



RELATIONSHIP OF SPEED LEG STRENGTH AND COORDINATION ON 100M SPRINTING PERFORMANCE

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Abstract

The purpose of the study was to find out the relationship between speed, leg strength and coordination and 100m sprinting performance. For this purpose, 29 university level sprinters were selected from different colleges and athletic club in Chennai. The performance of 100-meter sprint was measured in 1/100 of seconds, speed was tested with 50m, leg strength was tested with standing broad jump and coordination was tested through Scott obstacle race test. The collected data were analyzed with Pearson product moment correlation to find the relationship between speed, leg strength and coordination with 100-meter sprint performance. In all cases, level of significance was fixed at 0.05. It was concluded that speed and coordination had significant correlation with 100m sprint performance.

Keywords: Speed, Leg Strength, Coordination.

INTRODUCTION

The strength, power and speed are inherently related to one another, because they are all the output of same functional systems to generate the sprint (Delecluse, 1997). The braking/propulsion phases occur immediately after the block phase and that muscle strength strongly affects running velocity in the sprint start (Mero, 1988). Strength coached should be aware that the potential benefits of increased muscular strength during short sprints are likely to be affected by mechanical specificity and that improvements in sprinting performance may not occur immediately after a period of resistance training (Moir, et al, 2007). Muscle training with high contraction velocity is one of the main methods of increasing muscle power. Passive leg press training is a unique method for enhancing jump performance, speed and muscle power (Liu et al, 2013). Performance at 100m sprint is strongly associated with strength and power parameters (Smirniotou, 2008). The selected motor variables muscular strength and speed were higher positive relationship in 100m sprinting performance (Valsaraj 2013). The maximum absolute strength was more related to maximum sprinting speed (Young et al. 1995). Resistance training indicates that intramuscular coordination is an important component in

achieving transfer to sports skills (Warren, 2006). Improved movement coordination will have a greater impact on muscle force gains in more complex skill (Daley, 2007).

METHODOLOGY

The purpose of the study was to find out the relationship between speed, leg strength and coordination on 100m sprinting performance. For this purpose, 29 university level sprinters were selected from different colleges and athletic club in Chennai. The performance of 100-meter sprint was measured in 1/100 of seconds. Speed was tested with 50m test. The speed was recorded nearest one tenth of the seconds. Leg strength was tested with standing broad jump test. The measurement was taken from takeoff line to the nearest point of contact on the landing. Coordination was tested through Scott obstacle race test. The time taken from start to the finish was recorded in one-tenth of a second. The collected data were analyzed with Pearson product moment correlation to find the relationship between speed, leg strength and coordination with 100-meter sprint performance. In all cases, level of significance was fixed at 0.05.

RESULTS AND DISCUSSION**TABLE I
DESCRIPTIVE STATISTICS OF THE SELECTED VARIABLES**

	100m Sprinting performance	Speed	Leg strength	Coordination
Mean	12.22	6.70	2.39	18.51
Min	11.37	6.31	2.11	16.82
Max	12.97	7.96	2.64	20.98
SD	0.45	0.32	0.16	0.90

Table – I shows that the mean value of sprint performance, speed, leg strength and coordination was

12.22 seconds, 6.70 seconds, 2.39 meters and 18.51 seconds respectively.

**TABLE II
SHOWING THE CORRELATION ANALYSIS OF SELECTED VARIABLES**

	100m Sprinting performance	Speed	Leg strength	Coordination
100m Sprinting performance	1	0.619	-0.571	0.713
Speed		1	-0.471	0.698
Leg strength			1	-0.529
Coordination				1

Table 'r' value with df 27 = 0.367 at 0.05 level of confidence

It was evident from the Table – II that speed had moderate positive correlation (0.619), leg strength had negative moderate correlation (-0.571) and coordination

had strong positive correlation (0.713) with 100m sprinting performance.

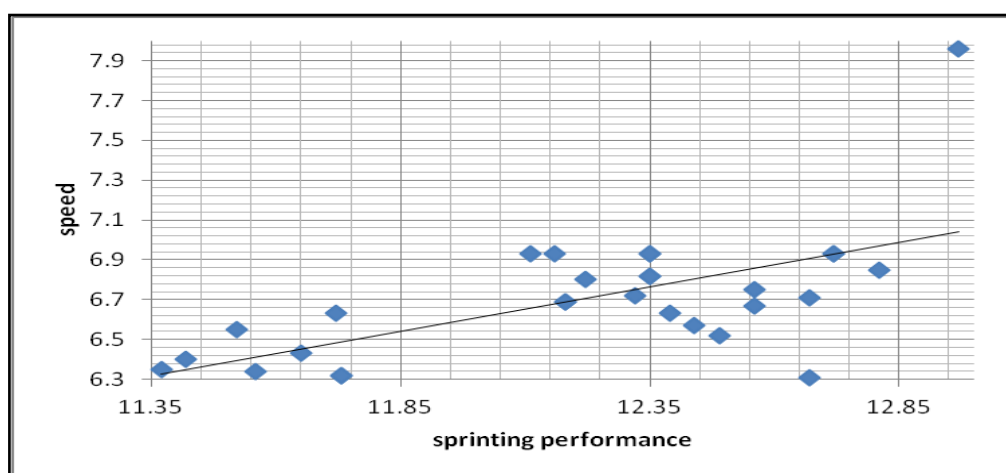
**FIGURE I
SHOWING RELATIONSHIP BETWEEN SPEED AND 100M SPRINTING PERFORMANCE**

FIGURE II
SHOWING RELATIONSHIP BETWEEN LEG STRENGTH AND 100M SPRINTING PERFORMANCE

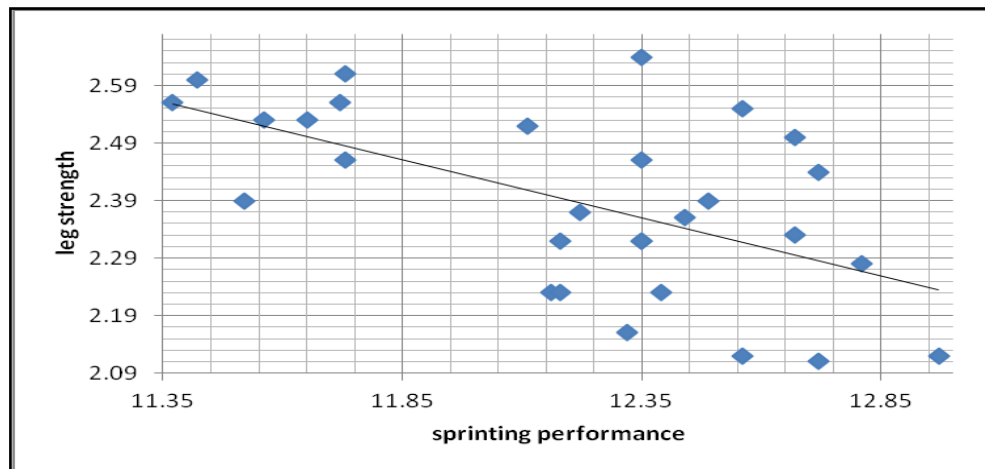
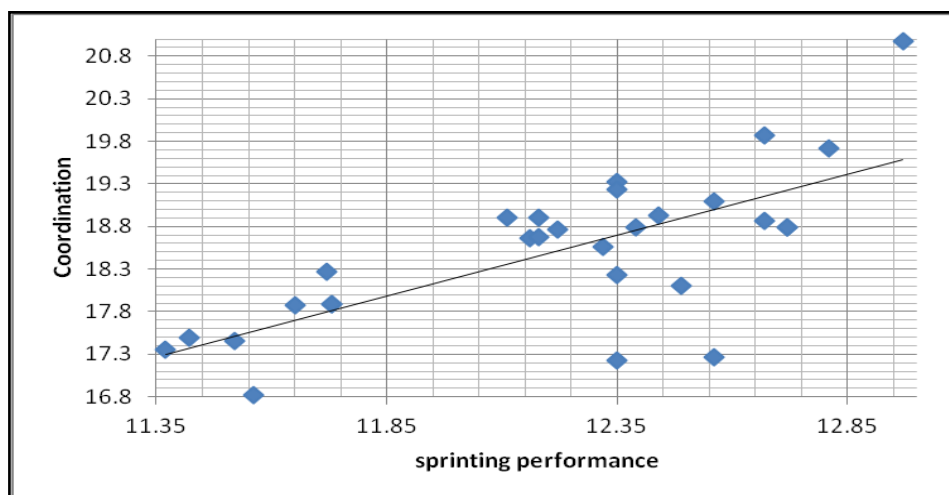


FIGURE III
SHOWING RELATIONSHIP BETWEEN COORDINATION AND 100M SPRINTING PERFORMANCE



CONCLUSION

The speed had moderate positive correlation and coordination had strong positive correlation with 100m sprinting performance whereas the leg strength had negative moderate correlation with 100m sprinting performance.

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