International Journal of Sports, Health and Physical Education

Sharath N
Research Scholar,
Department of Physical
Education, Mangalore
University, Karnataka, India

Sushmitha P
Department of Physical
Education, Director Hira
Women's College, Karnataka,
India

A comparative study on BMI and physical fitness between physical education and non-physical education students of Mangalore University

Sharath N and Sushmitha P

Abstract
The purpose of the study was to find out the comparative analysis of selected BMI and physical fitness (explosive power, agility, flexibility, and speed) between physical education and nonphysical education students. The study has been conducted on 60female students. The subjects were selected from Mangalore university students. The age of the subjects ranged between 18-24 years. The study was conducted on selected BMI and physical fitness abilities (explosive power, agility, flexibility, and speed). The data was collected through 50 meters dash for speed, sit and reach for flexibility, standing broad jump for explosive power, shuttle run for agility BMI for body composition. To find out significant difference among the group independent 't'-test was used with the help of SPSS software. The level significance chosen was 0.05. After the analysis, it was revealed that there was significant difference obtained on speed between the two groups. Whereas, no significant differences were found BMI, less than nonphysical education students of Mangalore university. Physical education had more explosive power, agility, flexibility, and speed as compare and nonphysical education students of Mangalore University.

Keywords: Body composition, explosive power, speed, physical education students

1. Introduction
Every individual must know the importance of Physical fitness. In other words, one must have a fundamental knowledge of anatomy and physiology. This fundamental knowledge enables person to understand physical fitness. Physical fitness is the capacity of a person to function steadily and smoothly when situation. Physical fitness makes you feel mentally sharper, physically comfortable and more with your body better able to cope with the demands that everyday life makes upon you. Increased physical fitness not only improves health but improves your performance at work.

The benefits of physical fitness are numerous. The person who is physically fit has greater amount of strength, energy and stamina an improved sense of wellbeing better protection from injury because strong well developed muscles safeguard bones, internal organs and joints and keep moving parts limbers and improved cardio respiratory function Bucher and Prentice (1985) It is necessary for every individual to be physically fit to perform their daily work with ease and to take part in various activities effectively. Everyone should be fit enough through participation in physical activates to develop the different physical fitness components.

Physical fitness is an important marker of the health of children and adolescents and also a good predictor of health in later life. It is most essential in the modern society due to the impact of globalization and technological advancements leading to improved lifestyle. Physical fitness can be thought of as an integrated measure of most, if not all, the body functions (skeleton muscular, cardio-respiratory, hematoma-circulatory, psycho-neurological and endocrine–metabolic) involved in the performance of daily physical activity and/or physical exercise.

Body mass index is a number calculated from a person`s weight and height. Body mass index provides a reliable of body fatness for most people and is used to serum for weight categories that may lead to health problem. As a measure, BMI become Popular during the early 1950s and 60s. As obesity started to become a discernible issue in prosperous western societies. BMI.

Corresponding Author:
Sharath N
Research Scholar,
Department of Physical
Education, Mangalore
University, Karnataka, India

Body composition is the study of three components in the body, ie., bone mass, muscle mass and fat mass. Body composition makes an important contribution to an individual's level of physical fitness, performance, particularly in such activities that require one to carry one's body weight over distance.

The body composition studies have been conducted very extensively on the athletes. The examination of the body fat and kin folds at selected sites is most important in them. It has been found that the athletes who were lean or less fatty but heavy because of well-developed musculature were superior in performance in certain competitive sports activities. On the other hand the athletes who had substantial amount of adipose tissues have permanently increased energy demands owing to the inert weight of fat (Sodhi, 1991).Sofat plays an important role in order to enhance or hinder performance.

Body composition is used to describe the percentage of muscle, fat and bone in the human body. But what does body composition mean. To find out, read on body composition is a technical term used to describe various components that make up the body weight. Two people of same height and same body weight appear completely different from each other due to different body composition. So, what is body composition? Body composition is defined as the ratio of lean body mass to body fat mass. Lean body mass includes structural and functional elements in cells, body water, bones, muscles, liver, heart, kidneys, etc. Body fat is of two types such as essential fat and storage fat. Essential fat is required for normal physiological functioning. Storage fat constitutes the fat reserves of the body. Body composition is expressed as present of body fat mass and percent of lean body mass. Body composition is the technical term used to describe the different body compartments. (Lean mass, fat mass, body water and bone mass) that make up a person's body weight. If body composition is of (higher fat compared to muscle mass) there are many health-related disease and illness you have a higher chance of contracting. It is important to combine healthy eating habits with your exercise program.

1.1 Motor Fitness
Motor fitness is the organic soundness and proper nutrition undergirds the entire physical structure. A motor unit is made up of a single motor neuron as well as all of the muscle fibers that neuron activity. When they receive signals from the brain to contract the muscle. Motor fitness is an individual quality that differs from person to person. It is influenced by age, sex, heredity, personal habits and eating habits, attitude towards life, anxiety, tension and stress values of physical fitness.

1.1 Objectives of the study
The purpose of the study is to find out the difference in BMI and Physical Fitness between Physical Education students and Nonphysical students of Mangalore University.

1.2 The delimitations of study
- The study was delimited to only sixty students (n=60), who volunteered to serve as subjects in the study.
- The study is delimited Students of Mangalore University.
- Students studying in P.G course were randomly selected for the study
- To assess physical fitness of the students, AAHPERD youth fitness test Battery was adopted.

1.3 The limitations of study
- Cooperation from students, teachers, administrators and parents during the study was beyond the control of researcher.
- Differences in implementing physical education program in university level will play a vital role in determining physical fitness and health awareness of students.
- The selected test items could not be administered to all the subjects under highly identical and controlled conditions, as the tests were administered on three different days.

1.4 Hypotheses
- For the purpose of the present study it was hypothesized that the body composition (BMI) and Physical fitness are independent of each other.
- There will be significant difference between Physical Education students and Non Physical Education students of Mangalore University their performance of physical fitness variables of explosive power, agility, speed and flexibility.
- There will be significant difference in total physical fitness among female Physical Education students and Non-Physical Education students of Mangalore University.

2. Materials and Methods
The purpose of the study is to compare BMI and Physical Fitness between Physical Education students and Non Physical Education students of Mangalore University. The subjects for the present study were drawn from Physical Education students and Non Physical Education students of Mangalore University Person's Product Movement Technique were employed to compute.

2.1 Subjects
The sample for the present study was 60 female students, 30 students from Physical Education and 30 students from Non Physical Education of Mangalore University.

2.2 Variables Selected for the Study
- Body Mass Index, Speed, Explosive Power Agility, Cardio Endurance and Flexibility was considered the Independent Variables (X)
- Motor fitness test was considered as the Dependent Variable (Y)

2.3 Data Collection
The body mass index that is a measurement of height and weight was measured as per the instructions given in the literature. The scores were in numerical form. That represented the data in impact of the independent variables (X).

2.4 Sources of Data
The motor fitness test which is a battery of five items *viz*.: Standing Broad Jump, (Power of the leg) Sit And Reach, (To measure the flexibility of hamstrings and lower back) Shuttle Run (measure for Speed & agility) Cooper 12-minute run test (To measure the aerobic fitness) 50 yards dash (To measure the speed) was administered to the subject in the present study the measurement was taken as per instruction in the literature. The scores of each subject in each of the three test items that were in numerical form represented the data in respect of the dependent variables (Y).

2.5 The Analysis of Data

For analysing the data, descriptive statistic for mean and standard deviation was used and to find out significant difference among the group independent 't'-test was used with the help of SPSS Software. The level of significance chosen was 0.05.

3. Results

Table 1: Comparison of Scores on Explosive Power (Standing Broad Jump) Between of Physical Education and Non Physical Education Students

Variables	Group	Mean	Standard deviation	t-Values
Explosive power	Physical Education students	2.17	0.5	8.82 *
	Non Physical Education students	1.33	0.19	

*0.05 Level of significance
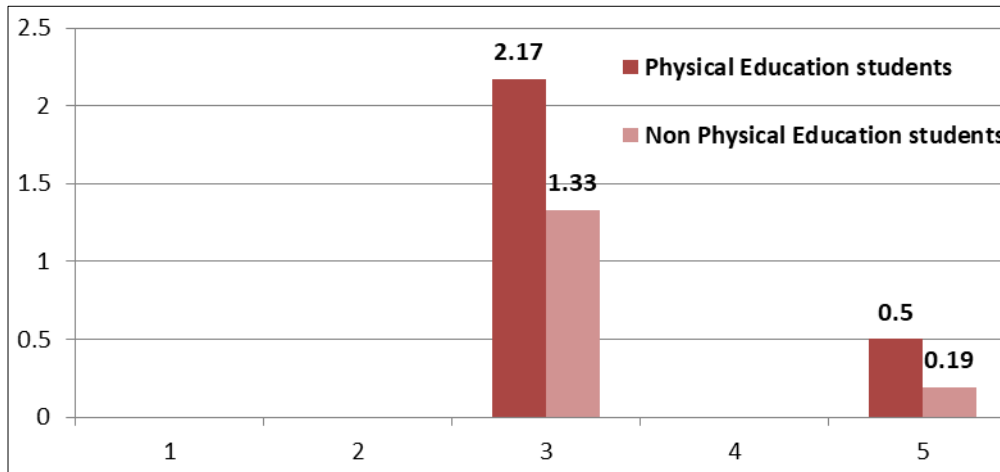
Graph 1: Comparison of Scores on Explosive Power (Standing Broad Jump) Between of Physical Education and Non Physical Education Students
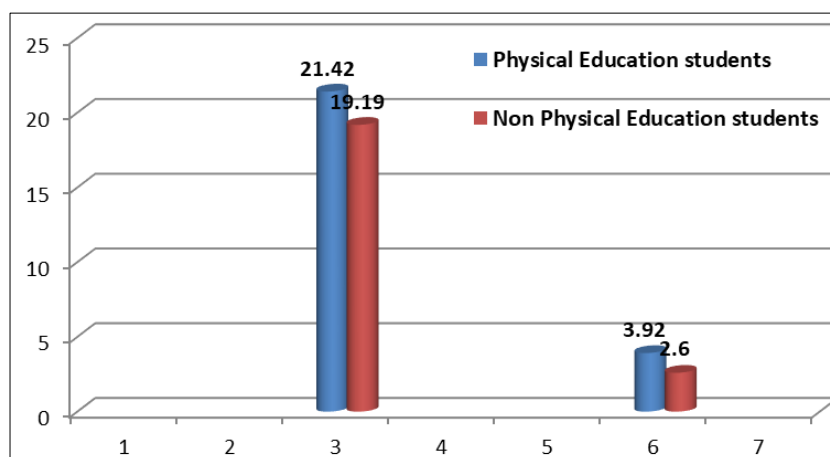
The Above Chart1 And Graph1 Represents The Mean, Standard Deviation As Well As t-Value of variable Explosive Power (Standing Broad Jump Test) of Physical Education And Non Physical Education Students. The Mean Value of Explosive Power (Standing Broad Jump Test) Of Physical Education And Non Physical Education Students Is 2.17 And 1.33 Respectively. The Standard Deviation Of Explosive Power (Standing Broad Jump Test) Of Physical Education And Non Physical Education Students Is 0.50 And 0.19 Respectively. The calculated t-value is 8.82. This is greater than tabulated t-value (2.00) on 58 degree of freedom at 0.05 levels. Hence hypothesis is rejected. So, it indicates that there is insignificant difference on explosive power (Standing Broad Jump Test) performance among Physical Education and Non Physical Education Students. Even we can conclude from the result Physical Education students are having greater leg explosive performance than the Non Physical Education Students.

Table 2: Comparison of Scores on Body Composition (BMI) Between of Physical Education and Non Physical Education Students

Variables	Group	Mean	Standard deviation	t-Values
Body mass index	Physical Education students	21.42	3.92	2.75 *
	Non Physical Education students	19.19	2.6	

*0.05 Level of significance

Graph 2: Comparison of Scores on Body Composition (BMI) Between of Physical Education and Non Physical Education Students
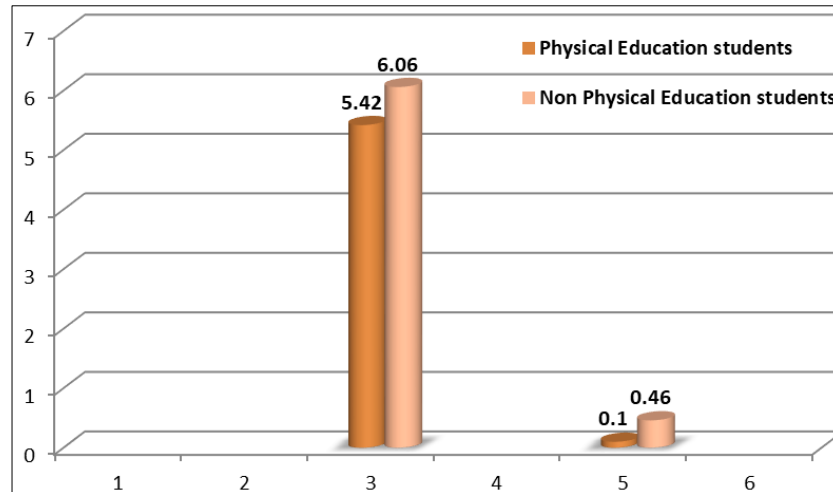
The Above Chart2 And Graph2 Represents The Mean, Standard Deviation As Well As T-Value Of Body composition (Body Mass Index Test) Of Physical Education And Non Physical Education Students. The Mean Value Of Body Mass Index Test Of Physical Education And Non Physical Education Students Is 21.42and 19.19 Respectively. The Standard Deviation of Body composition (Body Mass Index Test) of Physical Education and Non Physical Education Students is 3.92 and 2.6 respectively. The calculated t-value is 2.75. This is greater than tabulated t-value (2.00) on 58 degree of freedom at 0.05 levels. Hence hypothesis is rejected. So, it indicates that there is insignificant difference on Body composition (body mass index Test) among Physical Education and Non Physical Education Students. Even we can conclude from the result Physical Education students are having lesser than obese and overweight performance than the Non Physical Education Students.

Table 3: Comparison of Scores on speed (50 Yard Dash) Between of Physical Education and Non Physical Education Students

Variables	Group	Mean	Standard deviation	t-Values
Speed	Physical Education students	5.42	0.1	-7.85 *
	Non Physical Education students	6.06	0.46	

*0.05 Level of significance

Graph 3: Comparison of Scores on Speed (50 Yard Dash) Between of Physical Education and Non Physical Education Students
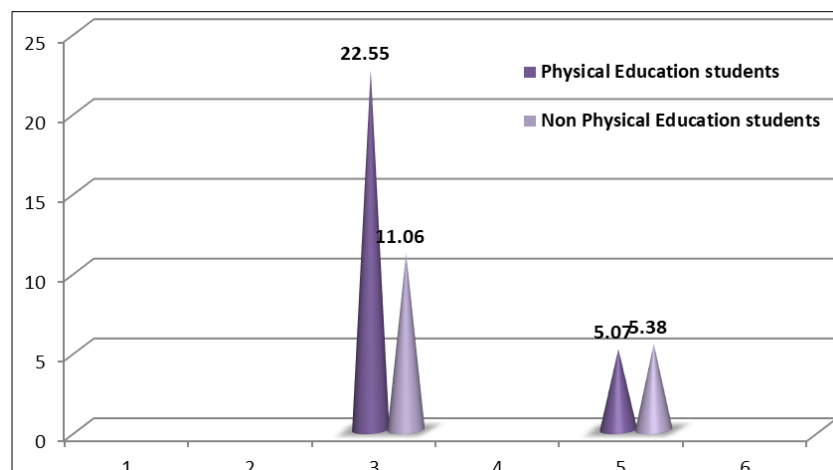
The Above Chart And Graph Represents The Mean, Standard Deviation As Well As T-Value Of Speed (50 Yard Dash Test) Of Physical Education And Non Physical Education Students. The Mean Value Of Speed (50 Yard Dash Test) Of Physical Education And Non Physical Education Students Is 5.42And 6.06 Respectively. The Standard Deviation Of Speed (50 Yard Dash Test) Of Physical Education And Non Physical Education Students Is 0.1 And 0.46 Respectively.

The calculated t-value is -7.85. This is less than tabulated t-value (2.00) on 58 degree of freedom at 0.05 levels. Hence hypothesis is rejected. So, it indicates that there is insignificant difference on Speed (50 yard dash Test) among Physical Education and Non Physical Education Students. Even we can conclude from the result Physical Education students are having higher speed performance than to Non Physical Education students.

Table 4: Comparison of Scores on Flexibility (sit and reach) Between of Physical Education and Non Physical Education Students

Variables	Group	Mean	Standard Deviation	T-Values
Flexibility	Physical Education Students	22.55	5.07	8.38 *
	Non Physical Education Students	11.06	5.38	

*0.05 Level of significance

Graph 4: Comparison of Scores on Flexibility (sit and reach) Between of Physical Education and Non Physical Education Students
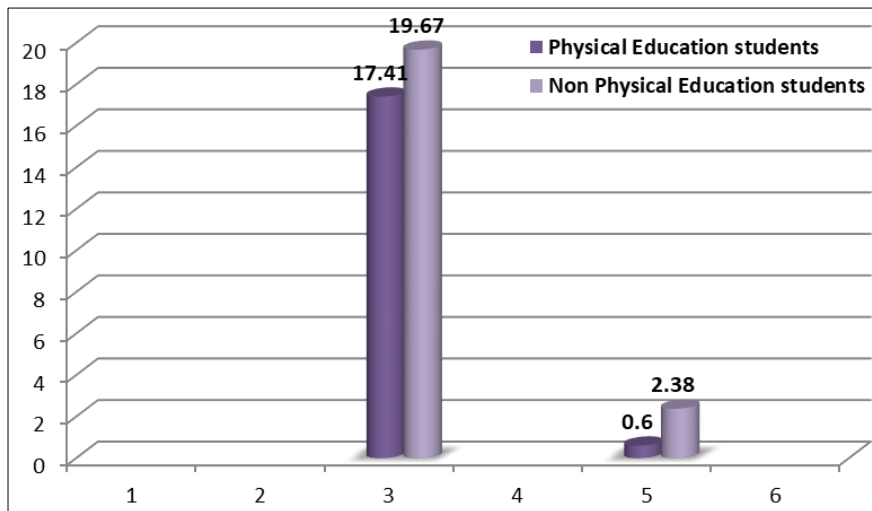
The Above Chart And Graph Represents The Mean, Standard Deviation As Well As T-Value Of Flexibility (Sit And Reach Test) Of Physical Education And Non Physical Education Students. The Mean Value of Flexibility (Sit and Reach) Of Physical Education And Non Physical Education Students Is 22.55And 11.06 Respectively. The Standard Deviation Of Flexibility (Sit And Reach Test) Of Physical Education And Non Physical Education Students Is 5.7 And 5.38 Respectively. The calculated t-value is 8.38. This is high than tabulated t-value (2.00) on 58 degree of freedom at 0.05 levels. Hence hypothesis is rejected. So, it indicates that there is insignificant difference on Flexibility (sit and reach Test) among Physical Education and Non Physical Education Students. Even we can conclude from the result Physical Education students are having greater flexibility of hamstrings and lower back strength than to Non Physical Education students.

Table 5: Comparison of Scores on Agility (shuttle run) Between of Physical Education and Non Physical Education Students

Variables	Group	Mean	Standard Deviation	T-Values
Agility	Physical Education Students	17.41	0.6	-5.14 *
	Non Physical Education Students	19.67	2.38	

*0.05 Level of significance

Graph 5: Comparison of Scores on Agility (shuttle run) Between of Physical Education and Non Physical Education Students

- The Above Chart 5 And Graph 5 Represents The Mean, Standard Deviation As Well As T-Value Of Agility (Shuttle Run Test) Of Physical Education And Non Physical Education Students. The Mean Value of Shuttle of Physical Education and Non Physical Education Students Is17.41 And 19.67 Respectively. The Standard Deviation of Agility (Shuttle Run Test) Of Physical Education And Non Physical Education Students Is 0.6 And 2.38 Respectively. The calculated t-value is -5.14. This is less than tabulated t-value (2.00) on 58 degree of freedom at 0.05 levels. Hence hypothesis is rejected. So, it indicates that there is insignificant difference on Agility (shuttle run Test) among Physical Education and Non Physical Education Students. Even we can conclude from the result Physical Education students are having greater speed and agility performance than to Non Physical Education students.

4. Conclusions
Body mass index and physical fitness test are analyzed and discussed hear it was considered that through the Physical education students and non-physical education students showed superior performance in many motor fitness and body composition they still needed regular practice hard work and professionals determination and devotion to improve strength, speed, coordination, explosive power flexibility and endurance in order to attain the perfect level.
On the basis of the data the researcher in confident of arriving at certain conclusion based on the result of the studies. There are

- The speed of Physical education students is better than non-physical education students.
- The flexibility of Physical education students is excellent while compared to non-physical education students.
- The agility of Physical education students is better than non-physical education students.
- The body mass index of Physical education students is lesser while compared to non-physical education students.

The non-physical education students should be improve the motor fitness performance by regular practice and seriously. The teacher can conduct the fitness test for the development of motor fitness ability performance of the high school and college level students. Similarly this study can be conducted to identify the BMI and motor fitness of high school students for the selection for sports and games The was yes signification mean standard deviation t value difference in Physical education students and non-physical education students of Mangalore university**.**

5. Acknowledgment

continuous support and understanding when undertaking my research and writing my paper. Your prayer for me was what sustained me this far. Finally, I would like to thank God, for letting me through all the difficulties. I have experienced your guidance day by day. You are the one who let me finish my paper. I will keep on trusting you for my future.

6. References

1. Pedersen BK. Body mass index-independent effect of fitness and physical activity for all-cause mortality. 2007 June;17(3):196-204
2. Gc Frey, Chow B. Relationship between BMI, physical fitness, and motor skills in youth with mild intellectual disabilities. International Journal of Obesity. 2006;30:861-867. Doi: 10.1038/sj.ijo.0803196; published online 10 January 2006.
3. Thomas NE, Williams DRR. Inflammatory factors, physical activity, and physical fitness in young people. 2006 October;18(5):543-556.
4. Nora Shields, Juliette Hussey, Joan Murphy, John Gormley, Hilary Hoey. An exploratory study of the association between physical activity, cardiovascular fitness and body size in children with Down syndrome. 2017 Feb 17;20(2):92-8.
5. Pedro Marques-Vidal. "BMI Group-Related Differences in Physical Fitness and Physical Activity in Preschool-Age Children. 83, Jan 2013;23(1):12-19.
6. Samuel Carvalho Dumith. Overweight/Obesity and Physical Fitness among Children and Adolescents. 2008;7(5):641-648.
7. Timothy Wessel R. Relationship of Physical Fitness vs. Body Mass Index With Coronary Artery Disease and Cardiovascular Events in Women JAMA. 2004;292(10):1179-1187.
8. Manios Y. Reliability of health-related physical fitness tests in European adolescents. International Journal of Obesity. 2008;32:S49-S57.