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Role of Motor Fitness in Track Events of Athletics

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ABSTRACT
The aim of the present study is to examined the role of motor fitness in track Events of Athletics. It was hypothesized that short, middle and long distance runners are differ in the level of motor fitness . The sample consisted of 300 (150 male & 150 female) track athletes who participated at national and All India inter-university levels of India. Data was analyzed by using independent sample t-test. Results revealed that short distance runners have better motor fitness than middle distance runners. Furthermore middle distance runners have better motor fitness then long distance runners. Also, short distance runners have better motor fitness then long distance runners. The study has its implications for coaches, trainers and physical educators. Key-Words: Motor fitness short distance runners, middle distance runners and long distance runners.

Today, everybody is as fit, and technically, tactically advanced as their opponents. The playing fields have leveled once again. The performance of players is influenced by many factors such as level of physical fitness, physiological and psychological abilities, technique, physique, body size, body composition and application of bio-mechanical principles, (Ortega et al, 2008) The relationship of sports performance with the physical, psychological and physiological abilities has been the thrust area for researchers from decades. There have been thousands of attempts by the researcher to develop a consistent physical and psychological and physiological profile of athletes, to be reliably used to different athletes to predict the sports performance. (Ketelaaar et al, 2009).Why physical fitness and motor fitness are very important for better performance by athletes? Is it probable to measure athletic potential and predict future athletics success. Early researchers operated on the theory that as there were tests for assessing the innate ability of intelligence in the cognitive domain, there must also be a way to measure innate motor ability in the psychomotor domain. The results of many researches show that athletes' motor fitness components differ from position to position, game to game male to female athletes and affect the sports performance. Johnson (1974) found in his study the successful wrestlers had better balance then the unsuccessful wrestlers. Malhotra and Subraminiam (1982) have reported a high level of general fitness with motor abilities like

strength, aerobic endurance, speed of moment, jumping ability, agility, flexibility are the essential qualities required to be developed by the athletes.

Motor fitness and its components play an important role in different fields of human activity has already been well brought out. Since games and athletic, including provide ideal situation for challenge; competition and evolution. The situation in which motor fitness and its components thieve there is justification for planning studies which aim at exploring the relationship of this important factors with performance in skill.(Gupta, 2014)

The terms "fitness", "physical fitness" and "motor fitness" are often used inter changeably, though these have slightly different meaning and connotations. Fitness has broader meaning which includes not only physical fitness but anatomical psychological and physical fitness too (Landiss, 12). Thus, fitness is not a matter of merely muscles, neither, it is a matter of physical capacity alone. It includes the realigns of moral, mental, social and emotional fitness as well.

Maura, Kumar, and Suri (2015) found physical fitness (muscular strength) among the football players and athletes of school level. The results indicated no significant difference between athletes and foot ball players. This may be attributed to nature of athletes' performance where muscular strength plays a vital role for optimum performance as equal to the foot ball players. Beside , this difference in relation to the muscular difference was found between athletes and foot ball players.

How were Singh and Malik (2015) conducted a study on 400 meters track event performance. Result showed that the combined contribution of the height, thigh length, shoulder diameter, ankle diameter, thigh circumference, calf circumference triceps skin fold, thigh skin fold and physical fitness variables (50 yards dash, 600 yards run and shuttle run 10×4m, arms pull-ups) were significantly related to the performance in 400 meter sprint. Thus, highest performance in 400 meter sprint test had showed significant relationship with selected anthropometric and physical fitness variables.

Though previous studies have provided an understanding about physical fitness measurements and its role in the successful athletics performances. Considering the physical fitness importance among, athletics and due to the dearth of researches in India related to motor fitness of athletics, the present study aimed to investigate the role of motor fitness in track events of athletics.

OBJECTIVES

- To find out significance difference between short distance runners and middle distance runners in relation to their motor fitness components.
- To find out significance difference between middle distance runners and long distance runners in relation to their motor fitness components.
- To find out significance difference between short distance runners and

long distance runners in relation to their motor fitness components.

HYPOTHESES

- There would be a significant difference between short distance runners and middle distance runners in relation to their motor fitness components.
- There would be a significant difference between middle distance runners and long distance runners in relation to their motor fitness components.
- There would be a significant difference short distance runners and long distance runners in relation to their fitness components.

METHOD

SAMPLE:

The sample for this study consisted of 300 subjects (150 male + 150 female) track athletes participated at national level and All India inter-university level of India. Random sampling method will used to select sample for the present study.

TOOLS

AAPHER Physical fitness test.

MOTOR FITNESS

The following components of motor fitness are involved:

- SPEED
- MUSCULAR STRENGTH (LEG)
- AGILITY
- FLEXIBILITY
- CARDIOVASCULAR ENDURANCE

MOTOR FITNESS TEST ITEMS

1. **5O YARDS DASH TEST (for measure speed)**

A 100 mt. race lanes of the standard track were used, further a football field and other ground were also used. In this running area 50 yards course was marked with the starting and finishing line. Two or more stop watch, whistle and starting clipper and wooden clap were used. After a short period of warm up, the players took their position in standing start behind the starting line. The starter used the command "ready" and "go". The starter used wooden clap as signal to start the race as well as timer. The player ran across the finishing line and the time was recorded to get the best result. Two to four players were ran at the same time for the competition.

2. **SIT AND REACH (for measure hip and trunk flexibility)**

The subject should sit on the floor with the back and head against the sit and reach box. The subject should place the hands on top of each other, stretching the arms forward, while keeping the back and head against the wall. Measure the distance from the finger tips to the box edge with a ruler. This is the zero or starting point. Now the subject slowly bends and reaches as far as possible sliding the fingers along the ruler. He/she must hold about the final position. The distance is recorded and measured in cms.

3. SHUTTLE RUN: (for measure agility)

Two lines parallel to each other were placed on the floor 30 feet apart. Since the player must over run both of these lines, it was necessary to have several feet more on floor space at either end. Two wood blocks, 2 × 2 inches and stop watch were used. The player stood at one of the lines with two blocks at another. On the signal to start, the player run to the blocks and returned to the starting line and placed the block behind that line. He than returned to the starting block which he carried across the starting line on his way back. Two player ran at the same time. Two trials were permitted. The players were given the option either to run bare footed or wear sneakers of their choice. The distance between the take off line and the nearest point of landing provides the score of the test.

4. 600 Yards Run (for measure cardiovascular endurance)

A 400 Mtr. standard track, stopwatches, whistle starting clipper were used After short warm-up, the players took their position at the starting line. The starter used wooden clap as signal to start the race. Four or more players were ran at the same time.

5. STANDING BROAD JUMP TEST: (for measure the leg strength.)

Long jump pit, 30 meter measuring tape, score sheet.

The athlete places his feet over the edge of the sandpit. The athlete crouches, lean forward, swings his arms backward and then jumps horizontally as far as possible. The coach should measure from the edge of the sandpit to the nearest point of contact. The start the jump must be from a static position.

RESULTS

Table1:- Mean, S.D. & t-value of short distance (N=100) and middle distance (N=100) runners with regards to their motor fitness components

Sr. No.	Variable	Group	Mean Score	S.D.'s	t-value
1.	50 Yard Dash	Short distance runners	6.52	0.67	4.54**
		Middle distance runners	6.89	0.48	
2.	Shuttle run	Short distance runners	9.35	0.68	3.47**
		Middle distance runners	9.69	0.69	
3.	Sit and Reach	Short distance runners	22.23	2.40	10.15**
		Middle distance runners	19.17	1.81	
4.	600 Yard run	Short distance runners	1.34	1.09	1.39^{NS}
		Middle distance runners	1.19	0.05	

5.	Standing Broad Jump	Short distance runners	2.70	0.21	11.12**
		Middle distance runners	2.43	0.10	

**p< 0.01, NS=Not significant

From Table 1, a significant difference has been obtained between short distance runners and middle distance runners on 50 yard dash (t-value = 4.54, p<0.01), shuttle run (t-value=3.47,p<0.01), sit and rich (t-value =10.15,p>0.01). However , on 600 yards run non-significant difference has been obtained between short distance runners and middle distance runners. Further, on standing broad jump a significant difference has been obtained between two group (t-value=11.12,p<0.01). Thus, short distance runners took less time in 50 yard dash, shuttle run and have more sit and reach and standing broad jump as compared to middle distance runners.

Hence, the first hypothesis, stated that there would be a significant difference between short distance runners and middle distance runners in relation to their motor fitness components" is partially accepted and partially rejected.

Table2:- Mean, S.D. & t-value of middle distance (N=100) and long distance (N=100) runners with regards to their motor fitness components

Sr. No.	Variable	Group	Mean Score	S.D.'s	t-value
1.	50 Yard Dash	Middle distance runners	6.89	0.48	8.98**
		Long distance runners	7.41	0.30	
2.	Shuttle run	Middle distance runners	9.69	0.69	8.19**
		Long distance runners	10.44	0.60	
3.	Sit and Reach	Middle distance runners	19.17	1.81	18.59**
		Long distance runners	13.80	2.24	
4.	600 Yard run	Middle distance runners	1.19	0.05	13.14**
		Long distance runners	1.27	0.03	
5.	Standing Broad Jump	Middle distance runners	2.43	0.10	10.76**
		Long distance runners	2.27	0.10	

**p= 0.01 level.

Table 2 indicates significant difference between middle distance runners and long distance runners on 50 yard dash (t-value=8.98, p<0.01), shuttle run (t-value=8.19,p<0.01), sit and reach (t-value=18.59, p<0.01), 600 yard run (t-value=13.14, p<0.01) and standing broad jump (t-value=10.76, p<0.01). Thus, middle distance runners took less time in 50 yard dash, shuttle run, more sit and reach, took less time in 600 yard run and better in standing broad jump as compared to long distance runners.

Hence, the second hypothesis, "that there would be a significant difference between middle distance runners and long distance runners in relation to their motor fitness components" is accepted.

Table3:- Mean, S.D. & t-value of short distance (N=100) and long distance (N=100) runners with regards to their motor fitness components

Sr. No.	Variable	Group	Mean Score	S.D.'s	t-value
1.	50 Yard Dash	Short distance runners	6.52	0.67	11.97**
		Long distance runners	7.41	0.30	
2.	Shuttle run	Short distance runners	9.35	0.68	11.92**
		Long distance runners	10.44	0.60	
3.	Sit and Reach	Short distance runners	22.23	2.40	25.60**
		Long distance runners	13.80	2.24	
4.	600 Yard run	Short distance runners	1.34	1.09	0.64^{NS}
		Long distance runners	1.27	0.03	
5.	Standing Broad Jump	Short distance runners	2.70	0.21	17.86**
		Long distance runners	2.27	0.10	

**p=< 0.01 , NS= Not significant

Table3 depicts singnificant diference between short distance runners and long distance runners on 50 yard dash (t-value=11.97,p<0.01), shuttle run (t-value=11.92,p<0.01), sit and reach (t-value=25.60,p<0.01). However, on 600 yard run non-significant difference has been obtained between two groups. Further, on standing broad jump a significant difference has been obtained between short distance runners and long distance runners (t-value=11.86, p<0.01). Thus short distance runners took less time in 50 yard dash, shuttle run, more sit and reach and standing broad jump as compared to long distance runners.

Hence, the third hypothesis, that there would be a significant difference between short distance runners and long distance runners in relation to their motor fitness components" is partially accepted and partially rejected.

DICCUSSION

The present study aimed at investigating the role of moter fitness in track events of atheletics. It was found that there was a significant difference between short distance runners and middle distance runners on 50 Yard dash. Short distance runners took less time in 50 yard dash as their counterpart middle distance runners. Short distance runners have more speed as compared to middle distance runners. A significant difference

has been observed between short distance runners and middle distance runners on shuttle run. Short distance runners took less time in shuttle run as their counterpart middle distance runners. Short distance runners have more agility as compared to middle distance runners. It was observed that there was a significant difference between short distance runners and middle distance runners on sit and reach. Short distance runners have more sits and reach than their counterpart middle distance runners. Sort distance runners were more flexible as compared to middle distance runners. Furthermore it was seen that short distance runners and middle distance runners on 600 Yards run have no significant difference. Short and middle distance runners have same type of endurance. However it was found that a significant difference between short distance runners and middle distance runners on standing broad jump. Short distance runners are better in standing broad jump as their counterpart middle distance runners. Short distance runners have more strength as compared to middle distance runners. A significant difference between middle distance runners and long distance runners on 50 Yard dash have been observed. Middle distance runners took less time in 50 yard dash as their counterpart long distance runners. Middle distance runners have more speed as compared to long distance runners. It was observed that there was a significant difference between middle distance runners and long distance runners on shuttle run. Middle distance runners took less time in shuttle run as their counterpart long distance runners. Short distance runners have more agility as compared to middle distance runners. It has been found that there was a significant difference between middle distance runners and long distance runners on sit and reach. Middle distance runners have more sits and reach than their counterpart long distance runners. Middle distance runners were more flexible as compared to long distance runners. A significant difference between middle distance runners and long distance runners on 600 Yards run has been observed. Middle distance runners took less time in 600 yards run than their counterpart long distance runners. Middle distance runners were more endurance as compared to long distance runners. It has been found that there was a significant difference between middle distance runners and long distance runners on standing broad jump. Middle distance runners are better in standing broad jump as their counterpart long distance runners. Middle distance runners have more strength as compared to long distance runners. Present findings indicated a significant difference between short distance runners and long distance runners on 50 Yard dash. Short distance runners shows that they took less time in 50 yard dash as their counterpart long distance runners. Short distance runners have more speed as compared to long distance runners. It was found that there was a significant difference between short

distance runners and long distance runners on shuttle run. Short distance runners shows that they took less time in shuttle run as their counterpart long distance runners. Short distance runners have more agility as compared to long distance runners. A significant difference has been found between short distance runners and long distance runners on sit and reach. Short distance runners have more sits and reach than their counterpart long distance runners. Short distance runners were more flexible as compared to long distance runners. However no significant difference has been observed between short distance runners and long distance runners on 600 Yards run. Short distance runners and long distance runners have same type of endurance Besides this, a significant difference between short distance runners and long distance runners has been observed on standing broad jump. Short distance runners were better in standing broad jump as their counterpart long distance runners. Short distance runners have more strength as compared to long distance runners.

RECOMMENDATIONS

1. It is recommended to the coaches, trainers and physical educators to adopt these findings to improve the selected parameters among athletes.
2. For runners length has shown to be important factors and may be recognized as an essential factor for selecting potential talent.
3. Speed, flexibility, agility and strength may be considered important factors for runners for selecting potential players, and as important training factors for the overall enhancement of performance.
4. For runners, height, arm length, leg length, speed, strength as measured with 50 meter dash run and throw the cricket ball may be considered in the proper selection and training of players for enhancing performance.
5. The present study has been conducted on only physical variables, A similar study may be conducted using other psychological variables such as, personality, emotional, intelligence, sports achievement, motivation, self-confidence, aggression, etc.

IMPLICATIONS

1. The present study is very useful for the coaches and physical education teachers to select the individual for the track athletes.
2. It is very useful of the coaches and physical education teachers to solve the motor fitness problem.
3. The study is also useful for event selection

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