

A Comparative Study of Muscular Strength and Body Mass Index between Physical Education Students and Police Trainers

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Abstract

The purpose of the study was to find out the comparison of muscular strength and body mass index between physical education students and police trainees. The study was delimited to the 40 male subjects. The age group of the subjects is ranged between 18-28 years. 20 each subjects were selected for this research between physical education students and police trainees. For muscular strength pull ups test and for body mass index height and weight was measured. On basis of obtained data Mean score, standard deviation and t- value was find out and it was found that there was statistically significant difference of muscular strength and body mass index among physical education students and police trainees.

INTRODUCTION

As physical education and sports help in the development of fundamental skills essential for the daily life activities of the human beings and social skills, which aid in making him a well adjusted and useful member of society.

Health is a very important; Health people constitute a healthy nation. It is necessary to explain the meaning of health as it is not merely absence of disease but much more. Health is that quality of life that enables individuals to live most and serve best. Health can be achieved maintained and improved by supplying the basic physical, mental, emotional and social needs in proper proportion. In fact health is the key to education success, good citizen ship and happy life.

Physical fitness

Physical fitness refers to the organic capacity of the individual to perform the normal task of daily living without undue tiredness or fatigue having reserve of strength and energy available to meet satisfactorily any emergency demands suddenly placed upon him. Softball is a sport requiring high levels of physical fitness. It is one of those rare games which demands not only speed but agility, strength, power and endurance. Softball players need a combination of technical, tactical and physical skills in order to succeed. Improving aerobic capacity and overall fitness boosts performance on the Softball field. Cricket is a deceivingly demanding sport; players spend a long day on their feet, there are periodic fast sprints when batting, chasing down a ball, and bowling, plus various dynamic movements such as leaping, throwing, and turning quickly. It really is vital that all players should increase their base levels of fitness because that will allow them to realize their potential. It will allow them to maintain their level of

performance for longer, increasing their concentration and endurance, and that is something each player will have to do if they want to do themselves justice on the world's biggest cricketing stage. Fitness is important at all levels of the game, whilst being essential for top level players; it is beneficial for beginners who will improve both their effectiveness and enjoyment through good standards of fitness. Fitness enables a player to cope with the physical demands of the game as well as allowing the efficient use of his various technical and tactical competencies throughout the match.

Although the term motor fitness is most often used synonymously with Muscular fitness by the coaches but there is basic difference between motor fitness and Muscular fitness. Muscular fitness is used to denote only the five basic fitness components (muscular strength, muscular endurance, cardiovascular endurance flexibility and body composition) whereas motor fitness is a more comprehensive term which includes all the ten fitness components including additional five motor performance components (power, speed, agility, balance and reaction time) important mainly for success in sports in other words motor fitness refers to the efficiency of basic movement in addition to the Muscular fitness

Body Mass Index:

The body mass index is an optional measure of body composition and provides an indication of the appropriateness of weight and height.

The body mass index (BMI) was developed by the "National centre for health statistics", and is an index of the relationship weight to height. It is needed to determine one's weight in kilograms and height in meters. It tells you whether your weight is appropriate for your height.

The Quetelet's body mass index is calculated by the following equation (Collins 1990)

$$\text{BMI} = \frac{\text{Body Weight (kg)}}{(\text{Standing height in meter})^2}$$

B.M.I. may be found by measuring body weight and height. The higher the value of B.M.I., the higher is one's food intake. The value of B.M.I., the higher is one's food intake. The value of B.M.I. between 22.0 to 25.0 indicates appropriate nutrition. The B.M.I. lower to 22 indicates poverty or lesser quantity of diet being taken than the required amount of food while B.M.I. greater than 25 indicates lavish and more amount of food than the need quantity and the individual is classified as overweight. B.M.I. reaching 30 indicates obesity and very high risk of getting weight related disease like atherosclerosis, type – 2 diabetes, heart disease, hypertension etc.

Body types:

All individuals have different physique characteristics because of different biological, psychological, sociological, geographical, cultural and racial backgrounds. The concept that an individual body type is related to his health, immunity from disease, physical performance and personality characteristics has developed from ancient times. On the basis of this concept, number of scholars have made attempts to describe the body types in to two or three categories and proved to be inadequate in many respects. However, one things is common in the result is research studies that physique pattern is significant and related to an understanding of individuals in terms of physically, mentally, emotionally and socially. However they did designate three primary components of body build that are the best criteria for differentiating individuals, such as

- Endomorph
- Mesomorph
- Ectomorph

Purpose of the study:

“The main purpose of the study was to determine the “A comparative study of muscular strength and body mass index between physical educations and police trainee students”.

Methodology

The information regarding the selection of subjects, sampling, variations, tools and means, procedures, collection of data, statistical method were described in this chapter.

Sampling Method:

The simple random sampling was applied to select the subjects for this study.

Source of Data:

The data pertaining to this study were collected from the students of S.R.T.M University Nanded and boys from Nanded district.

Selection of Subject:

The researchers select the 40 subjects 20 from each.

Criterion Measures:

The following criterion measures were chosen for testing the hypothesis.

Physical Fitness Variables measures were:

- Strength: Arm and Shoulder strength was measured with the help of pull- ups.
- Body mass index: Body fat was measured through the measuring of height and weight.

1. Pull Ups:

Purpose: To measure the shoulder strength

Equipments: Bar- Chalk-Powder

Scoring: The maximum number of completed pull ups is the score which may be evaluated with the help of local norms.

2. Body mass index

- A. Height
- B. Weight

A. Height:

Equipment: Stadiometer

Scoring: The height was recorded in centimeters.

B. Weight:

Equipment: weighing machine

Scoring: The weight was recorded in kilo grams.

Collection of Data:

The data pertaining to the study was collected by administering the tests for the selected variables.

Before Collection of data, the subjects was given a chance to practice the prescribed tests so that they should become familiar with the tests and know exactly what is to be done to ensure uniform testing condition the subjects was tested during morning and data was collected.

STATISTICAL ANALYSIS:

For the statistical analysis of data mean, standard deviation and t- ratio were employed at 0.05 level of confidence.

Formula for mean, standard deviation and t- ratio are as below.

$$M = X/N$$

$$S.D = \sqrt{X^2/N}$$

$$T\text{-ratio} = \frac{M1 - M2}{\text{Critical ratio}}$$

Results & Findings

The finding of the study were shown in the following tables-

Table 1:
Shows statistical comparison of police trainers and physical education students group in pull-ups:

Group	N	Mean	S.D	T-ratio
Police trainers	20	5.9	1.33	.5595

Physical students	20	4.9	2.12	
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From the above table it is observed that the mean of police trainers and physical students in pull-ups is 5.9 and 4.9 respectively. After applying “t” test, it is found that the t-ratio is 0.5595 and the level of significance is 0.05 that is statistically not significant.

Figure 1:

Shows statistical comparison in pre-test and post-test of control group in standing broad jump:

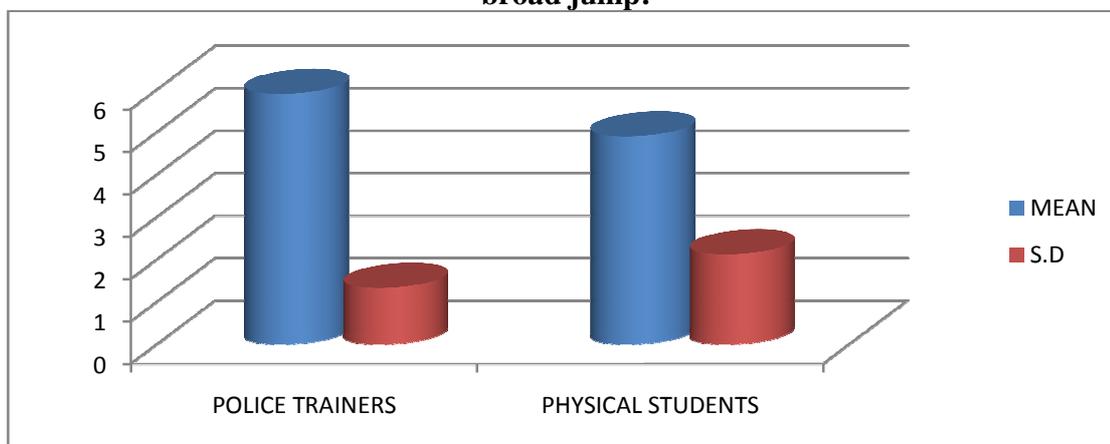


Table 2:

Shows statistical comparison of police trainers and physical education students group in B.M.I:

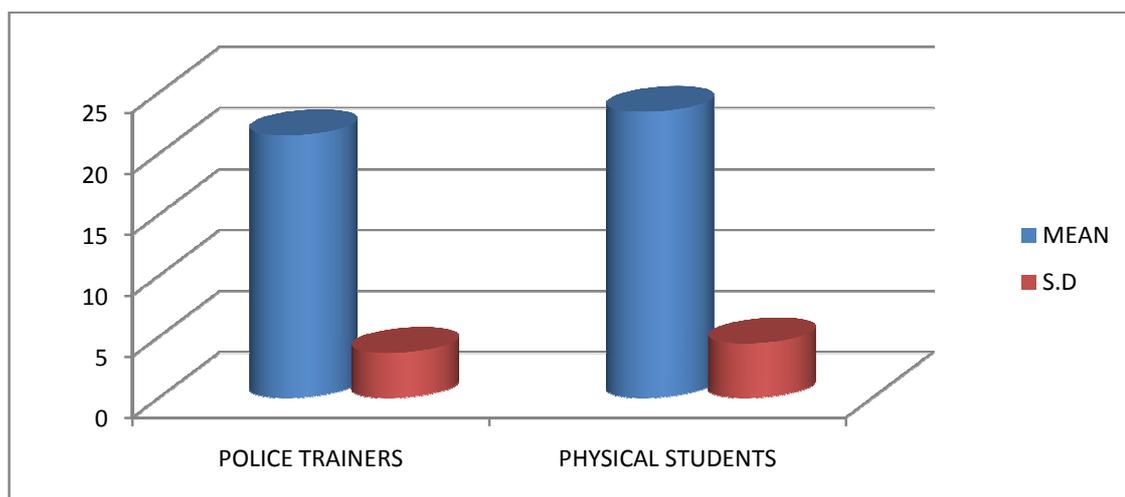
Group	N	Mean	S.D	T-ratio
Pre-test	20	21.49	3.66	1.2866
Post-test	20	23.41	4.44	

From the above table it is observed that the mean of control group students in pull-ups from police trainers and physical students is 21.49 and 23.41 respectively. After

applying “t” test, it is found that the t-ratio is 1.2866 and the level of significance is 0.05 that is statistically significant.

Figure 2:

Shows statistical comparison in pre-test and post-test of experimental group in standing broad jump:



Conclusion:

The following conclusions drawn from the study are as under:

1. There was statistically significant difference of muscular strength among physical education students and police trainers.
2. There was statistically significant difference of body mass index among physical education students and police trainers

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