



Comparative study of Athletic Potentiality in Relation to Selected Performance Variables among High School Boys

Manoj Goel

Research Scholar, Physical Education, Calorx Teachers' University, Ahmedabad, Gujarat

Dr. Arvind Mukharji

H.O.D., Physical Education, Calorx Teachers' University, Ahmedabad, Gujarat

Dr. Dinesh

Director, Physical Education, DAV CET, Kanina, Mahendergarh, Haryana

Abstract: In order to understand the concept of present study and get the idea about various types of studies related to this particular field a review of related literature helped the research scholar to a great extent. The researcher collected information from various sources in order to know about the background material and methods used, the statistical technique employed to analyze the data and to evaluate the significance of the study. The related study helped in further investigation. Such literatures were available in the form of books, periodicals, reviews and journals etc. which helped the research scholar during investigation. The directly or indirectly related literature provided the background for the present study.

Keywords: Athletic Potentiality, Performance Variables, High School Boys, University level
Introduction

The problems of modern child are varied in type. While in the west, the process of urbanization is largely completed and the high-tech life style prompts them to avoid natural forms of physically activities, in the Third world countries the problem is different. Here many children commence work at the extremely early age and the participation in physical activities or sport is very much related to the socio-economic conditions. Many children cannot afford to spare their times for sport and recreations. They are rather compelled to engage in their live hood. Economic factors ake substantial impact on both leisure activity and sports participation of the children of the third world. But the United Nations Educational Scientific and Cultural Organizations in 1978 at its 20th session drew up charter of physical Education and Sports. It emphasizes that ever body should have access to physical Education and sports and this may be dedicated to human progress and development.

New Scientific Approach to Athletic Performance:

The man throughout his evolutionary process evaluates his performance and always aspires to run fasted, jump the highest and lift the heaviest load. Each Olympic brings the new records by shortening the winning time for most running and swimming events,, lifting the weights and jumping the heights. After the Second World War various nations have become more interested for the improvement in sport performance of their people. For the improvement of his performance man has to rely more and more on-developed sciences.

The remarkable improvement in the standard of athletic performance during the past few decades represents unique Biological phenomenon. It was inconceivable even a decade ago, that some of the earlier established athletic records could be improved upon within such a short span. Apart from phenomenal progress in training methods, techniques and improvement in tools, equipments, track and various other associated factors which contribute in shaping a world class athlete, genetically endowed human potential seems to play a great role in the final outcome, everything else being equal. However, the nature of the contributory



role of the genetic factor in sport event is still a mystery. Perhaps in few years with the rapid advances in the field of genetics, a clear picture may soon emerge.

As sport has developed into a distinct scientific discipline in itself and each is vying with the other to produce top class players to win laurels in International competitions, considerable research is devoted to identify the factors that will be predictive of achieving high level of skill in a given sports with proper coaching.

It is important to understand the role of different sportive factors that influence performance individually and in combination. This will help the coach or a physical educationist to counsel the potential or talented sportsman at an appropriate age. The development of all the factors determining performance is intimately linked without the growth and development of the child from the birth onwards. During this age the child starts taking active interest in physical activities in his own way. Any physical activity or sport is expected to improve his biological growth in all factors connected with the fully understand the detailed structure of performance in sport.

Sports Achievement:

It is not for everyone to achieve world fame. However, if one is destined to such height, it will become evident in early stage itself that the athlete, person or sportsman, was born with certain attributes and gifts, without which a really great success is not probably possible.

The modern world appears to be much more concerned with the world of sports. The hold of sports has grown very strong on the mind of individuals in the society at large. Sportsmen and spectators are very clear about the value and significance of sports. There is hardly any individual who has been left out of its impact in the countries of the developed world. Now winning the competitions involves the national prestige as each nation strive to win a tournament in which they compete. There are certain nations/states which try to project the superiority of their political ideology and socio-political system through spectacular achievements in the field off sports. They show their excellence y winning the maximum number of medals in all the international competitions. The participating competitors in sports, at the International level bring name, fame and laurels for their countries and also raise their prestige.

At each Olympic Games and International competitions, the standard of performance is raised and new records are set for human skills and endurance. It also aims at understanding and assessing the athlete in totality. Competition at all levels are so keen that no coach or player can afford to neglect the application of scientific training principles that can give him and advantage over or atheist keep him in pace with his opponent.

Physiological system are highly adaptable to exercise. Each task has major physiological component and fitness for the task require effective functioning of the appropriate system Involvement in systematic programmers of training brings about the desirable changes in the physical and physiological ability which enhances the athlete's performance in his sports.

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



Review Literature:

In the present study by Deol et al. (2008), an attempt has been made to analyze the comparative effect of exercise on physical fitness between active and inactive females. Total 68 female subjects were taken for the experiment (34 active female and 34 inactive female subjects), and the age of the subjects were between 20 to 27 years, to study the cardiovascular fitness, muscular strength, muscular endurance and physical efficiency of physically active and inactive females, from Panjab University, Patiala. The criterion variables were weight, Body Mass Index (B.M.I.), Grip strength (Right and Left Hand), Persistence time, 12 min. run/walk test and concentration of Hemoglobin.

The observation revealed that the physically active females were taller than inactive females and when the statistical difference was recorded the physically active females had better cardiovascular fitness in comparison to inactive females which shows the physical training improves the cardiovascular fitness of females.

The muscular endurance was also significantly better in physically active females as compared to physically inactive females. There was significant difference between active and inactive females.

Pandey et al. (2007) studied fifty adolescent boys as subjects to 8-weeks aerobic exercise training (experimental group) and an equal number was taken in the control group. The effects of exercise components—dash speed, explosive strength, strength endurance and agility were evaluated.

It was that after 4 weeks of training, there was no change in speed but significant change was observed after 8 weeks. The time recorded improved from 8.67 seconds to 8.16 seconds. Similar change was observed in “Standing Broad Jump” (Explosive strength) performance increasing from 1.59 meters to 1.67 meters. The strength endurance test, Arms and Shoulders (Pull-ups) and Abdomen Endurance (sit-ups) improved after both 4 weeks and 8 weeks of training. The initial averages for pull-ups and sit-ups were 7.16 and 18.3 respectively. While these figures, after 8 weeks training were 10.53 and 22.30. The agility measurement i.e. 4x10 meters shuttle run revealed significant increase in agility, which improved from 10.02 seconds to 9.92 seconds. The results conclusively showed that aerobic exercises improve motor fitness.

Sisodiya and Parihar (2007), studied to determine the effect of three different duration of break in training on the selected physical fitness variables. Twelve subjects of various faculties of J.N.V. University, Jodhapur, acted as subject for this study. The selected motor variables for this study were speed, strength and agility for physical fitness. The speed was measured with 50 meters dash test, strength was measured with standing broad jump test and the agility test was measured with 4x 10 meters shuttle Run. The pre-test (initial Test) were taken before break and post test were taken after each break, the first post test were taken after one week break and second were after two week and final post test were taken after three Week break in training. To find out the comparative significant difference on selected physical fitness event due to three different durations of breaks in training, Correlation, variance and “t” test were used to compare the mean difference between the variables. Significance of t-test and critical difference was tested at 0.05 levels. Tabulated ‘t’ observed in this study was 2.07 and in all the cases it was found that $t_{tab} > t_{cal}$ so hypothesis may be



accepter at given level of significance.

Data Collection & Anlysis

The data pertaining to the study were collected on six hundred forty high School athletes of four different levels of School, tehsil, District and Division were analyzed statistically by using standard and appropriate procedure. To find out the difference among the means of four selected levels of athletes, one way analyzed of variance (F-test) was employed for each variable separately and wherever F-ratio was found to be significant, LSD Post Hoc test was applied to determine paired mean difference. The raw scores were converted into T- scores to obtain composite scores of each selected variables independently and then Person's product Moment coefficient of co-relation in between the selected variables are selected variables are stated in the table.

Parameter Wise Analysis Of Physical Fitness Components :-

The following physical fitness parameters for the present study have been considered as Bend Knee Sit-Ups (Muscular strength and endurance), 50 yard dash (speed), 600 yard/run (cardio vascular endurance), shuttle run (agility), and standing broad jump (muscular power). All these variable measurements were taken as per procedure mentioned in chapter-3.

The investigator intended to observe the significant differences in each parameter among the groups. For this purpose, the mean and standard deviation of each parameter for each group were calculated first, the ANOVA was employed for each group and post hoc test was implemented when it was found to be needed.

TABLE -1

SUMMARY OF ANOVA OF BEND KNEE SIT-UPS AT FOUR LEVELS OF HIGH SCHOOL ATHLETES

	Sum of Square	df	Mean Square	F-Ratio
Between groups	21505.962	3	17067.654	116.2470*



Within groups	93379.012	636	146.822	
Total	144581.975	639		

Significant at 0.01 level

tabulated F.05(3,636)2.6 14

From table-1, it is evident that the F-value is 116.47 which is significant at 0.05 level with df 3/636. It means that mean of Bend Knee Sit -Ups of male Athletes of School, Tahsil, District and Division level differ significantly. In this context, the null Hypothesis that, there is no significant difference in mean score of Bend Knee Sit -Ups of School, Tahsil, District and Division level male athletes is rejected.

Since the F-ratio was found to be significant, therefore for finding out Paired Mean difference among the groups, LSD Post hoc test was applied and it is stated below.

TABLE -2

**PAIRED MEAN DIFFERENCE IN BEND KNEE SIT -UPS AT SCHOOL,
TAHSIL, DISTRICT AND DIVISION LEVEL OF HIGH SCHOOL MALE
ATHLETES**

Comparison of group Mean difference		Mean difference	Critical Difference
School	Tahsil	1.47	3.54
School	District	6.56	3.54
School	Division	22.55	3.54



Tahsil	District	5.09	3.54
Tahsil	Division	21.08	3.54
District	Division	15.98	3.54

Significant at 0.05 level

It is evident from the above table that the mean of Bend Knee Sit -Ups of School athletes do not differ significantly with Tahsil level (MD=1.47), because critical difference value of 3.54 at 0.05 level is greater than the mean difference value. It is also found from the above table that, there are significant mean difference in between School and District (MD6.56), School and Division (MD22.55), Tahsil and District (MD=5.09), Tahsil and Division (MD21.08) District and Division (MD15.98), as all the mean difference values are greater than the critical difference value of 3.54 at 0.05 level of confidence. The mean values are depicted in fig. 1

Conclusions:-

Within the limitations of the present study and on the basis of findings the following conclusions are drawn.

- 1) There are significant differences in the mean value of composite scores of Physical Fitness of the four selected groups namely School, Tahsil, District and Division level High School athletes.
- 2) It is also found that Division level High School athletes are superior in the Physical Fitness score while compared against the District, Tahsil and School level.
- 3) Each and every independent variable significantly differs among the groups. In Bend Knee Sit-ups, 50 yards dash, Shuttle Run and 600 yards Run / Walk test, the athletes belonged to Division level shown superior performance followed by the District, Tahsil and School level athletes. In Standing Broad Jump Division level shown superior performance followed by District level, School level and Tahsil level.
- 4) There are significant differences in the mean value of composite scores of Anthropometric measurement of the four selected groups namely School, Tahsil, District and Division level High School athletes.
- 5) It is also found that Division level High School athletes are superior in the Anthropometric measurement score while compared against District, Tahsil and School level.
- 6) All the independent variables significantly differed among the groups. In body weight and standing height, athletes belonged to district level shown superior measurements followed by Division, School and Tahsil level athletes.
- 7) In leg length, shoulder width, calf girth and thigh girth athletes of Division level shown superior measurements followed by District, School and Tahsil level athletes.
- 8) School level athletes were superior in chest girth measurement followed by Division, District and Tahsil level athletes.
- 9) There were significant differences in the mean values of composite scores of physiological variables of the four selected groups namely School, Tahsil, District and



Division level high School athletes.

10) It is also found that School level high School athletes are superior in the physiological variables while compared against Tahsil, District and Division level.

11) Every independent variable significantly differed among the groups. In resting pulse rate athletes belonged to Division level shown superior pulse count followed by District, Tahsil and School level athletes and athletes belonged to Division level shown superior hemoglobin percentage followed by District, School and Tahsil level athletes.

12) Pearson's Product Movement correlation coefficient showed that only anthropometric measurement significantly correlated to physical fitness components at School level.

13) While correlation were established between the composite scores of physical fitness components, anthropometric measurement and physiological variables, finding showed significant correlation in between physical fitness components and anthropometric measurement where as insignificant correlation shown by the other variables..

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