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Inter-relationship of height, weight, aerobic capacity, power, agility and speed of selected sports hostel inmates of Odisha

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Abstract

The present study was carried out to find out the Inter-Relationship of Height, Weight, Aerobic Capacity, Power, Agility and Speed of Selected Sports Hostel Inmates of Odisha. The present research scholar is serving as Coach-in-Charge in Sports Hostel of Govt. of Odisha and pursuing his Ph.D. programme under Utkal University. This paper is related to his course work and one of the pre-requisites for submission of his Ph.D. Theses. Data for the present study were collected from 150 male athletes, age ranging between 16 to 25 years, who have participated in the district level athletics competition in Odisha state. A total of 150 male athletes were selected from different sports hostels by using purposive sampling technique. Aerobic Capacity was assessed by Coopers 12 minutes run/walk test. Power was assessed by Margaria - Kalamen test. Speed was assessed by 50mts. dash and Agility by Hexagonal obstacle test. Data collected were analysed by applying Regression Analysis Techniques. It is concluded that the selected variables have little contribution towards the Performance in Speed. Hence other variables like Anthropometric Measurements and Physiological Parameters should be considered and the study may be re-conducted.

Keywords: Height, weight, aerobic capacity, power, agility, speed and sports hostel

Introduction

Education can be defined as a change, a modification, or an adjustment on the part of an individual as a result of experience. It is associated with learning and is characteristically followed by some change in behavior. If that change is positive and in the right direction, it seems to help those individuals being educated to adjust more effectively to their constantly changing environment, to understand more readily their experiences in that environment, or adjustment is manifested through growth, development, and achievement ^[1].

Education means preparation for life. It helps every individual to become all he incapable of becoming. Education must be concerned with developing optimum organic health, vitality, emotional stability, social consciousness, knowledge, wholesome attitude and spiritual and moral qualities. Sports by their varying natures are enjoyable, challenging, all absorbing and require a certain amount of skill and physical conditions. It is as old as human society itself and it has achieved a universal following in the modern time.

A highly systematic, well-developed programme of physical education, sports and games is basically a product of modern historical era. Although exercise fundamentally is a large part of physical education, sports and games, a close examination of the lives of the previous societies of man reveal that exercise alone is not a true representation of such activities but man has always had a propensity or natural bent for physical education, sports and games ^[2].

According to John Fitzgerald Kennedy "Physical fitness is not only one of the most important keys to a healthy body; it is the basis of dynamic and creative intellectual activity". Physical education, which is commonly a part of the curriculum at school level, includes training in the development and care of the human body and maintaining physical fitness. Physical education is also about sharpening overall cognitive abilities and motor skills via athletics, exercise and various other physical activities like martial arts and dance. Here are some of the benefits that highlight the importance of physical education.

Physical fitness is one of the most important elements of leading a healthy lifestyle. Physical

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education promotes the importance of inclusion of a regular fitness activity in the routine. This helps the students to maintain their fitness, develop their muscular strength, increase their endurance and thus stretch their physical abilities to an optimum level. Physical fitness helps to inculcate the importance of maintaining a healthy body, which in turn keeps them happy and energized. Sound physical fitness promotes increased absorption of nutrients, better functioning of digestion and all other physiological processes and hence results in all round fitness.

Performance

Performance is the sum total of these mentioned factors i.e. Anthropometrics, Socio-Economic, Psychological, Physiological, Physical Fitness etc. A variety of factors are involved in actually attaining performance goals. There are number of important performance prerequisites for good performance in sports. They are aerobic capacity, good eyesight, speed, endurance, co-ordination, tactics, intelligence etc. But in a nutshell it can be said that the co-relations of these factors are prime factor, which is responsible for better performance.

Statement of Problem

The present research scholar is serving as Coach-in-Charge in Sports Hostel of Govt. of Odisha and pursuing his Ph.D. programme under Utkal University. This paper is related to his course work and one of the pre-requisites for submission of his Ph.D. Theses. Hence the problem is stated as "Inter-Relationship of Height, Weight, Aerobic Capacity, Power, Agility and Speed of Selected Sports Hostel Inmates of Odisha".

Purpose of Study

The purpose of the study was to study the Inter-Relationship of Height, Weight, Aerobic Capacity, Power, Agility and Speed of Selected Sports Hostel Inmates of Odisha. Further the purpose of the study was to develop the Prediction Equation for forecasting the Performance of the Inmates of Sports Hostel in Odisha.

Significance of the Study

The significance of the present study is argued on the fact that (1) The study will show the Inter-Relationship of Height, Weight, Aerobic Capacity, Power, Agility and Speed of Selected Sports Hostel Inmates of Odisha; (2) The study may help to set up the target of performance related variables to be achieved, keeping in view the performance demand in Odisha; (3) The study would promote enthusiasm and interest among scholars for further research in the field of sports.

Hypothesis

Based upon the reviews of literature and the past experiences of the research scholar, it was hypothesized that there will be a positive relationship of Height, Weight, Aerobic Capacity, Power and Agility with Speed.

Delimitations and Limitations

The study was confined only to 150 male athletes between 16 to 25 years, who have participated in the district level athletics competition in Odisha state. The previous experience of the subjects in the field of sports and games, which might be influencing on the data collection were not considered. The Socio-Economic statuses of the subjects were beyond the control of the research scholar.

Definition of the Terms

Aerobic capacity

Aerobic means, with oxygen during aerobic exercise a large portion of the required energy is obtained from the aerobic energy system. The aerobic capacity is the maximal amount of energy that can be produced by the system. It is the highest amount of oxygen consumed during maximal exercise in activities that use the large muscle groups in the legs or arms and legs combined.

Speed

Speed is the ability to move quickly across the ground. Speed as the capacity of performing a movement or covering a distance as fast as possible.

Agility

Agility is defined as "a skill-related component of physical fitness that relates to the ability to rapidly change the position of the entire body in space with speed and accuracy.

Power

It is capacity of the individual to bring into play maximum muscle contraction at the fastest rate of speed.

Review of Related Literature

A summary of the writings of recognized authorities and previous researchers provides evidence that the concerned researcher is familiar with what is already known and what is still unknown and untested. Since effective research is based upon past knowledge, this step helps to eliminate the duplication of what has been done, and provides useful hypotheses and helpful suggestions for significant investigation^[3].

Review suggests a method and a technique of dealing with a problematic situation, which may also suggest avenues of approach to the solution of similar difficulties, a scholar may be facing. It can provide the investigator with new ideas and approaches, which may not have occurred to him. It also assists the researcher in evaluating his own research efforts by comparing them with related efforts done by others^[4].

Considering the importance of reviews efforts were made to find out the researches completed and related to the present study by giving visit to the libraries of different leading universities in India. Internet was also used to find some new reviews pertaining to the present study. From the 42 reviews it is found that there is very little relationship of Height, Weight, Aerobic Capacity, Power and Agility with Speed i.e. performance in the present study.

Sources of Data

Data for the present study were collected from 150 male athletes, age ranging between 16 to 25 years, who have participated in the district level athletics competition in Odisha state.

Sampling Method

A total of 150 male athletes were selected from different sports hostels by using purposive sampling technique.

Criterion Measures and Tools for the Collection of Data

Aerobic Capacity was assessed by Coopers 12 minutes run/walk test. Power was assessed by Margaria - Kalamen test. Speed was assessed by 50 mts. dash and Agility by Hexagonal obstacle test.

Analysis and Interpretation of Data

The purpose of the study was to study the Inter-Relationship of Height, Weight, Aerobic Capacity, Power, Agility and Speed of Selected Sports Hostel Inmates of Odisha. To achieve this objective data were collected from 150 male athletes were selected from different sports hostels. To analyse the data collected, the research scholar used the Regression Analysis Techniques. Multiple regression equation describes the path of the mean values of the

dependent variable Y, for all combinations of the independent variables $X_1, X_2, X_3, \dots, X_k$. Multiple regression equation is expressed as “ $Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \dots + \beta_k X_k$ ” in which α is a constant, $\beta_1, \beta_2, \dots, \beta_k$ are constants known as partial regression coefficients, Y is the variable taken to be dependent and it is to be predicted/estimated and $X_1, X_2, X_3, \dots, X_k$ are the independent variables [5].

Table 1: Showing Inter-Correlations among the Selected Variables and Performance

	Weight	Height	Power	Aerobic	Agility	Performance
Weight	1.00					
Height	0.48	1.00				
Power	0.74	0.56	1.00			
Aerobic	-0.05	0.00	-0.04	1.00		
Agility	-0.13	-0.09	-0.17	0.22	1.00	
Performance	0.02	0.09	-0.02	-0.13	0.02	1.00

From the above table it is observed that there is good relationship of Power with Height and Weight. The relationship of Height and Weight is moderate. In rest of the parameters the inter-correlations are negligible.

Table 2: Showing different components of Regression Statistics

Multiple R	0.19
R Square	0.04
Adjusted R Square	0.00
Standard Error	0.49
Observations	150
Intercept	5.70
Weight	0.00
Height	0.92
Power	-0.01
Aerobic	0.00
Agility	0.01

Based upon the above components, the Prediction Equation for the Performance can be formulated as Performance = 5.70 + Weight x 0.0 + Height x 0.92 + Power x -0.01 + Aerobic x 0.0 + Agility x 0.01.

Conclusion

Based upon the present data and its analysis, it is concluded that the selected variables have little contribution towards the Performance in Speed. Hence other variables like Anthropometric Measurements and Physiological Parameters should be considered and the study may be re-conducted.

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