



## Comparative Analysis on Physical Fitness Components of Senior Secondary Girls Students Between the States of Kerala and Tamil Nadu

## KEYWORDS

Physical fitness, explosive power, standing broad jump, speed

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**ABSTRACT** The present study efforts were made to analyse the physical fitness variables of senior secondary girls students between Kerala and Tamil Nadu. To achieve this purpose, hundred ( $n = 100$ ) senior secondary girls students were selected fifty ( $n = 50$ ) from Kerala and fifty ( $n = 50$ ) from Tamil Nadu as subjects at random and their age ranged between 15 and 18 years. Explosive power and speed were selected as criterion variables of this study and they were assessed by using standing broad jump and 50 meter run. The significance level was set to priority at 0.05. The collected data were analysed by independent  $t$  ratio to find out the significant difference if any between the groups. The results of the study showed that there was an insignificant ( $p \geq 0.05$ ) difference in explosive power ( $1.73 \pm 0.22$  Vs  $1.68 \pm 0.20$ ,  $P \geq 0.05$ ) and speed ( $8.66 \pm 0.42$  Vs  $8.79 \pm 0.46$ ,  $P \geq 0.05$ ) between senior secondary school girls students of Kerala and Tamil Nadu.

### Introduction

Physical fitness is one of the components of the total fitness of the individual, which also includes mental social and emotional fitness. Total fitness is essential (Fitness) for healthful living. Physical education is potentially a powerful force in the present day society to develop total fitness (Robert, 1972). Fitness is determined by what we do twenty four hours a day. To live, work, sit, walk, think, eat and sleep. Fitness helps to enjoy the life (Lawrence, 1975). Physical fitness is not a static factor and it varies from individual to individual and with the same person from time to time depending on various factors (Harrison, 1976). In the context of physical fitness, 'exercise' refers to any activity involving a fairly high degree of physical movements that makes one breathless and sweaty if it is done vigorously during physical exercise one has to breath more deeply to get more oxygen into the lungs and the heart must beat harder and faster to pump blood to the muscles (Dorgo, 2009). The physical benefits are unarguable but there are physiological benefits also, many people have sound sleep after exercise, wake up more refreshed and are more alert and better able to concentrate than when they are unfit. Exercise of the right sort should make one feel better live longer and have less illness (Tony Smith, 1983).

Explosive power is the ability is the ability to release maximum muscular force in the shortest time (Baugartner et al. 1991). It is one of the most important features of athletes. The biological basis is represented only by the energy aspects of substrate utilization, as many investigators believe. Indeed, the most peculiar factors for explosive power development must be formed in neuromuscular properties (Bosco et al. 1992). The length of the jump will depend to a greater degree upon the force or push the jumpers can generate the ability to outline the force is explosive power. The jumpers need greater leg strength and power while jumping. In turn, the explosive power mainly depends upon one's leg strength (Paulson, 2003). Standing broad jump is used as a test to measure the explosive power in this study.

Speed is an ability to execute motor action under given condition in maximum possible time (Clarke & Clarke, 1987). Muscles are made up of a combination of fast-switch and slow-switch fibers. Fast-switch fibers contract rapidly and slow-switch fibers contract more slowly and with lower level of force. If all other things are equal, athletes with longest muscle fibers and greater percentage of fast switch fiber should have the ability to run faster (Jarver, 1978) than an athlete with shorter slow -switch fibers. Eicher (1975) pointed

out that speed is the product of two factors, stride length and stride frequency. Increasing either factor automatically increases a runners sprinting speed. Stride frequency is an inborn quality; it might be possible to improve it slightly through training (Astrand & Rodahe, 1970). But the stride length can be increased by increasing the leg strength and power. In this study fifty meters sprint has been taken as a test for measuring the speed of the subjects.

### Materials and Methods

The purpose of the study was to analyse the physical fitness variables of senior secondary girls students between Kerala and Tamil Nadu. To achieve this purpose, hundred ( $n = 100$ ) senior secondary girls students were selected fifty ( $n = 50$ ) from Kerala and fifty ( $n = 50$ ) from Tamil Nadu as subjects at random and their age ranged between 15 and 18 years. The Kerala students were selected from five schools of Thrissur and Malappuram districts and Tamil Nadu students were selected from four schools of Coimbatore and Cuddalore districts. Explosive power and speed were selected as criterion variables of this study. The selected variables were assessed by using standard test and procedures, such as explosive power and speed by using standing broad jump test and 50 meters run respectively. The collected data from the two groups were statistically examined by using an independent  $t$  ratio to find out the significant difference between the Kerala and Tamil Nadu senior secondary girls students on explosive power and speed.

### Results and Discussion

#### Table I

Mean, Standard deviation and  $t$  ratio on Explosive Strength of Kerala and Tamil Nadu Senior Secondary Girl Students

Group	Mean	S D	t value
Kerala	1.73	0.22	1.31
Tamil Nadu	1.68	0.20	

#### Table-II

Mean, Standard deviation and  $t$  ratio on Speed of Kerala and Tamil Nadu Senior Secondary Girl Students

Group	Mean	S D	t value
Kerala	8.66	0.42	1.52
Tamil Nadu	8.79	0.46	

Table -I showed that the mean values of explosive power of Kerala and Tamil Nadu students are 1.73 and 1.68 respective-

ly. The obtained t ratio of 1.31 is lesser than the table value 1.99 for df 98 required for significance at 0.05 levels ( $t = 1.73$ ,  $P \geq 0.05$ ), which means there was an insignificant difference occurred in explosive power between Kerala and Tamil Nadu senior secondary girls students. The mean values of Kerala and Tamil Nadu senior secondary girls students on explosive power is graphically represented in figure 1.

Table –II showed that the mean values of speed of Kerala and Tamil Nadu students are 8.66 and 8.79 respectively. The obtained t ratio of 1.52 is lesser than the table value 1.99 for df 98 required for significance at 0.05 levels ( $t = 1.52$ ,  $P \geq 0.05$ ), which means there was an insignificant difference occurred in speed between Kerala and Tamil Nadu senior secondary girls students. The mean values of Kerala and Tamil Nadu senior secondary girls students on speed is graphically represented in figure 2.

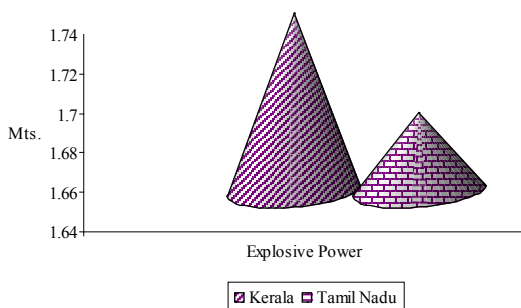


Figure 1: The Mean Values of Kerala and Tamil Nadu Senior Secondary Girls Students on Explosive Power

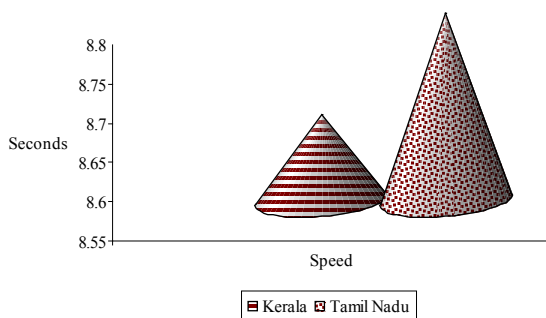


Figure 1: The Mean Values of Kerala and Tamil Nadu Senior Secondary Girls Students on Speed

Explosive power depends on one's leg strength and speed. Standing broad jump will depend to a greater degree upon the force or push the jumpers can generate the ability to outline the force. Research in the field of sports and games had provided that the future performance of an individual or team could be predicted through the analysis of certain variables, which were found to be the basis for total performance (Dick.1980, Fogelholm, 2008). Individual motor ability gains more importance as a factor that decides the performance (Ghuman et al. 2000). Speed is the product of stride length and stride frequency. Basic fitness is very needed for the adolescent period (Robert, 1993). Based on the results of the study it indicates that there was an insignificant difference between Kerala and Tamil Nadu senior secondary girls students on explosive power and speed.

### Conclusion

Based on the results of the study, it was concluded that there was an insignificant difference between Kerala and Tamil Nadu senior secondary girls students on explosive power and speed. We can conclude from the result of the study that there was no significant difference between Kerala students and Tamil Nadu students on physical fitness variables. The physical fitness level was very average among girls and more or less same of both states.

### REFERENCE

1. Baugartner, Ted. A., & Andrew, J. Jackson. (1991). Measurement for evaluation in Physical Education and Exercise Sciences, Dubuque, IOWA: WMC Brown Publishers.
2. Clarke Harrison, H., & David, H. (1987). Application of measurement of physical education, (6th Ed). Englewood Cliffs, New Jersey. Prentice Hall Inc.
3. Dick Frank William. (1980). Sports training principles and coaching, London: Henry Kimpton Publishers Ltd.
4. Dorgo Sandor. (2009). Effects on manual resistance training on fitness in adolescents, Journal of Strength and Conditioning Research, Vol. 23(8), pp. 2287-2294.
5. Eicher Tom. (1975). "Improving Sprinting Speed through Strength Training". Athletic Journal, Vol. 65, 12-14.
6. Ghuman, P. S., & Dhilon, B. S. (2000). A study of factors influencing sports career, Scientific Journal, SAI NSNIS, 23:1.
7. Harrison Clarke. (1976). Application of Measurement of Health and Physical Education, (Englewood clings; New Jersey Prentice Hall, P.50.
8. James, S. Bosco., & William, F. Gustafson. (1992). Measurement and Evaluation in Physical Education Fitness and Sports, Englewood Cliffs: New Jersey, Prentice Hall, Inc, 21.
9. Jarver J. (1978). Sprinting in a nutshell in-Jarver. J (Ed). Sprints and Relays. 1st Edition. Mountain view, CA: TAFNEWS press.
10. Lawrence E (1975). more house and Leonard Broses, Total Fitness on 30 Minutes in a Week, (new York Rockefeller center), P. 36.
11. Paulson, G. (2003). The influence of volume of exercise on early adaptations to strength training, Journal of strength and conditioning research, 17 (1), pp. 115-120.
12. Robert, H. Kick, (1972). Personal Health in Ecological Perspective, (St. Lines: The C.V. Mosby company, P.99.
13. Tony Smith. (1983). The MC Millar Guide to Faculty Health, London; MC Millar London Ltd). 15.
14. Astrand., & Keare Rodahe, (1970). Textbook of work physiology, New York: Mc Graw Hills Book Co.
15. Hockey Robert, V. (1993). Physical Fitness: The Pathway to Healthful Living, St. Louis: C.V. Mosby Year Book Inc.
16. Fogelholm, M. (2008). "How Physical Activity Can Work?", Int J Pediatr Obes, 3:1.