

*Full Length Research Paper*

# Relationship between motor skills and psychomotor achievement in Physical Education in Cross River State, Nigeria

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This study investigates the effect of motor skills and flexibility on psychomotor achievement of secondary school students in Physical Education in Calabar Municipality, Cross River State. To achieve the objectives of this study, two hypotheses were formulated to guide the study. Literature was reviewed according to the hypotheses directing the study. Two hundred respondents were randomly selected through simple random sampling technique. Motor skills such as: running, walking, jumping and kicking was used for this investigation. A questionnaire was designed by the researchers with the help of some measurement experts that gave its 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 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 result shows that there is a significant effect of motor skills and flexibility on psychomotor achievement of secondary school students in Physical Education. Based on the findings of this study, the result of the statistical analysis indicates that the calculated r-value of 0.64 is greater than the critical r-value of 0.138 at 0.05 level of significance with 198 degrees of freedom. The result is significant and the null hypothesis was rejected while the result of the statistical analysis indicates that the calculated r-value of 0.701 is greater than the critical r-value of 0.138 at 0.05 level of significance with 198 degrees of freedom. The result is significant and the null hypothesis was also rejected. Recommendations such as: 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; students should be encouraged to participate in different types of physical activities; properly selected and meaningful conducted activities would improve self-image, develop strength, and other desirable physical qualities; and finally parents/guardians should encourage their wards to participate in different types of physical activities that are meaningful and also promote good health and longevity, were proposed.

**Key words:** Physical Education, motor skills, flexibility, psychomotor achievement.

## INTRODUCTION

Motor skills are concerned with developing the body awareness and making physical movements useful with as little expenditure of energy as possible (Odey, 2002).

They make one become proficient, graceful and aesthetic in movement. To him, this has implications for one's work, play, academic success and other activities. Effective motor movement depends on a harmonious working together of the muscular and nervous systems. It results in greater distance between fatigue and peak performance.

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Ntui (2005) supported that motor skills are skills required for activities which demand a high degree of coordination. Typical of the research studies confirming the relationship between motor skills and psychomotor achievement in Physical Education is that of Rarrick and McKee (1999) who studied twenty-third grade students grouped according to their motor proficiency. The study showed that the group with high motor proficiency had a greater number of persons who achieved excellent or good rating in physical performance than the group with low motor proficiency.

Humphrey (2000) found that motor activities are beneficial in developing skills and concepts in performance. He indicated that if psychomotor skills or concepts are practiced during physical education activities, such skills or concepts are learned faster. For example, students can be taught the science and concept of the complete circuit of participating in simple physical activities, such as the straddle and ball relay. In this activity, students stand in one line behind the other, legs out-stretched, roll a ball between their legs, the ball is considered as the electric current and the students are in the circuit. When the ball goes outside one of the students' legs, the teacher can then emphasize that the circuit is broken. He further indicated that many advanced psychomotor skills and practical concepts can be introduced to students at an early age through the use of motor activities as a vehicle for learning.

Bucher (1989) said that his findings and those of other researchers have shown that, to some extent a relationship exists between the development of motor skills and performance in Physical Education related activities. For example, the slow learners frequently perform better in motor skills. Also characteristics such as hand-eye coordination, spatial awareness and lateral viewing are perceptual motor skills that are pertinent to practical psychomotor achievement in Physical Education. Many students have learning difficulties, and in some cases, it has been found that by prescribing activities to increase perception and movement, beneficial results do occur.

Motor activities seem to be most closely related to perceptual motor skills involving coordination, balance, agility, sense of direction and awareness of pace. It is believed that through early motor learning as mentioned above, a better base is established whereby other learning are gained and conceptualized. According to Bucher (1989), perceptual motor process is the management of information coming to the individual through the senses, the processing of this information and reacting in terms of overt motor behaviour. In reality, the perceptual motor process is extremely complex, requiring many interrelationships of abilities on the part of the processor.

Odey (2002) observed that sensory information is first recognized, discriminated, and selectively carried through nerve pathways to various levels of the brain. The initial

reception of information is conducted through the primary channels of sight, hearing, feeling and perception. After this, sensory information must be processed for current and future use. All information are compared, integrated and stored within the brain on the basis of previous experiences of the individual. Information is expressed as a constant source of covert feedback impulse. This would provide a continual means for adjusting to current or future motor behaviour.

It is believed that opportunities to use motor movements in a series of purposeful movement patterns increases the level of functioning of perception and thus, learning is thought to arise from a number of sensory and motor stimulation during childhood. Many students with average and above average intelligence often have difficulty with classroom task such as reading, writing and concept formation. Specially, some individuals have problems with balance, basic motor skills, hand-eye and foot-eye coordination, laterality, directionality and body awareness. These are some of the perceptual motor aspects of learning and they have been shown to affect practical psychomotor learning. It is further maintained that these activities will foster good perceptual motor development. However, it should be recognized that some of the perceptual motor problems, according to Ntui (2005) are too complex for the average teacher and should be referred to personnel specially trained in learning disabilities.

According to Ikeonu (1999), flexibility is the ability of the body to make a wide range of movements like those needed for swimming, diving, and tumbling. He added that flexibility should also be considered as the static maximum range of motion (ROM) available around a joint. The movement is caused by the contractions of muscle fibres attached by the tendons on either side of a given joint (that is, the elbow joints is flexed by contraction of the biceps muscles attached to bones of the upper and lower arms). In athletics, this is called dynamic or range of motion (ROM), where the movement is caused by a muscular contraction. Active range of motion or athletic specific movement is most affected by the force of the muscle contraction and the flexibility of the joint being moved.

Okime (2001) opined that flexibility has been considered among other components of physical fitness to have a great deal of effect on achievement of students in Physical Education. To further justify this statement, Moller (2002) supported that there is a good deal of research into the effect of flexibility in working muscles. This suggests that making muscle tissue more pliable can have a positive effect on psychomotor achievement of students in Physical Education. Under similar conditions, pliable muscles are more mechanically efficient and will bring out fatigue at a slower rate that tends to be more susceptible to cramping and muscle pull. Tight muscle can also expose Physical Education students to tendonitis and other overuse injuries.

It has not been clinically proven that more flexible muscles have the capacity to produce more power. It has been shown to hold up better under the stresses of exercise and is less susceptible to common soft tissue injuries that disrupt the training process and delay positive training effect on students' psychomotor achievement in Physical Education. Moller (2002) concluded that flexibility is important to the health of those who engage in physical activities as well as encourage athletic development. Choosing the proper methods and movements for a flexibility programme is very important. He also said that one will need to do some personal assessment of his own flexibility and determine what areas need work and which physical activities are most appropriate.

Devries (1998) showed that while pre-stretching increases static range of motion in sprinters, it has no effect on speed or energy cost during the 100 m dash, but flexibility has a great deal of effects on other athletic events, specifically in the field events other than in track events. It seems logical that the ease with which a contracted muscle can change length will have an impact on the performance of a stretch-shortening cycle movement, so active stiffness is a more appropriate parameter to measure flexibility for sports performance. Along same line, lasvili (2000) supported that active range of motion and not passive range of motion was more highly correlated with sport performance.

## **METHODOLOGY**

### **Design**

In this study, the researchers made use of the survey research design, which is meant to describe and interpret the effect of motor skills and flexibility on Physical Education students.

### **Population**

The population of this study consists of all the Junior Secondary School students from the fourteen public schools in Calabar Municipality, Cross River State of Nigeria.

### **Sample**

A total of 200 respondents were randomly selected from all the fourteen public secondary schools in Calabar Municipality, Cross River State. The sampling technique employed in selecting the 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 the effect of motor skills and flexibility on psychomotor achievements of students in Physical Education.

### **Validity of the instrument**

The instrument used for data collection was validated using factor to content validation. Each item 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 0.07. This shows a high level of reliability.

### **Hypothesis one**

There is no significant effect of motor skills on psychomotor achievement of secondary school students in Physical Education. Independent variable is motor skills, while the dependent variable is psychomotor achievement of secondary school students in Physical Education. The result of the analysis is presented in Table 1.

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 0.138 at 0.05 level of significance with 198 degrees of freedom. The result is significant and the null hypothesis was rejected. This means that there is a significant effect of motor skills on psychomotor achievement of secondary school students in Physical Education.

### **Hypothesis two**

There is no significant effect of flexibility on psychomotor achievement of secondary school students in Physical Education. Independent variable is flexibility, while the dependent variable is psychomotor achievement of secondary school students in Physical Education. The result of the analysis is presented in Table 2.

The result of the statistical analysis as presented in Table 2 indicates that the calculated  $r$ -value of 0.701 is greater than the critical  $r$ -value of 0.138 at 0.05 level of significance with 198 degrees of freedom. The result is significant and the null hypothesis was rejected. This means that there is a significant effect of flexibility on psychomotor achievement of secondary school students in Physical Education.

**Table 1.** Pearson product moment correlation analysis of effect of motor skills on psychomotor achievement of students in Physical Education.

Variable	$\sum x$ $\sum y$	$\sum x^2$ $\sum y^2$	$\sum xy$	r-value
Motor skills	3328	11075584	6514	0.64
Psychomotor achievement	3186	10150596		

\* significant at .05 level, df = 198, critical r = .138.

**Table 2.** Pearson product moment correlation analysis of effect of flexibility on psychomotor achievement of students in Physical Education.

Variable	$\sum x$ $\sum y$	$\sum x^2$ $\sum y^2$	$\sum xy$	r-value
Motor skills	3354	11249316	6540	0.701
Psychomotor achievement	3186	10150596		

\* significant at .05 level, df = 198, critical r = 0.138.

## DISCUSSION OF FINDINGS

Here, the discussion of findings of the hypotheses directing this study was made. The result of the first hypothesis indicates that there is a significant effect of motor skills on psychomotor achievement of secondary school students in Physical Education. The findings of this hypothesis are in line with those of Humphrey (2000) who said that motor activities are beneficial in developing skills. He further stressed that if a psychomotor skill is practiced during physical activities, that skill is learned faster. He also indicated that many advanced psychomotor skills and concepts can be introduced to the students at an early age through the use of motor activities as a vehicle for learning.

Ntui (2005) also asserted that motor skills are concerned with developing the body awareness and making physical movement useful with as little expenditure of energy as possible. This makes one to become more proficient, graceful and aesthetic in movement. He said this has implication on one's work, play, academic success and other activities. That effective motor movement depends on a harmonious working together of the muscular and nervous systems.

The result of the second hypothesis indicates that flexibility has a significant effect on psychomotor achievement of secondary school students in Physical Education. To support the findings of this study, Ikeonu (1999) observed that flexibility is the ability of the body to make a wide range of movements like those needed for swimming, diving, and tumbling. He added that flexibility should also be considered as the static maximum range of motion available for a joint.

Moller (2002) supported that tight muscle tends to be more susceptible to cramping and muscle pull. To him,

tight muscle can also expose Physical Education students to tendonitis and other overuse injuries. While it has not been clinically proven that more flexible muscle has the capacity to produce more power, it has been shown to hold up better under the stretches exercise and is less susceptible to common soft tissue injuries that disrupt the training process and delay positive training effect on students' psychomotor achievement in Physical Education. He concluded that flexibility is important to the health of those who engage in physical activities as well as encourages athletic development.

## CONCLUSION AND RECOMMENDATIONS

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

1. There is significant effect of motor skill on psychomotor achievement and of secondary school students in Physical Education.
2. There is a significant effect of secondary school students in Physical Education.

Based on the findings and conclusions of this 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, flexibility, and other desirable physical qualities.

3. Parents/guardians should encourage their wards to participate in different types of physical activities that are meaningful and also promote good health and longevity.
4. Students with postural defects should be encouraged to take active part in physical activities to correct their physical deformities.
5. Government should endeavor to help in the finding of Physical Education programmes in schools.
6. Adequate and qualified Physical Education teachers should be employed to help impart proper knowledge on the students.
7. Physical Education should be made compulsory for all students from primary school to university level of first degree.

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