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Effects of Medium Velocity Resistance Training On Speed among Urban Youth Girls

Dr.R.Suresh

Asst Director of Physical Education - Vel Tech Rangarajan Dr.Sagunthala R & D Institute of Science and Technology. Chennai- Tamil Nadu (India).

ABSTRACT

The purpose of the study was to find out the effects of medium velocity resistance training on speed among urban youth girls. To achieve this purpose, thirty (*n=30*) youth urban girls were selected as subjects at random. The age of the youth girls were ranged between 15 and 19 years. The selected subjects were further divided into two equal groups of medium velocity resistance training group and the control group of fifteen (*n=15*) each in strength. The training group was treated with systematic medium resistance training for twelve weeks with three sessions in a week. The speed was taken as a criterion variable for this study and 50 Meter; dash test was used as a test item. The data were collected before and immediately after the training programme. The collected data were analyzed statistically by analysis of covariance (ANCOVA). The level of significance was fixed at 0.05 in all aspects. The results of the study show that the medium velocity resistance training group had a significant improvement ($p \leq 0.05$) in speed as compared with the control group of selected urban youth girls.

Key words: speed, systematic training, urban youth girls.

INTRODUCTION

Today, it is generally accepted that sprint performance, like endurance performance, can improve considerably with training. Strength training, especially, plays a key role in this process. Sprint performance will be viewed multidimensionality as an initial acceleration phase (0 to 10m), a phase of maximum running speed (36 to 100m) and a transition phase in between. Immediately following the start action, the powerful extensions of the hip, knee and ankle joints are the main accelerators of body mass. However, the hamstrings, the muscles of adductor magnus and the muscles of gluteus maximums are considered to make the most important contribution in producing the highest levels of speed. Different training methods are proposed to improve the power output of these muscles. Some of them aim for hypertrophy and others for specific adaptations of the nervous system. This includes general (hypertrophy and neuronal activation), velocity specific (speed-strength) and movement specific (sprint associated exercises) strength training. In developing training strategies, the coach has to keep in mind that strength, power and speed are inherently related to one another, because they all are the output of the same functional systems. As heavy resistance training results in a fiber type II b into fiber type II a conversion, the coach has to aim for an optimal balance between sprint specific and nonspecific training components. To achieve this they must take into consideration the specific

strength training demands of each individual, based on performance capacity in each specific phase of the sprint (Delecluse, 1997).

It is generally accepted that training and nutrition in the restitution period affects the development of skeletal muscles. Recently, focus has been on optimal nutrition and especially on the ingestion of protein to enhance hypertrophic response to resistance training. Previous research has revealed that muscle protein metabolism can be modulated not only by resistance exercise (Biolo *et. al*., 1995) but also by changes in circulating amino acids. Administration of amino acids in combination with resistance exercise augments protein synthesis acutely which would be expected to result in a more pronounced muscle hypertrophy over a prolonged period (Tipton *et. al.*, 1999). In contrast, if subjects remain fasted after a bout of resistance training, muscle net protein balance remains negative and a catabolic state is induced (Phillips *et. al.*,1997). It therefore seems of paramount importance to ingest sufficient amounts of dietary protein in conjunction with resistance training when muscular hypertrophy or optimal restitution is the goal. Post exercise carbohydrate supplementation may also be beneficial because of a decreased rate of muscle protein breakdown (Roy *et. al.*, 1997).

It has been recommended that the greatest gains in strength and muscle size by weight resistance training would result from programs with sets of moderate loads (70–75% of 1RM), respectively (Chestnaut., & Docherty, 1999). Several studies have been carried out to certify this point, but the findings differ among reports, even when the product of repetitions per set, sets per session, and percentage of 1RM was normalized as an index of the training volume.

The aim of the present study was to investigate the effects of medium resistance long duration or short duration exercises on the morphological and functional aspects of the human muscles. Different functional tasks, however, may require power with a greater velocity component or a greater force component depending on the nature of the specific task. The different resistance training protocols may be able to deliver different aspects of power to transfer to functional task performance.

MATERIALS AND METHODS

The purpose of the present study was to find out the effects of medium velocity resistance training on speed among urban youth girls. To achieve this purpose, thirty (*n=30*) youth urban girls were randomly selected from the Nagapattanam District in Tamil Nadu State. The age of the selected subjects were ranged between 15 and 19 years. The total strength was divided into two groups of fifteen (*n=15*) each. The groups were named as medium velocity resistance training group and the control group. The training group underwent systematic planned medium velocity resistance training for twelve weeks duration with three sessions per week. The control group didn't do any special training programs apart from their regular activities. Speed was taken as a criterion variable for the current study and the test item used to measure the speed was 50 meters dash test. The data were collected before and after the training duration. The collected data were analyzed statistically through analysis of covariance (ANCOVA). The level of significance was fixed at 0.05 levels in all aspects.

RESULTS AND DISCUSSIONS

Table I

Analysis of Covariance on Speed of Medium Velocity Resistance Training Group and the Control Group

Test		Experimental Group	Control Group	SOV	SS	Df	MS	F
Pre test	Mean	8.91	8.79	B	0.12	1	0.12	0.12
	SD	1.08	0.92	W	28.42	28	1.02	
Post test	Mean	8.04	8.81	B	4.42	1	4.42	4.17
	SD	1.14	0.90	W	27.74	28	1.06	
Adjusted Post test	Mean	8.04	8.81	B	5.97	1	5.97	186.67*
				W	0.86	27	0.03	

(The table value required for significance at 0.05 level with df 1 and 28 is 4.20 and for adjusted post test df 1 and 27 the table value is 4.21)

Table I, shows that the pre test means of medium velocity resistance training group and the control groups were 8.91 and 8.79 respectively. The obtained '*F*' ratio of 0.12 for the pre test mean was lower than the table value 4.20 for df 1 and 28 required for significance at 0.05 level. The post test means of medium velocity resistance raining group and control groups were 8.04 and 8.81 respectively. The obtained '*F*' ratio of 4.17 for post test mean is lower than the table value of 4.20. There was no significant difference in speed among the training and the control group as per the post test '*F*' value. The adjusted post test means of medium velocity resistance training group and the control groups were 8.04 and 8.81 respectively. The obtained '*F*' ratio of 186.67 was greater than the required table value 4.21 for df 1 and 27 required for significant at 0.05 level. As per the '*F*' value of adjusted post test it was conclude that the result of the study was shows that significant difference among the training and the control group on speed.

The pre, post and adjusted post test mean values of medium velocity resistance training group and the control groups on speed is graphically represented in the figure 1.

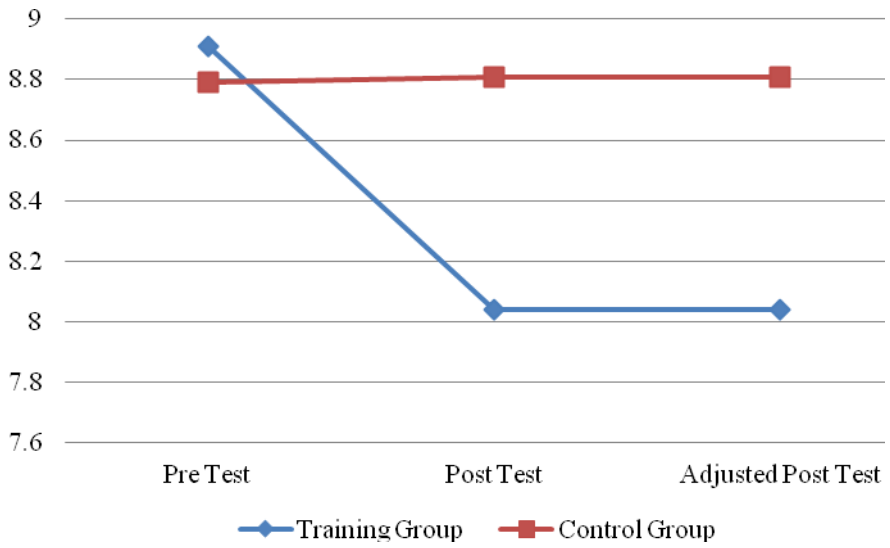

Figure 1: The pre, post and adjusted post test mean values of experimental and the control groups on Speed

The result of the study indicated that, there was a significant difference in speed among the medium velocity resistance training group and the control group on speed. The medium resistance training was highly influencing the criterion variable of speed among the selected subjects. The studies of the Stephen *et. al.* (2012), Andersen *et. al.* (2004) and Kanehisa *et. al.* (2002) also supporting the present result of improvement in speed due to the systematic resistance training after the training duration.

CONCLUSION

The result of the study shows that, there was a significant difference in speed among the medium velocity resistance training group and the control group after the training duration. It was further conclude that the medium velocity resistance training is one of the best methods to improve the quality of speed among the selected subjects.

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