagbor, (1998) in his book, Mohammed Ali was the greatest, stated that the champion had a superb athletic physique (body), awesome, punching power and one of the fastest pairs of feet and hands ever to grace any athlete, let alone a boxer. He was so quick, he boasted, that he could flick off the light switch and then get into bed before the light went out. May be he was exaggerating his ability here, but the champion was incredibly agile. He asked a question, so what can one do to develop equally ferocious ability in students' academic achievement in physical education. Nkagbor also said that agility is an amalgam of balance, speed, coordination etc., although a student's agility relies heavily on the acquisition of optimum academic achievement techniques in physical education through physical activities. It can also be enhanced by specific conditioning.

A variety of performance enhancing agility drills, and items of equipment are available to the students of physical education of today and their teachers or coaches. The science of agility (speed and power) training has made rapid strides recently, especially in terms of accessibility to the mainstream of sporting world. Okplenye (2002) supported that agility to a large extent promotes academic achievement in physical education. He further stated that, those that are agile perform better and longer in sporting activities. Essentially, agility training dissects sports skill, a skill like the fast-stepping ability required of a rugby player is broken down into its constituent parts, which are then specifically trained. It is all about patterning and conditioning a heightened physical, neural, sport-specific response. Agility and speed work together, because who is agile must have speed. Therefore, speed is defined as the ability to make series of similar movements in a short span of time. Speed is necessary for the sprinters, hurdlers etc., and it can be improved through constant practice.

Strength and Academic Achievement in Physical Education

According to Ikeonu (1989), muscular strength and endurance is the ability to make proper use of the needed number of muscle fibres to execute a given task. Regular and meaningful exercises which involve the muscles help to achieve muscular strength and endurance. Ntui (2005) defined strength as a physical quality permitting the muscle to overcome either a static external or artificial resistance (weight) or natural resistance gravity. It is a qualitative effort of a short duration and requiring a very long recuperation period. Strength is of muscular and nervous origin. According to him, from a physiological perspective, muscular strength is proportional to the size of the muscle fibre (the larger the muscle, the stronger it is). Strength depends on neuromuscular co-ordination and on the action of the body levers on the articulations. It is estimated that strength can be developed up to 200% of its initial value. Its improvement is carried out by working with heavy weights which provoke an increase in the muscle mass (weight).

Ntui concluded with a caution, he said contraction of healthy muscle against resistance so that the muscles cannot shorten (isometric exercises) is of little value except to physical education students. Muscles exercised in this way become larger and stronger for physical activities but there is no increase in endurance, which may even be reduced because there is no corresponding increase in blood supply to the bulky muscles. He said again that, in older people with arterial degeneration, isometric exercises are not only useless but dangerous because they cause a considerable rise in blood pressure which may rupture the diseased arteries.

Since students of physical education who take active part in physical activities require enough strength to perform better in their academics, therefore, they need to go extra miles to get this done by engaging in strength training. Strength training is an essential element of fitness for every student who takes part in physical activities. Gone are the days when physical education teachers and coaches believed resistance exercises only added unnecessary bulk to the students, hindering their ability to execute skills. Bompa (1999) stated that, the benefits of strength training to students psychomotor achievement are enormous and many. He said that not only is it an integral conditioning component for power, students such as footballers and rugby players performance in the pure endurance events can be improved with a well-structured strength routine.

However, aside from body builders, sport-specific resistance training requires a more refined approach than simply lifting heavy weights to complete exhaustion. Johnson (2002) said, a physiological analysis of any game or event will confirm that most students of physical education require explosive power, muscular endurance, maximal strength or some combination of all the three in order to excel. Rarely is pure muscle bulk the primary concern and when it is, other elements of strength are equally as important.

Hoff (2002) emphasized on strength endurance. He said explosive power is not always the predominant goal of the strength training programme. For physical activities such as distance running, cycling, swimming and rowing, strength endurance is a major limiting factor. He again said, the greater amount of starting maximal strength, the more of it can be maintained for a prolonged period. Strength endurance can be developed through circuit training or the use of low weights and high repetitions. However, many strength endurance programmes are inadequate for endurance based sports. A set of 15-20 repetitions for example does not condition the neuromuscular system in the same way as a long distance event. Moses (1996) also talked on strength, but laid more emphasis on maximal strength.



Methodology

Design: In this study, the researchers made use of the survey research design which is meant to describe and interpret existing conditions of the students in physical education.

Population: The population of this study consists of all students in Calabar, Cross River State.

Sample: A total number of 200 students were randomly selected from all the public secondary schools in Calabar. The sample technique employed in selecting the sample size was the stratified random sampling technique.

Instrumentation: The main instrument used for data collection was the questionnaire. The closed ended questionnaire was constructed and administered to the respondents to enable them choose the alternatives that best describe their opinions.

The questionnaire contained two parts. Part 1 is focused on the demographic data of the respondents, while part 2 contained data on agility and strength on academic achievement of students in physical education.

Validity of the instrument: The instrument used for data collection was validated using factors to contain validation. Each of the items in the questionnaire was formulated to relate to the topic under investigation.

Reliability of the instrument: To determine the reliability of the instrument used for this study, test-retest reliability was conducted on a smaller sample size using Pearson Product Moment Correlation Coefficient (r) and the result yielded 0.70. This shows a high level of reliability.

Hypothesis one

There is no significant effect of agility on academic achievement of secondary school students in physical education. (independent variable-agility, dependent variable- academic achievement). The result of the analysis is presented in table 1.

Table 1

Pearson Product Moment Correlation Analysis of effect of agility on academic achievement in physical education (N=200)

Variables	$\sum x$ $\sum y$	$\sum x^2$ $\sum y^2$	$\sum xy$	r-value
Agility	3398	11546404	6745	0.64
Academic Achievement	3347	11202409		

Significant at .05 level, df=198, critical r=.138.

The result of the statistical analysis as presented in table 1 indicates that the calculated r-value of 0.64 is greater than the critical r-value of .138 at 05 level of significance with 198 degree of freedom. This result is significant and the null hypothesis was rejected. This means

that there is a significant effect of agility on academic achievement of secondary school students in physical education.

Hypothesis two

There is no significant effect of strength on academic achievement of secondary school students in physical education.(independent variable-strength, dependent variable-academic achievement in physical education). The result of the analysis is presented in table 2.

Table 2
Pearson Product Moment Correlation Analysis of effect of strength on academic achievement in physical education (N=200)

Variables	$\sum x$	$\sum x^2$	$\sum xy$	r-value
Strength	3375	11390625	6722	0.59
Academic Achievement	3347	11202409		

Significant at .05 level, df=198, critical r=.138.

The result of the statistical analysis as presented in table 2 indicates that the calculated r-value of 0.59 is greater than the critical r-value of .138 at .05 level of significance with 198 degree of freedom. This result is significant and the null hypothesis was rejected. This means that there is a significant effect of strength on the academic achievement of secondary school students in physical education.

Discussion of Findings

This section deals with the discussion of findings of the hypotheses directing the study. The result of the first hypothesis indicates that there is a significant effect of agility on the academic achievement of secondary school students in physical education. The findings of this hypothesis is in line with Okplenye (2002) who posited that agility to a large extent promotes academic achievement in physical education. He further stated that, those that are agile perform better and longer in sporting activities.

The result of the second hypothesis indicates that there is a significant effect of strength on the academic achievement of secondary school students in physical education. The findings of this hypothesis is also in line with Bompa (1999) who said, the benefits of strength training on students’ academic achievement are enormous and many. He further said not only is it an intergral conditioning component of power for students such as footballers and rugby players.

Conclusion and Recommendations

Based on the findings of this study, the following conclusions were made:

- 1) There is a significant effect of agility on academic achievement of secondary school students in physical education
- 2) There is a significant effect of strength on academic achievement of secondary school students in physical education.

Based on the findings and conclusions of the study, the following recommendations are made;



- 1) Adequate and regulated exercises contribute to good health and well-being of an individual, therefore, physical education students should be allowed to take active part in physical activities
- 2) Students should be encouraged to participate in different types of physical activities. If properly selected and meaningfully conducted would improve self-image, develop strength, motor skills, agility, flexibility, and other desirable physical qualities.
- 3) Adequate and qualified physical education teachers should be employed to help impart proper knowledge to the students.
- 4) Parents/guardians should encourage their wards to always engage in physical activities that would promote good health and longevity.
- 5) Provision of adequate facilities and equipment for teaching and learning of physical education in schools is necessary.
- 6) Government should endeavour to help in the funding of physical education programmes in schools.

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