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Relationships between anthropometry and physical fitness variables in softball players

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Abstract
The aim of this study was to examine the relationships between anthropometry and physical fitness variables in softball players. Thirty softball players who were studying in colleges affiliated to R.T.M. Nagpur University, Nagpur those who have represented intercollegiate tournaments were randomly selected as subjects for this investigation. The age of the participants were ranged from 18-20 years. Physical fitness was measured with the help of AAHPERD Test. The row scores of each item were converted into composite score and then correlated with each selected anthropometric variables. The Pearson Product Moment Coefficient of Correlation was used to find out the relationship between anthropometry and physical fitness variables in softball players. The level of significance was fixed at 0.05 levels. We concluded that six physical variables- muscular strength, muscular endurance, agility, explosive strength, speed, cardio-vascular endurance were found to be significantly correlated to standing height, sitting height, leg length and hand length where body weight was found to be not significantly correlated to physical fitness variables.

Keywords: anthropometry, physical fitness, softball

Introduction
The use of anthropometric is to determine relationship between body structure and motor performance observations of such relation are common place to observe the well-proportioned bodies of wrestler and gymnastics, the super structure of top level football, athletics, the champion distance runners and the massive builds of great shot putters and discus throwers on a less grand scale relationship with flexor tensed arm girth.

Anthropometry the science of human physical measurements has wide applications as one of the essential parameters constituting the selective diagnosis of any games or sports. Recently anthropometric measurement focuses on those areas, via growth measures, body types and body composition. Several investigations have studied the relationship between the morphological anatomical structural characteristics and the physiological phenomenon. The majority opinion was that certain correlation existed between body build physical characteristics and motor capacity [1].

Methodology
Thirty softball players who were studying in colleges affiliated to R.T.M. Nagpur University, Nagpur those who have represented intercollegiate tournaments were randomly selected as subjects for this investigation. The age of the participants were ranged from 18-20 years. Physical fitness was measured with the help of AAHPERD Test. The row scores of each items were converted into composite score and then correlated with each selected anthropometric variables.

Selection of variables
The following variables selected for the study with tests and criterion measures.

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| Variable	Test/Equipments used	Unit
Standing Height	Steel Tape	Meter
Sitting Height	Steel Tape	Meter
Body Weight	Weighing Machine	Kg.
Leg length	Steel Tape	Meter
Hand Length	Steel Tape	Meter
Muscular Strength	Pull Ups	Number count
Muscular Endurance	Sit Ups	Number count
Agility	Shuttle Run	In Second
Explosive Strength	Standing Long Jump	In Meter
Speed	50 yard Dash	In Second
Cardio-vascular endurance	600 yard Run and Walk	In Second

Statistical Procedure
The Pearson Product Moment Coefficient of Correlation was used to find out the relationship between anthropometry and physical fitness variables in softball players. The level of significance was fixed at 0.05 level.

Results and Discussion
The correlation of selected anthropometric variables with physical fitness of intercollegiate softball players were ascertained by the obtained values of coefficient of correlation. The results are presented in Table-I.

Table 1: Pearson correlation coefficients between physical fitness and anthropometric variables

Variable Correlated	Mean	SD	Correlation Coefficient
Standing Height	215.533	5.8116	0.766*
Sitting Height	174.6	5.5311	0.700*
Body Weight	102.433	2.25424	0.248
Leg length	66.9333	2.70291	0.633*
Hand Length	108.967	3.67173	0.577*

*Significant at.05 level of confidence   r.05 (28) 0.361

An analysis as shown in the above table no.1 indicated that the relationship of physical fitness to standing height was significant as the obtained value ($r = 0.766$) is much greater than the tabulated value (0.361) at 0.05 level with 28 degree of freedom.

An analysis as shown in the above table no.1 indicated that the correlation of physical fitness to body weight was insignificant as the obtained value ($r = 248$) is much lesser than the tabulated value (0.361) at 0.05 level with 28 degree of freedom.
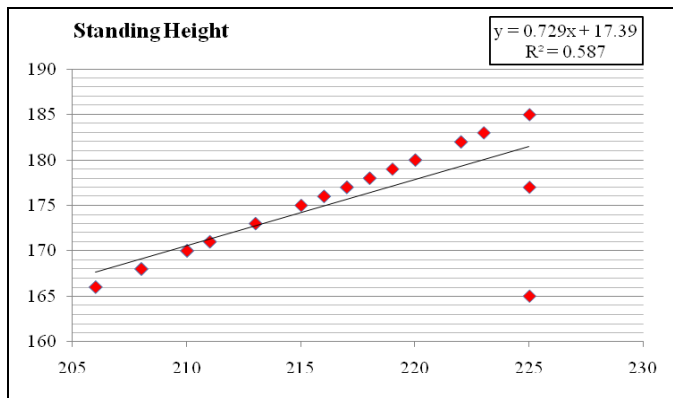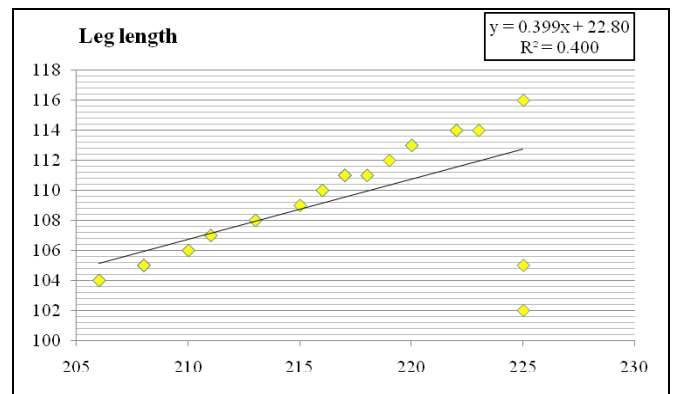

Fig 1: Scatter diagram shows values of physical fitness score and standing height

Table no.1 shows that the correlation of physical fitness to sitting height was significant as the obtained value ($r = 0.700$) is much greater than the tabulated value (0.361) at 0.05 level with 28 degree of freedom.
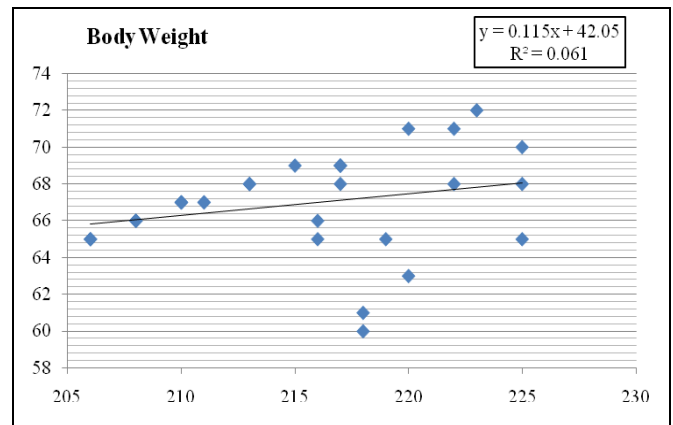
Fig 3: Scatter diagram shows values of physical fitness score and body weight

Table no.1 shows that the correlation of physical fitness to leg length was significant as the obtained value ($r = 0.633$) is much greater than the tabulated value (0.361) at 0.05 level with 28 degree of freedom.
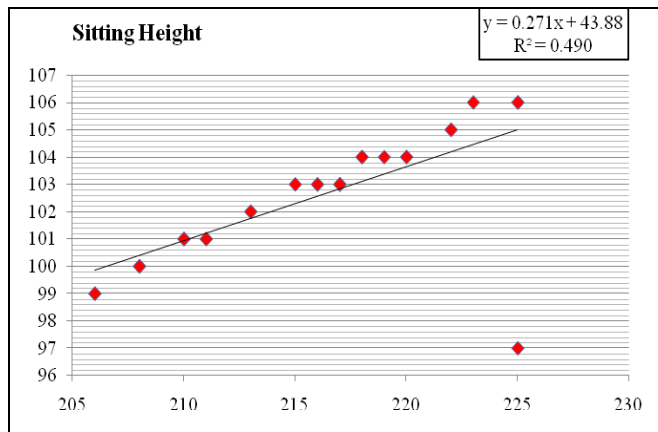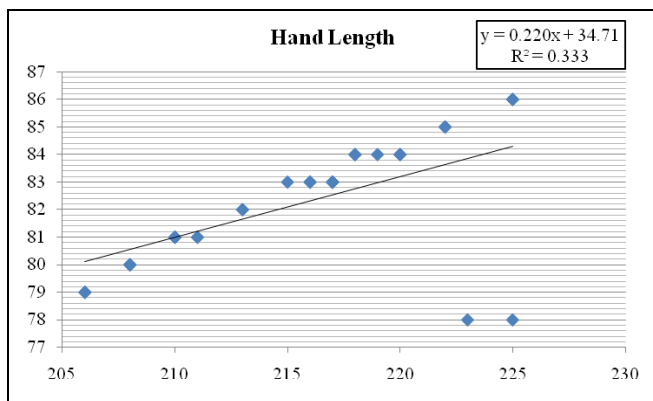

Fig 2: Scatter diagram shows values of physical fitness score and sitting height

Fig 4: Scatter diagram shows values of physical fitness score and leg length

Table no.1 shows that the correlation of physical fitness to hand length was significant as the obtained value (r = 0.577) is much greater than the tabulated value (0.361) at 0.05 level with 28 degree of freedom.

Fig 5: Scatter diagram shows values of physical fitness score and hand length

Conclusions

Within the limitations of this study, the following conclusions justified as per the results obtained.

An analysis as shown in the above table indicate that six physical variables- muscular strength, muscular endurance, agility, explosive strength, speed, cardio-vascular endurance were found to be significantly correlated to standing height, sitting height, leg length and hand length where body weight was found to be not significantly correlated to physical fitness variables.

References

1. Barrry L, Johnson, Jack K Nelson. Measurement for Evaluation in physical Education, Delhi: Surjeet Publications. 1973, 165.
2. Clarke, David H, Clarke Harrision H. Research process in Health Physical Education and Research, Engle wood cliffs, New Jersey: prentice Hall, Inc. 1970, 417.
3. Parumeswarn N. Kinesiology physical education and spots, Ludhiana: prakash publishers. 1984, 15.
4. Matheus, Donald K. Measurement in physical Education, Philadelphia: W.B Saunders Company. 1973, 19.
5. Yobu A. Test, Measurement and Evaluation in Physical Education and Sports, New Delhi: Friends Publications, 2010.