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Research Paper :

Effect of plyometric training on speed, stride length and stride frequency

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ABSTRACT

The purpose of the present investigation was to find out the effect of plyometric training on speed, stride length and stride frequency. For this purpose, thirty men players from various disciplines of games studying for Bachelors Degree in the Department of Physical Education and Sports Sciences, Annamalai University in the age group of 18 – 22 years were selected as subjects. The subjects were divided into two equal groups of fifteen subjects each. Group I underwent plyometric training and group II acted as control. The training period for this study was three days in a week for twelve weeks. The subjects were tested for speed stride length and stride frequency at prior to and after the training period. The results were statistically analyzed by using analysis of covariance (ANCOVA). The results of the study revealed that better improvement was in speed, stride length and stride frequency due to plyometric training.

Key words : Plyometric training, Speed, Stride length, Stride frequency

Plyometirc exercises characterized by maximum or near maximum rates of force development are effective for enhansing physical performance, when properly taught and supervised. Explosive exercises are safe and likely to reduce the risk of injury during participation in sports and other activities that involve higher rate of force development and acceleration. (Conley Michaels and Michael stone, 1999).

The ability to generate strength and power is a very important component for success in many sports, particularly in those involving plyometric movements (Singh and Brar, 2003). Prolonged muscles strength training increases muscle strength in the trained muscle among children, (Sewall and Michelli, 1986) and adults (Mac Dougall *et al.,* 1980). Moving speed and strength in combined is refered to as power, and power is essential in performing majority of the sports skills. Although specific exercises designed to enhance the explosive movements have been taught for some in only in the last decade a new system emerged which emphasized explosive reactive power training known as plyometrics (Donald Chu, 1998).

METHODOLOGY

To achieve the purpose, thirty men students studying Bachelor!s degree in Department of Physical Education and Sports Sciences, Annamalai University, Annamalainagar during the academic year 2009 – 2010 were selected as subjects. They were divided into two equal groups of fifteen each as plyometric training group and control group.

The experimental group underwent plyometric training one session in a day, three days in a week for twelve weeks. The plyometric training group underwent the training with an intensity of 60 – 95% of effort with a gradual increase in intensity with number of weeks.

Speed, stride length and stride frequency were selected as criterion variables and were measured by using 50 meters run and video graph method, respectively. Plyometric training group and control group were tested on selected dependent variables prior to and immediately after the training programme as pre-and post-test, respectively. The data collected were analysed using analysis of covariance (ANCOVA) to analyse the significant difference if any, between the groups.

The level of significance to test the "F" ratio obtained by the analysis of covariance was at .05 level of confidence, which was considered as appropriate.

OBSERVATIONS AND DISCUSSION

The analysis of data presented Table 1 indicate that the obtained "F" ratio value of 226.0 for adjusted post – test scores of plyometric training group and control group was more than the required table value of 4.22 for significance with df 1 and 27 at .05 level of confidence.

The obtained "F" ratio value of 13.50 for adjusted post – test scores of plyometric training group and control group on stride length was more than the required table value of 4.22 for significance with df 1 and 27 at .05 level of confidence.

Table 1 : Analysis of covariance of speed, stride length and stride frequency of plyometric training group and control group

Variables		Plyometric training group	Control group	F – ratio
Speed	Pre- test Mean ± SD	13 ± 0.89	8.00 ± 0.80	0.10
	Post-test Mean ±SD	7.33 ±91	7.99±0.75	3.96*
	Adj. Post – test Mean ± SD	7.36	7.92	226.00*
Stride length	Pre- test - test Mean ± SD	3.60 ± 0.21	3.60*±*0.20	0.50
	Post – test Mean ± SD	3.90 ± 0.17	3.60 ± 0.20	14.75*
	Adj. post – test mean ± SD	3.90	6.30	13.50*
Stride frequency	Pre – test Mean ± SD	3.45± 0.19	3.50 ± 0.20	0.50
	Post – test Mean ± SD	3.68±0.20	3.52±0.20	4.20*
	Adj.Post test Mean ± SD	3.66	3.53	7.75*

* indicates significance of value at P=0.05

The table value required for significance at.05 level of confidence with df 1 and 28 and 1 and 27 were 4.20 and 4.22, respectively.

The obtained "F" ratio value of 7.75 for adjusted post – test scores of plyometric training group and control group on stride frequency was more than the required table value of 4.22 for significance with df1 and 27 at .05 level of confidence (Table 1).

The results of the study showed that there was a significant difference between plyometric training group and control group on selected criterion variables such as speed, stride length and stride frequency. It was also showed that there was a significant improvement on selected criterion variables due to plyometric training. The results of the study are in accordance with the results of Antony (1973), Piterson Belcastra (1989) and Rand Krick (1969).

Conclusion:

Based on the results of the study, the following conclusions were drawn.

– There was a significant difference between plyometric training group and control group on selected criterion variables such as speed, stride length and stride frequency.

– There was a significant improvement on selected criterion variables such as speed, stride length and stride frequency due to the plyometric training.

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