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Effect of Plyometric Training and Resistance Training on the Development of Speed among University Sprinters of Telangana State

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Abstract:

The purpose of the study was to find out the effect of Plyometric Training and Resistance training on the development of Speed among University Sprinters of Osmania University.The selected University Level Sprinters N=90 were randomly assigned into 3-groups and each group consist of n=30 . 30 Sprinters underwent treatment of plyometric training program, 30 Sprinters experimental group-II resistance training group underwent treatment of resistance training program and control group 30 Sprinters participated only their regular routine of Sprint Training for 12 Weeks. To assess the Speed 50 M Run were used in the Pre Test and Post Test of the Study.Accordingly, the results obtained showed that the intervention of Plyometric Training (PT) and Resistance Training (RT) on speed significantly improved among treatment groups. Key Words:Plyometric Training, Resistance Training, Sprinters etc.

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Introduction:

Speed is important physical fitness component in every sport. The athletes should have high level of sprinting qualities during high tensed match competitions. There are several phases in sprinting, for instance the acceleration phase is the most important phase in a race. During this phase, after the sprinter has left the starting blocks, the athlete increases the length of their stride and decreases the amount of strides taken per second. Male sprinters usually have a stride rate of 4.6 strides per second, with female athletes little less with 4.8 strides per second. Elite sprinters reach their highest speed at around the 60-70-meter distance, in a 100-meter race, for men. Professional women sprinters reach their top speeds at around the 50-60-meter distance. Top runners usually cover 20-30 meters at top speed.

Maximum speed, which is produced during movement, depends on various factors. These factors are related to morphological and physiological characteristics, energetic mechanisms, age, gender, motor abilities, inter- and intra-muscular coordination and optimal biomechanical technique of movement. Locomotive speed in the form of sprinting is one of the most important abilities, which defines the successfulness of athletes in many sport disciplines. From the genetic (hereditary) motor programme aspect, speed can be classified into primary phylogenetic human movements. In specific sports situations, speed is being manifested in a form of the “three segment model”. The model consists of speed, strength and coordination. Pondering of individual segments of this model depends on the particularities of specific sport disciplines.

Maximum running speed is a product of the frequency and the length of stride. Both variables are mutually dependant; they are also linked to the processes of central regulation of movement,

to the morphological characteristics, motor abilities and energetic processes. The relationship between the frequency and the length of a stride is individually defined and automated. Changing one variable results in changes of the second. When a length of a stride is increased, the frequency decreases and vice versa.

Purpose of the study: The purpose of the study was to find out the effect of Plyometric Training and Resistance training on the development of Speed among University Sprinters of Osmania University.

Methodology:
The selected University Level Sprinters N=90 were randomly assigned into 3-groups and each group consist of n=30 . 30 Sprinters underwent treatment of plyometric training program, 30 Sprinters experimental group-II resistance training group underwent treatment of resistance training program and control group 30 Sprinters participated only their regular routine of Sprint Training for 12 Weeks. To assess the Speed 50 M Run were used in the Pre Test and Post Test of the Study.

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Results and Discussion:

TABLE – 4.1ANALYSIS OF VARIANCE OF EXPERIMENTAL GROUPS AND CONTROL GROUP ON SPEED

(Units in Seconds)

Test	PT	RT	CG	SV	SS	df	MS	'F' Ratio	P-Value
Pre Test									
Mean	6.84	6.94	6.92	Between	0.18	2	0.09	1.88	0.16
SD	0.18	0.24	0.23	Within	4.16	87	0.05		
Post Test									
Mean	6.25	6.49	7.12	Between	12.03	2	6.01	386.84*	0.00
SD	0.11	0.11	0.15	Within	1.35	87	0.02		

*Significant (P<0.05).

Pre-test: The M ± SD of the Group – 1,2 & 3 pre-test speed scores are 6.84 ± 0.18, 6.94 ± 0.23 and 6.92 ± 0.23 respectively. The 1.88 pretest F value obtained was less than the required table value at0.05 level of significance needed. "As a result, the pre-test men's importance of Plyometric Training (PT), Resistance Training (RT) and control group of speed prior to the start of the respective treatments were found to be insignificant at 0.05 level of trust for degrees 2 and 87 of freedom, this study therefore confirms that the random allocation of subjects into three groups has been successful".

Post-test: The M ± SD of the Group - 1, 2 & 3 post-test scores are 6.25 ± 0.11, 6.49 ± 0.11and 7.12 ± 0.15respectively. The 386.84value obtained after test F was greater than the 0.00 p-value. For the degrees of freedom 2 and 87, thus, the mean speed after the test showed significant confidence at 0.05.

Conclusion:

Accordingly, the results obtained showed that the intervention of Plyometric Training (PT) and Resistance Training (RT) on speed significantly improved among treatment groups.

Recommendations:

Based on analysis of collected data, the investigators would like to recommend the research work to extend further more as mentioned below.

1.Similar research work should be done on similar set of sports to validate the results. Use a variety of training to develop physical strength, focusing on the development of ot her motivations through all methods that have to do with each quality to be created.

2.Further research, as well as the published findings, will contribute to the basket ball coaching. The study also helps the physical educationists and coaches understanding the knowledge and performance of the players.

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