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A Comparative Analysis of Selected Physical and Physiological Variables between Pre- Adolescent and Adolescent Girls

Sanjay Kumar[1] and Rekha Devi[2]
[1]Physical Education & Sports, Central Sanskrit University, Ved Vyas Campus, Balahar, District Kangra Himachal Pradesh, India
[2]DIET, Dharamsala, District Kangra Himachal Pradesh, India
sanjaymankotia23@gmail.com

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Abstract

The purpose of the study was to compare the selected physical and physiological variables between preadolescent and adolescent girls. The present study has been conducted on 60 players with an aim to find out the difference between Pre Adolescent (n=30) and Adolescent (n=30) players of Himachal Pradesh. Sample for present study was taken from schools of District Kangra, Himachal Pradesh, India. Each pre-adolescent and adolescent girl players were tested for Physical and Physiological variables i.e. Speed, Cardio reparatory Endurance, resting pulse rate and breath holding time. To analyze the difference in Physical and Physiological variables between two groups of Pre adolescent and adolescent players were determined through 't' test. From the findings, it has been found that there existed no significant difference in above given physical fitness variables between Pre Adolescent and Adolescent players belongs to District Kangra of Himachal Pradesh. However there existed significant difference in between Physical and Physiological Speed between Pre adolescent and adolescent girls of Himachal Pradesh players.

Keywords: Physical and Physiological, variables, Pre-Adolescent and Adolescent.

Introduction

The scientific research in the fields of physical education and sports is a precious benefit to athletes, trainers and watches. The physical education scientists have trying to develop new methods of training and techniques to attain higher level of performance in games and sports. Though research in physical education and sports is new venture, it has already reached a new weigh of technical knowledge. Physiological experiments conducted in recent years have conclusively proved that the performance in any sports activities depends upon the physical fitness and the body type of the athletes[1].

Physical activities and sports serving as vehicles to achieve and maintain social relationship with other people. Sports for all becomes a very popular slogan all over the world today. Participation in sports will yield optimum physical fitness and positive health for all. Today's mostly depends upon science and technology. In such circumstance people need more exercise to keep the body and mind fit to execute the activity efficiently. Sports is a popular spectacle and a mass social movement of contemporary times. In the process of historical development, sport has occupied a prominent place in both the physical as well as in the moral culture of society. Its social significance continues to soar.

The modern world is a world of competition. In every phase of life people have to face one or other kind of competition. In this competitive world sports and games occupy. The main aim of modern sports competition is to detect and develop human ability at an early stage of life and channelize it in the right direction to realize the achievements aimed at in particular sports and games.

The world of games and sports is every expanding with intensity of competition and enlarging scientific advancement has influenced the mode of selection, screening and training the athletes in a variety of sports activities an international level. The sports performance in international competition and tournament not only denotes the high level of efficiency of an individual sports man but also gives expression to the overall efficiency of a nation, society and culture to which he (or) she belongs. The countries, which win the greater number of medals in Olympics (the maximum number of medals per unit of their population) have better political, economical, social and cultural conditions, which are indispensable for producing world champions[2].

In the present day world great importance and prominence are given to sports and games. Even underdeveloped countries are interested in competitive sports and winning laurels in the internal sports. People all over the world area of the idea that the development of a country is significantly notable and related to the development of sports and games in that country.

It is also to be understood that a country which exhibited better performance in the field of sports and games will reveal its worth in other fields like, industry, science, technology,

economic status. This is the main reason for all the nations taking active interest in the field of international sports and competitions[3]. Sports for all become a very popular slogan all over the world. Today participation in sports will yield optimum physical fitness and positive health for all. Today's life mostly depends upon science and technology. In such circumstances, people need more exercise to keep the body and mind fit to execute the activity efficiently.

The modern world is a world of competition in every phase of life people have to face one (or) other kind of competition. In this competitive world sports and games occupy a unique position. It is the area of friendly rivalry. Top class international sports meets are considered to be the international ambassadors of peace. Top nation in the world are trying for world supremacy in various sports and games. The maintain of modern sports competition activity that involves vigorous physical exertion (or) the use of relatively complex physical skills by individual whose participation is motivated by a combination of intrinsic factors.

The sports performance in international competitions and tournament not only denotes the high level of efficiency of an individual sportsman but also gives expressions to the overall efficiency of a nation, society and culture to which he (or) she belongs. The countries which win the greater number of medals in Olympics have better political, economical, social and cultural conditions which are indispensable for producing world champions. Needless to say sports have long been intimately related to the social, political, economic and religions institution. The institution of family has been affected by the sports events in more than one way. It is a common observation that politicians are found eager to identify with sport celebrities and successes of sports teams. The economy is also activated by the large amount of money spent on various items of sports. Many religions organisations may be seen drawing up various athletic programmes[4].

The belief experience of physical education today rest on the history of this field of endeavour. It is a source of physical education's identity. Many of today's activities have their forerunners in history. Many more facts that will help the physical educators to understand the present better can be achieved by studying past.

Budha's prohibition of games, amusements and exercises in ancient India did not totally prevent participation in such activities. The Indian physical activities such as chariot race, riding elephants and horse, swordsmanship, wrestling, boxing, dands, baithak, malkhamb, lezim, lathi, etc. have been in practice from time immemorial. But neither the names of the inventors of the Indian system of physical education was in existence in India and was practiced by the people[4].

The word physical education is derived from two separate words "physical" and "education". The word physical is 'relating to body', it may relate to any one or all of the bodily characteristics. It may be physical fitness, physical endurance physical appearance (or) physical health. The word education means systematic instructions (or) training or preparation for life or for some particular task.

A combined meaning of these two worlds would be that systematic instructions or training which relate to physical activities (or) programme of activities, necessary for development and maintenance of human body, development of physical powers, or cultivation of physical skill. Physical education is an education of and through human movement where many of the educational objectives are achieved by means of big muscle activities involving sports, games, gymnastics, dance and exercise[5].

The quantity and quality of research improve, which is to be expected. This is certainly not meant to imply any criticism of the early researchers. On the contrary physical education has been extremely fortunate to have had such excellent are inspiring leadership in the areas of research and tests and measurements. As in any profession, students most profit from the experiences of the professors and strive to improve upon the work of these who have gone before[6].

Physical education scores as a medium of men's total education and intellectual development using experience centered in movement. Hence, the promotion of physical education is the moral and social responsibility of each nation[7]. Physical education is an educational process that has as its aim the improvement of human performance through the medium of physical activities selected to realize this outcome. The word 'physical' refers to the body characteristics such as physical strength physical department, physical health and physical appearance. Thus physical education refers to the process of education that goes on in the school through all activities in the development and maintenance of the human body. Bucher defines physical education as "an integral part of the total education process of a field of endeavour that has its aim the development of physically, mentally, emotionally and socially fit citizens through the medium of physical activities that have been selected with a view to realize these out comes[8].

Physical education is a way of education through motor activity and related experiences and its matter is primarily ways of behaving[9]. Physical education has a special significance, unique role and has made unlimited contribution in the modern age as it caters to the biological, sociological and psychological necessities of the man. Swami Vivekananda has stressed that "what India need today is not the Bhagwat Geeta but the football ground. Physical education is of great value for the man not only for his present but also for his future. Emphasizing the need and importance of physical education, Rousse said, "It is the sound constitution of the body that makes the operation of mind easy and certain.

The secondary education commission was aware of the need and importance of physical education when it stated, the physical welfare of youth of the country should be one of the main concerns of the state and any departure from the normal standards of physical well being at this period of life may have serious consequences". Today's man is facing, as never before, the crisis of existence and adjustment. Torn survive and overcome this present crisis, the need of the hour is grooming up a couragements, both physical, mentally, emotionally, socially and intellectually strong individual.

Jen son and Schultz observed in the vertical jump the forces as directed and the projection takes place with the centre of gravity over the base of support, after initiation of the upward movement if the arms and shoulders the movement that follow in close sequences are hip, knee, ankle extension, and toe flexion. The combined forces from these movements determine how high the body will be projected[10].

G.S. Sundararajan stated that jumping events require height, depending on mostly on like strength. Leverage and leg strength greater leg length to total body height was advantages to facilitate the vertical jumping ability and standing broad jump with long leg[11]. According to Martin and Stull the vertical jump has been employed in numerous studies for the purpose of classifying students predicting athlete ability, measuring physical fitness and validating new tests and training programmes in physical education[12].

Statement of the Problem: "A Comparative Analysis of Selected Physical and Physiological Variables between Pre-Adolescent and Adolescent Girls"

Objectives of the Study: i. To compare difference between the selected physical and physiological variables such as speed between pre adolescent and adolescent girls. ii. To compare difference between the selected physical and physiological variables such as cardio respiratory endurance between pre adolescent and adolescent girls. iii. To compare difference between the selected physical and physiological variables such as resting pulse rate between pre adolescent and adolescent girls. iv. To compare difference between the selected physical and physiological variables such as breath holding time between pre adolescent and adolescent girls.

Delimitation of the Study: i. Only thirty pre-adolescent and thirty adolescent girls studying in the Kangra District were selected as subjects. ii. The physical and physiological components are as follow; speed, cardio respiratory endurance, resting pulse rate and breath holding time. iii. The in dependent selected groups were pre-adolescent and adolescent girls of Kangra District, Himachal Pradesh, India. iv. The age group of the subjects was ranged from 15 to 20 years.

Limitations of the study: i. The climatic conditions such as temperature, altitude and other environmental factors were not taken into an account. ii. The past experience of the subjects in various fields other than the specific games was not considered. iii. The weight and height of the subjects were not taken into an account.

Hypothesis: It was hypothesized that there may be a significant difference between pre- adolescent and adolescent girls on selected physical and physiological variables.

Methodology

The present study has been conducted on 30 pre adolescent and 30 adolescent girls studying in the District Kangra, Himachal Pradesh, India were selected as subject at random. The age of the subject were ranged between 15 to 20 years. Each player was to compare the selected Physical and Physiological Variables Between preadolescent and adolescent girls. Each player was tested for test and measurement Physical fitness Variables i.e. speed and cardio respiratory endurance and Physiological Variables measurements such as resting pulse rate and breath holding time were selected. To test the significance of mean difference between pre-Adolescent and adolescent girl's statistical technique of "t" and ANOVA test was applied.

Selection of Tests: Based on the availability of the instruments, feasibility and also based on the reviews, the selected variables were tested by using standardized test items. The following test items were selected to test the variables for the study and it was presented in the Table-1.

Table-1: Test Selection.

Variables	Test Items
Speed	50 mtr run
Cardio respiratory endurance	Cooper's 12min run /walk
Resting Pulse Rate	Radial pulse
Breathing Holding Time	Holding Breath for time

Collection of the Data: Prior to the administration of the test, the purpose of the study and the testing procedures were explained in the detail to the subjects to ensure proper understanding effective co-operation and to obtain the reliable data. The data were collected on selected physical and physiological variables such as speed, cardio respiratory endurance, resting pulse rate and breath holding time and they were measured by using 50mtr.run, Cooper's 12 Min. run test, radial pulse and holding breath for time respectively.

Statistical Procedures: The purpose of the study was to compare the selected physical and physiological variables between pre adolescent and adolescent girls. The achieve this purpose of the study 30 pre adolescent and 30 adolescent girls

studying in the Kangra District, Himachal Pradesh were selected as subjects at random. The data was collected on selected criterion variables and they were statistically analyzed by using "t" ratio, in all the cases.05 level of significance was fixed to test the significance.

Results and Discussion

Analysis of the Data and results of the study: The mean, standard deviation and "t" ratio values on each criterion variables were analysed separately and presented below:

The mean, standard deviation and 't' ratio values on speed of pre-adolescent and adolescent girls have been analyzed and presented in Table-2.

Table-2: The Mean, Standard Deviation and 't 'Ratio values between Pre- adolescent and adolescent girls on speed.

Groups	Mean	Standard Deviation	't' ratio value
Pre-adolescent girls	8.12	1.10	4.11*
Adolescent girls	7.94	1.12	

*Significant at.05 level of confidence.

The Table-2 values required for significance at .05 level of confidence with df 58 was 2.002.

The Table-2 shows that mean values on speed for pre adolescent girls were 8.12 and 7.94 respectively. The obtained 't' ratio value on speed 4.11 which was greater than the table value required for significance with df 58 was 2.002. The results of the study showed that there was a significant difference between pre adolescent and adolescent girls on speed. The mean values of pre adolescent and adolescent girls on speed.

The mean, standard deviation and 't' ratio values on Cardio respiratory endurance of pre adolescent and adolescent girls have been analyzed and presented in Table-3.

Table-3: The Mean, Standard Deviation and 't' Ratio values between Pre-adolescent and adolescent girls on Cardio respiratory endurance.

Groups	Menu	Standard Deviation	't' ratio value
Pre-adolescent girls	1050	21.25	5.86*
Adolescent	1210	23.85	

*Significant at .05 level of confidence.

The Table-3 values required for significance at .05 level of confidence with df 58 was 2.002.

The Table-3 shows that the mean values on cardio respiratory endurance for pre adolescent and adolescent girls were 1050 and 1210 respectively. The obtained 't' ratio value on speed 5.86 which was greater than the table value required for significance with df 58 was 2.002. The results of the study show that there was a significant difference between pre adolescent and adolescent girls on cardio respiratory endurance. The mean values of pre adolescent and adolescent girls on cardio respiratory endurance.

The mean, standard deviation and 't' ratio values on resting pulse endurance of pre adolescent and adolescent girls have been analyzed and presented in Table-4.

Table-4: The Mean, Standard Deviation and 't' Ratio values between Pre-adolescent and adolescent girls on resting pulse rate.

Groups	Mean	Standard Deviation	't' ratio value
Pre-Adolescent Girls	57.2	2.87	4.85*
Adolescent	62.4	2.51	

*Significant at .05 level of confidence.

The Table-4 values required for significance at .05 level of confidence with df 58 was 2.002.

The Table-4 shows that the mean values on resting pulse rate for pre adolescent and adolescent girls were 57.2 and 62.4 respectively. The obtained 't' ratio value on speed 4.85 which was greater than the table value required for significance with df 58 was 2.002. The results of the study show that there was a significant difference between pre adolescent and adolescent girls on cardio respiratory endurance. The mean values of pre adolescent and adolescent girls on resting pulse rate.

The mean, standard deviation and 't' ratio values on breathing holding time of pre adolescent and adolescent girls have been analyzed and presented in Table-5.

Table-5: The Mean, Standard Deviation and 't' Ratio values between Pre-adolescent and adolescent girls on breathing holding time

Groups	Mean	Standard Deviation	't' ratio value
Pre-Adolescent Girls	59.5	0.87	6.92*
Adolescent	61.2	0.79	

*Significant at .05 level of confidence.

The Table-5 values required for significance at .05 level of confidence with df 58 was 2.002.

The Table-5 shows that the mean values on breathing holding time for pre adolescent and adolescent girls were 61.2 and 59.2 respectively. The obtained 't' ratio value on breathing holding time 6.92 which was greater than the table value required for significance with df 58 was 2.002. The results of the study show that there was a significant difference between pre adolescent and adolescent girls on breathing holding time. The mean values of pre-adolescent and adolescent girls on breathing holding time.

Discussion of the results: The results of the study showed that there was a significant difference between pre adolescent and adolescent girls on selected criterion variables such as speed, cardio respiratory endurance, resting pulse rate and breathe holding time. It may be due to the reason that the nature of the gender.

Discussion on Hypotheses: It was hypothesized that there may be a significant difference between pre adolescent and adolescentgirlsonselectedphysicalandphysiologicalvariables.The resultsofthestudyshowed that there was a significant difference between pre adolescent and adolescent girls on selected physical and physiological variables such as speed, cardio respiratory endurance, resting pulse rate and breath holding time. Hence, the researcher's first hypotheses was accepted.

Conclusion

Based on the results of the study, the following conclusions were drawn: There was a significant difference between pre-adolescent and adolescent girls on speed. There was a significant difference between pre-Adolescent and adolescent girls on cardio respiratory endurance. There was a significant difference between pre-adolescent and adolescent girls on resting pulse rate. There was a significant difference between pre-adolescent and adolescent girls on breath holding time.

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