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A comparative study on selected anthropometric and physiological variables among graduate and post graduate students of physical education

L Sailo**Abstract**

The paper provides a critical review over the difference on anthropometric and physiological variable among physical education graduation and post graduate student of Tripura. A total of 30 graduate and post graduate students of physical education (15 in each group), was randomly selected for the purpose of the study. The graduate students were selected from the Regional College of physical education (Panisagar) and the post graduate students were selected from the department of physical education of Tripura University. To analyze the collected data the following statistical procedure were used. Descriptive mean and standard deviation were adopted, and for testing the significant difference between means t-test were adopted for the purpose of the study. The data were analyzed using the mean, standard deviation and t-test. To test difference between means of selected Anthropometric variables and physiological variables of the subject, level of significance was set at 0.05.

The results indicate a significance difference between mean of Anthropometric variables and physiological variables among graduate and post graduate students of physical education are as follows- B.M.I. (0.839), fat percentage (0.0067), arm length (0.028), leg length (0.652), Resting pulse rate (0.000177) and vital capacity (0.175). But calculate t-value much lower than table value. So, there were not found statistically significant difference at 0.05 level of confidence.

Keywords: Anthropometric, Physiological, Arm length, BMI, Skin Fold, Heart Rate, Vital Capacity.

Introduction

Every individual sustains different level of health and welfare, and more specifically the ability of performing any physical activities. The allocation of proper physical activity, bodily ratio, nutritional status and active or inactive lifestyle are the main factors which form the difference in between every individual.

In addition to this, what is the term that make every individual unlike is their Anthropometric measures and Physiological variables which are continuously changing according to the change in their lifestyle, change in courses, and physiological changes by the time. And with automation and change in lifestyles physical fitness is now given as the utmost importance to measure the individual working capacity along with leisure activities effectively be become physical and mental wellbeing (Saini, D. 2016)^[2, 3].

Anthropometric measures are the measurement of proportion of human body, which relate this study to the scientific evidence which emphasize on the core elements i.e., Height, Weight, Head circumference, BMI (Body Mass Index), Body circumference of waist, hip and limbs and skinfold thickness, fat percentage. This scientific disciplinary is formed to body measurement which can help to assess the health risk factor and also future disease risk factors among individuals. Along with the diagnosis of health risk factors it also assesses the body composition and body alignment factors which is very beneficial for individual to analyze themselves. And due to the rapid change of modern life span, this bodily composition factors influence the individual's physiological variables a lot.

Physiological variables or parameters represent the evolution of a physical magnitude change in any individual such as human heart rate, Resting heart rate, blood pressure, body temperature, vital capacity. Which describe the difference physical entertainment? These factors mainly effect due to the physical activities and exercises level of individual,

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physiological variables also change by the time, and an individual experience many differences, specifically who are connected with games and sports field (Sharma, C. (2017) ^[1]). In the particular period of time graduation students and post graduate students may have some similarities in their academics and field, but also it has very clink level difference in their curriculum which made the difference in between these two genres. This study is conducted to inculcate the differences among graduate and post graduate students of physical education on the basis of their Anthropometric measures and Physiological Variables.

Statement of the Problem

Considering the above purposed the problem was stated as, "A Comparative Study on Selected Anthropometric and Physiological Variables among Graduate and Post Graduate Students of Physical Education".

Purpose of the Study

The purposes of the study are as follows –

1. To compare and evaluate selected Anthropometric variables among graduate and post graduate students of physical education.
2. To compare and evaluate selected Physiological variables among graduate and post graduate students of physical education.

Delimitation

1. The study was delimited to graduate and post graduate students of physical education.
2. The study was further delimited into 15 graduate and 15 post graduate students of physical education.
3. The study was further delimited to boys of graduation and post-graduation students.
4. The study was also delimited to some of the selected anthropometric and physiological variables.

Hypothesis

The study was hypothesized that there would be a significant difference among the graduate and post graduate student of physical education among anthropometric variables and physiological variables.

Significance of the Study

1. The study would be significant in analyzing the health status of graduate and post graduate students of physical education.
2. This study will help the researcher to do further study in anthropometric variables and physiological variables of physical education students.

Methodology

In this chapter the procedure for selection of subjects and criterion measures, collection of data and statistical technique used to analyze the data has been described.

Selection of the Subject

A total of 30 graduate and post graduate students of physical education (15 in each group), was randomly selected for the purpose of the study. The graduate students were selected from the Regional College of physical education (Panisagar) and the post graduate students were selected from the department of physical education of Tripura University.

Criterion Measures

In the present study the following parameters Were selected-

age, height and weight as personal data, Anthropometric measuring criteria-BMI, Arm Length, Leg Length, Skin fold, Physiological measuring variables-Resting Pulse Rate, and Vital capacity.

Reliability of the Data

To obtain reliable measurements, the instruments which were used for the purpose of the study, namely Weighing Machine, Stadiometer, Dry Spiro meter, Skin fold calliper, Anthropometric Tap Were all standard instruments as available in the department of physical education, Tripura University and their reliability was insured by the manufacturers. All the measurements pertaining to the selected variables were taken by the scholar under the expert guidance, so the data collected for the study were considered reliable.

Administration of the test and Collection of the Data

Age

The age of the subject was recorded from the information of i.e. date of birth certificate.

Height

The height was measured by the Stadiometer. A subject one and stand erect keeping his higher portion of the body indicated his height and was recorded.

Weight

The weight of the subjects is measured by standard weighing machine. The recording was taken in nearest kilogram.

Body Mass Index (BMI)

BMI was calculated by the metric formula of –

$$BMI = \frac{\text{weight (kg)}}{\text{height}^2 (\text{m}^2)}$$

Vital Capacity

Vital capacity was measure by dry Spiro meter.

Fat Percentage

Skin fold calliper was used to measure skin fold thickness in millimeter. Four sight of skin fold thickness was measure in mm. (Bicep, Triceps, Sub scapula and supra iliac). Based on Dumin and Womersley / (1974) prediction equation, percentage of body fat determined.

Arm Length

The subject wears minimum cloth and asked to stand erect with arms sideways. Arm length of the subject was measured from acromion process to the tip of the third finger by the standard anthropometric tape. Measurement was recorded to nearest centimeter. (Jonson and Nelson, 1982)

Leg Length

The subject wears minimum cloth and asked to stand erect with arms sideways. Weight of the body was equally distributed on both feet. Length of the subjects' legs was measured from the trochanter to lateral malleolus by the standard anthropometric tape. Measurement was recorded to nearest centimeter.

Result and discussion of the findings

In this chapter the results and the findings found after analyzing the data were discussed. The data's were collected

on 30 students, 15 students from RCPE and 15 students from Department of Physical Education, Tripura University following the standard procedures. T-Test was to compare the anthropometric and physiological variables. In order to test the hypothesis, the level of significance was set at 0.05.

Presentation and Analysis of the Data

To test the difference of selected Anthropometric and physiological variables among graduate (B.P.Ed) and post graduate (M.P.Ed) students of physical education were presented. The mean and standard deviation of personal data of the B.P.Ed and M.P.Ed students have been presented in Table No-1.

Table 1: Mean and SD of personal data of the subjects

Parameter	Group	Mean	SD
Age (year)	B.P.ED	23.8	2.274
	M.P.ED	25.6	2.323
Height (m)	B.P.ED	1.64	6.103
	M.P.ED	1.67	5.678
Weight (kg)	B.P.ED	58.66	7.612
	M.P.ED	61.86	15.78

Table - 1 shows the mean age of B.P.Ed AND M.P.Ed students were 23.8 years and 25.6years, and S.D. were +2.274 and #2.323 respectively. Mean height of B.P.Ed and M.P.Ed student's wear 1.64m and 1.67m, and S.D. was +6.103 and +5.678 respectively. And in case of weight the mean weight and SD of B.P.Ed and M.P.Ed students were 58.66kg +7.612 and 61.86kg +15.78 respectively. It was observed from the mean age, height and weight of graduate and post graduate students of physical education were homogeneous.

Table 2: Mean SD and t-value of BMI

Subjects	Mean of the B.M.I	SD	t-value
B.P.ED	21.8	2.155	0.839
M.P.ED	22.03	3.810	

Table - 2 shows the Mean, SD and t- value of BMI of graduate level and post graduate level students of physical education. The BMI of B.P.Ed students mean and standard deviation were found 21.8 and +2.155, and the M.P.Ed students mean and standard deviation were found 22.03 and +3.810 respectively. The calculated t-value was 0.839, which was less than the table value. So in BMI also there was no significant difference between two means B.P.Ed and M.P.Ed students at 0.05 level of confidence.

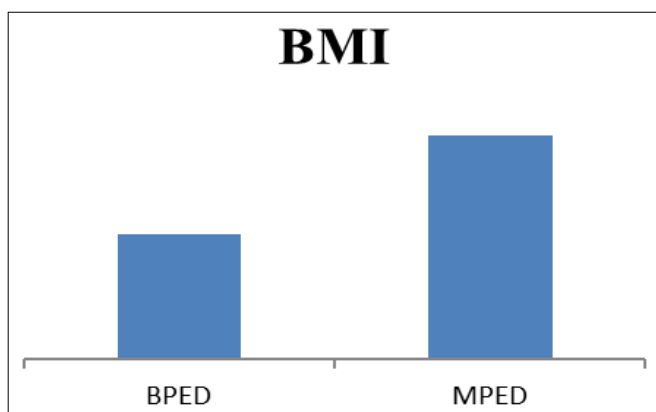


Fig 1: Graphical representation of the mean difference of BMI among B.P.Ed and M.P.Ed

Students

It is observed from the figure that post graduate students of physical education have slightly high BMI than graduate students of physical education.

Table 3: Mean SD and t-value of Resting Pulse Rate

Subjects	Mean of the Pulse Rate	SD	t-value
B.P.ED	80.06	8.947	0.000177
M.P.ED	69	3.374	

Table - 3 shows the Mean, SD and t- value of Resting pulse rate of graduate level (B.P.Ed) and post graduate level (M.P.Ed) students. The Resting pulse rate of B.P.Ed students mean and standard deviation were found 80.06 and +8.947, and the M.P.Ed students mean and standard deviation were found 69 and +3.374 respectively. The calculated t-value was 0.000177, which was also less than the table value. So in resting pulse rate also there was no significant difference between two mean of B.P.Ed and M.P.Ed students at 0.05 level.

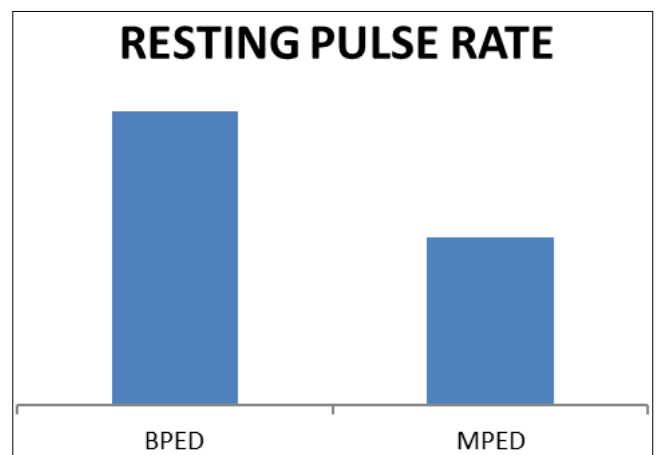


Fig 2: Graphical representation of the mean difference of Resting pulse rate among B.P.Ed and M.P.Ed Students

Figure 2 shows that the mean difference of Resting pulse rate among graduate and post graduate students of physical education. It is observed from the figure that graduate students of physical education have slightly high Resting pulse rate than graduate students of physical education.

Table 4: Mean SD and t-value of Fat Percentage

Subjects	Mean of the Fat Percentage	SD	t-value
B.P.ED	17.65	3.402	0.0067
M.P.ED	13.02	5.089	

Table - 4 shows the Mean, SD and t- value of Fat Percentage of graduate level (B.P.Ed) and post graduate level (M.P.Ed) students of physical education. The Fat Percentage of B.P.Ed students mean and standard deviation were found 17.65 and +3.402, and the M.P.Ed students mean and standard deviation were found 13.02 and 25.089 respectively. The calculated t-value was 0.0067, which was also less than the table value. So in Fat Percentage also there was no significant difference between two mean graduate level and post graduate level students of physical education at 0.05 level of confidence.

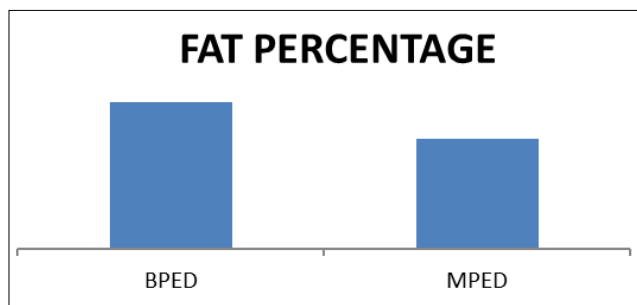


Fig 3: Graphical representation of the mean difference of Fat Percentage among B.P.Ed and M.P.Ed Students

Figure 3 shows that the mean difference of Fat percentage among graduate and post graduate students of physical education. It is observed from the figure that graduate students of physical education have slightly high Fat percentage than post graduate students of physical education.

Table 5: Mean SD and t-value of Arm Length

Subjects	Mean of the Arm Length	SD	T-value
B.P.ED	70.16	4.580	0.028
M.P.ED	73.28	2.537	

Table - 5 shows the Mean, SD and t- value of Arm Length of graduate (B.P.Ed) and post graduate (M.P.Ed) students of physical education. The Arm Length of B.P.Ed students mean and standard deviation were found 70.16 and +4.580, and the M.P.ED students mean and standard deviation were found 73.28 and +2.537 respectively. The calculated t-value was 0.028, which was also less than the table value. So in Arm Length also there was no significant difference between two mean graduate and post graduate level students of physical education at 0.05 level of confidence.

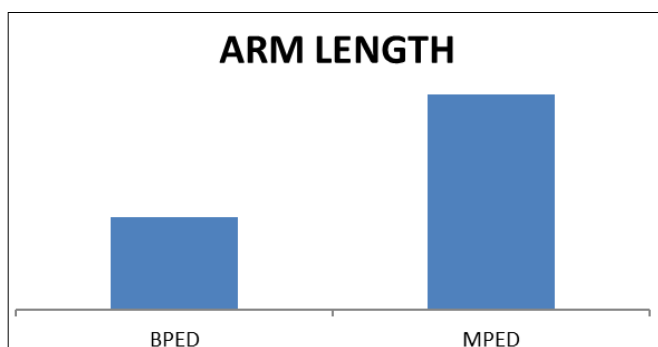


Fig 4: Graphical representation of the mean difference of Arm length among B.P.Ed and M.P.Ed Students

Figure 4 shows that the mean difference of Arm length among graduate and post graduate students of physical education. It is observed from the figure that post graduate students of physical education have slightly better Arm length than graduate students of physical education.

Table 6: Mean SD and t-value of Leg Length

Subjects	Mean of the Leg Length	SD	T-value
B.P.ED	79.09	6.940	0.652
M.P.ED	80.03	3.926	

Table - 6 shows the Mean, SD and t-value of Leg Length of graduate (B.P.Ed) and post graduate (M.P. Ed) students of physical education. The Leg Length of B.P.Ed students mean

and standard deviation were found 79.09 and +6.940, and the M.P.ED students mean and standard deviation were found 80.03 and +3.926 respectively. The calculated t-value was 0.652, which was also less than the table value. So in Leg Length also there was no significant difference between two mean tribal and non-tribal soccer players of Tripura University at 0.05 level of confidence.

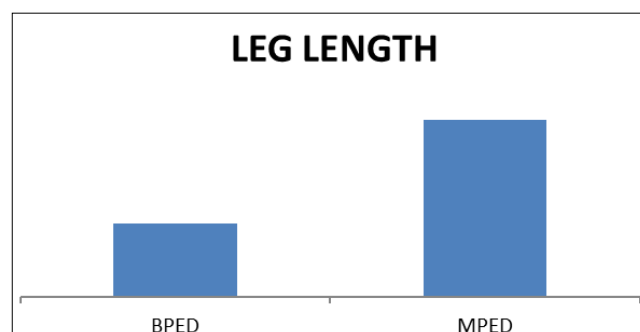


Fig 5: Graphical representation of the mean difference of Leg length among B.P.Ed and M.P.Ed Students

Figure 5 shows that the mean difference of Leg length among graduate and post graduate students of physical education. It is observed from the figure that post graduate students of physical education have slightly better leg length than graduate students of physical education.

Table 7: Mean SD and t-value of Vital capacity

Subjects	Mean of the Vital capacity	SD	T-value
B.P.ED	5.41	0.75	0.175
M.P.ED	5.78	0.68	

Table - 7 shows the Mean, SD and i- value of Vital Capacity of B.P.Ed and M.P.Ed students. The Vital Capacity of B.P.Ed students mean and standard deviation were found 5.41 and +0.75, and the M.P.Ed students mean and standard deviation were found 5.78 and +0.68 respectively. The calculated t-value was 0.175, which was also less than the table value. So in Vital Capacity also there was no significant difference between two mean graduate (B.P.Ed) and post graduate (M.P.Ed) level students of physical education at 0.05 level of confidence.

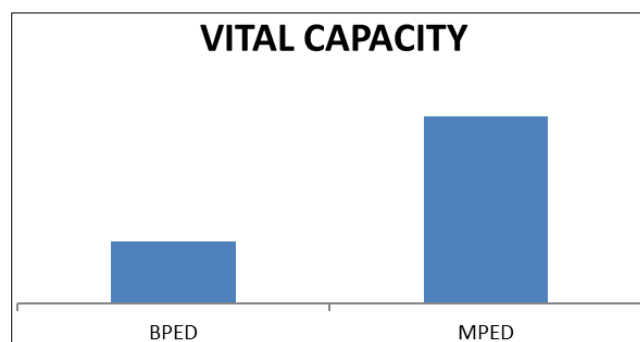


Fig 6: Graphical representation of the mean difference of Vital Capacity among B.P.Ed and M.P.Ed Students

Figure 6 shows that the mean difference of Vital capacity among graduate and post graduate students of physical education. It is observed from the figure that post graduate students of physical education have slightly better vital capacity than graduate students of physical education.

Discussion of the Findings

Based on the literature gone through the research findings and scholar's understanding of the subject area the following results were found.

There were no any significant differences in the mean of vital capacity, resting pulse rate, fat percentage, arm length, leg length, and BMI among graduate and post graduate level students of physical education. The researcher hypothesis states are not accepted as no significant difference was found in vital capacity, Resting pulse rate, fat percentage, arm length, leg length, and BMI among graduate (B.P.Ed) and post graduate (M.P.Ed) students of physical education. When the researcher observed the mean and standard deviation that there was a little difference in all the variables i.e. vital capacity, Resting heart rate, fat percentage, arm length, leg length, and BMI among B.P.Ed and M.P.Ed students. The researcher observed that the mean of vital capacity of B.P.Ed students better than M.P.Ed students. On the other hand post graduate level students (M.P.Ed) mean of arm length and leg length better comparing to graduate level students (B.P.Ed), though the differences were not statistically significant at 0.05 level of confidence. . Nitya G. Das and Dr. Krishnendu Dhar conducted a study to compare the selected Anthropometric Variables between 12-14 years Rajbangsi and other Bengali school going Boys. It is an established fact that an individual is the product of humidity environment and their complex interaction heredity is the genetic endowment, which one achieves from his parents by birth. Rajbangsi is such an ethnic group of Cooch Behar district of West Bengal. Because of different hereditary traits Rajbangsi people exhibit certain physical and anthropometric differences than the normal population at the same region. The purpose of the present study was to compare those anthropometric variables among Rajbangsi and other Bengali school boys. A total of 30 school boys within the age group of 12-14 years were selected as subject for the present study as per their availability and without any bias. Fifteen of them were from R Rajbangsi and the rest fifteen were from normal Bengali population. Height, Weight, sitting height, arm length, leg length, and shoulder width were selected as criteria. Mean and SD were used as descriptive statistics and for comparing the mean "t"- test were adopted. The researcher found no significant difference among the groups in all the selected variables

Summary

Physical fitness is a general state of health and well-being and, more specifically, the ability to perform aspects of Sports or occupations. Every human being or athlete must have physical fitness. Physical fitness depends on physical, physiological, and psychological status. Physical status are- size, shape, proportion etc. and that is determined by anthropometry measurement. The objective of physical activity is to improve the physical, physiological and mental fitness in athletes. Fitness is one of the most important requirements for any physical education student. Along with anthropometric variables, physiological variables is also a basic need for any physical education student, which depends on vital capacity, vo₂ max, pulse rate, blood pressure etc. The purpose of the study was to compare anthropometric variables and physiological variables among graduate and post graduate level students of physical education. A total of 30 graduate and post graduate students of physical education (15 in each group), was randomly selected for the purpose of the study. The graduate level students were selected from the Regional College of physical education, Panisagar and the

post graduate students were selected from the M.P.Ed students of Tripura University. In the present study the following parameters were selected age, height and weight as personal data, Anthropometric measuring criteria-BMI, Arm-length, Leg Length, Skin fold, Physiological variables measuring variables-Resting pulse rate, and Vital capacity. Reliability of test was established by test re- test method.

The data were analyzed using the mean, standard deviation and t-test. To test difference between means of selected Anthropometric variables and physiological variables of the subject, level of significance was set at 0.05.

Analysis of data for determining significance difference between mean of Anthropometric variables and physiological variables among graduate and post graduate students of physical education are as follows- B.M.I. (0.839), fat percentage (0.0067), arm length (0.028), leg length (0.652), Resting pulse rate (0.000177) and vital capacity (0.175). But calculate t-value much lower than table value. So, there were not found statistically significant difference at 0.05 level of confidence.

Conclusions

In the present study after analyzing the data following conclusion can be drawn

1. There is no significant difference in selected Anthropometric variables of graduate and post graduate students of physical education
2. There is no significant difference in selected physiological variables among graduate and post graduate students of physical education.
3. Regarding arm length, leg length there is also no significant difference found among graduate and post graduate students of physical education.
4. In vital capacity and Resting pulse rate though a difference is found but it is not significant among graduate (B.P.Ed) and post graduate (M.P.Ed) students of physical education.
5. Though slight difference is found in BMI among graduate (B.P.Ed) and post graduate (M.P.Ed) students of physical education but it was not statistically significant.
6. The researcher found no significant difference among graduate and post graduate students of physical education in all the selected Anthropometric variables and physiological variables. So, the hypothesis is rejected.

Recommendation

In the light of result and conclusions drawn, the following recommendations are made for further research study and application in practical field.

1. This type of study may be conducted among women players.
2. This study can be done on large number subjects.
3. These types of work can be conducted on experimental studies.

References

1. Sharma C. A comparative study on selected anthropometrical measurements of Kabaddi and boxing players, 2017.
2. Saini D. Analysis of Selected Physiological Variables between Haryana and Delhi Female Badminton Players. Lung. 2016;67:1-09.
3. Saini D. Analysis of Selected Physiological Variables between Haryana and Delhi Female Badminton Players. Lung. 2016;67:1-09.

4. Bharati P, Itagi S, Megeri SN. Anthropometric Measurements of School Children of Raichur,(Karnataka). *Journal of Human Ecology*. 2005;18(3):177-179.
5. Bayios IA, Bergeles NK, Apostolidis NG, Noutsos KS, Koskolou MD. Anthropometric, body composition and somatotype differences of Greek elite female basketball, volleyball and handball players. *Journal of sports medicine and physical fitness*. 2006;46(2):271.