

Speed Endurance and Explosive Leg Strength with Physical Fitness: A Relationship Study

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Abstract

The Present investigation has been conducted with the aim to establish the relationship of speed endurance and explosive strength with physical fitness. The study was carried out on forty six (N=46) male students, age ranged from 20 to 25 years belonging to various parts of U.P. state, was investigated. The subjects were selected using random sampling technique who came for entrance test in the year 2007 at AAI, Allahabad. Explosive strength was measured by standing broad jump, speed endurance by 300 meter run and Fitness test which was described in the prospectus of the year 2005-06 of Lakshmi Bai National Institute of Physical Education was used. In order to determine the relationship of explosive strength and speed endurance with physical fitness of the students, Pearson product moment correlation was employed and the level of significance was chosen at 0.05 levels. The result shows significant relationship between physical fitness and explosive leg strength and also between physical fitness and speed endurance of the students.

KEYWORDS: Physical fitness, explosive leg strength, speed endurance.

INTRODUCTION

.In today's ever advancing and professionally competitiveness best performance in sports can be made only through a systematic, planned and controlled training system, based on scientific system of sport training. Sports in today's life play very important role in bringing about physical, mental and social growth of nations. The Sport Scientists and the physiologists have been of the view that human capacity of performances has its limits. But, this has been proved false and the barriers of performance have been surpassed by the athletes as result of improvement in the techniques, method of training, coaching and fitness test.

Strength is a key to success in modern games and sports. Such a statement may sound extreme, but never the less it is true. Strength however is the key element because it is more trainable improved than other elements. Explosive strength is the ability of the neuro-muscular system to overcome resistance with a high contraction speed. It is necessary for shooting, jumping, run up, take off and sprint capacity. The main emphasis is laid on the development of the speed and not on the strength. In sports, the explosive strength is of different nature cyclic and acyclic movements. Explosive strength always

finds expression in motor expressions and motor movements. It is a form of dynamic strength. Explosive strength performance is markedly influenced by the level of motor co-ordination required for a movement for e.g. Inter and Intra muscular co-ordination. As a result explosive strength is highly specific to the nature of a movement.

Speed Endurance is the ability to do sports movements with high speed under condition of fatigue. Speed Endurance is a combination of Speed and endurance abilities. It is of different nature in cyclic and non-cyclic sports. In cyclic sports the speed is required in spite of the rapid accumulation of fatigue during the activity. In non-cyclic sports the speed endurance is required to do movement again and again with maximum possible speed under condition of fatigue, e.g. repeated sprints in football. Speed endurance depends considerably on anaerobic capacity, technique and psychic factors.

Fitness has always been a concern of man from prehistoric times. Primitive man was either fighting "fit" or was subdued by others. Indeed it was survival of the fittest. The fit individual lived more productive life. They are likely to respond more effectively to emergency situations which may be encountered in everyday life. Fitness as an increased work capacity across broad times and modal domains; mastery of several attributes of fitness including strength, endurance, power, speed, balance and coordination and being able to improve the amount of work done in a given time with any of these domains. A well rounded fitness program will improve a person in all aspects of fitness, rather than one, such as only cardio/respiratory endurance or only weight training. In order for physical fitness to benefit the health of an individual, an unknown response in the person called a stimulus will be triggered by the exertion. When exercise is performed with the correct amount of intensity, duration and frequency, a significant amount of improvement can occur. The person may overall feel better but the physical effects on the human body take weeks or months to notice and possibly years for full development.

MATERIAL AND METHODS

For the purpose of this study forty six (n=46) male students was selected as subjects randomly. The age of the subjects were ranged from 20 to 25 years belonging to various parts of U.P. state, was investigated. The subjects were selected using random sampling technique, who came for entrance test in the year 2007 at AAI, Allahabad. Explosive strength was measured by standing broad jump, speed endurance by 300 meter run and Fitness test which was described in the prospectus of the year 2005-06 of Lakshmibai National Institute of Physical Education was used. The selected subjects were oriented before going for actual data collection with the need and requirement of the study. Explosive strength, speed endurance and physical fitness was measured by standing broad jump, 300 meter run and fitness test used by Lakshmibai National Institute of Physical Education at the time of entrance physical fitness test. Data obtained on the above variables were statistically analyzed by computing Pearson product moment correlation at 0.05 level of significant.

RESULTS

Pearson's product moment correlation of physical fitness with explosive leg strength and endurance has been presented in Table 1 and 2.

Table- 1

Co-efficient of correlation of Physical Fitness with Explosive Leg Strength

S. No.	Variables	Correlation coefficient (r)
1.	Physical Fitness and Explosive leg strength	-0.68*

*Significant at 0.05 level, N=46, $r_{0.05} (45) = 0.288$

The table-1 reveals that there is significant relationship between physical fitness and explosive leg strength of the students as the calculated value of correlation coefficient is 0.68, which is higher than tabulated value 0.288 as required to be significant at 0.05 level.

Table-2

Co-efficient of correlation of Physical Fitness to Speed Endurance

S. No.	Variable	Correlation coefficient (r)
1	Physical Fitness and Speed Endurance	0.42*

*Significant at 0.05 level, N=46, $r_{0.05} (45) = 0.288$

The table-2 reveals that there is significant relationship between physical fitness and speed endurance of the students, as the calculated value of correlation co-efficient is

0.42, which is greater than tabulated value 0.288 as required to be significant at 0.05 level.

DISCUSSION OF FINDINGS

The result of the study shows negative sign in the correlation coefficient between Explosive leg strength and the physical fitness is quite obvious as one of the variable is time based (time taken in physical fitness) where time is considered better, while other variable is distance based (distance covered in standing broad jump- explosive leg strength) where more distance is considered better. So the negative correlation actually indicate the both the performance are higher/better and the negative sign has no implication. As for the relationship, if one scan through the items of physical fitness test, it will be obvious that they are mostly fast in nature based-jumping a distance, jump across a hurdled, ditch jumping, jumping over a vaulting horse etc. and a higher correlation are quite justifiable.

The result of the study also shows that their exits a positive relation with the speed endurance and the physical fitness. This may be attributed to the fact the physical fitness test has to be performing fast and one has to do various stunts which require a good amount of endurance till reaching the end line. To get better performance in fitness items one has to develop speed endurance and explosive strength.

CONCLUSIONS

With the limitation of the study it may be concluded that there was significant relationship between physical fitness and explosive leg strength and there was also significant relationship between physical fitness and speed endurance.

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