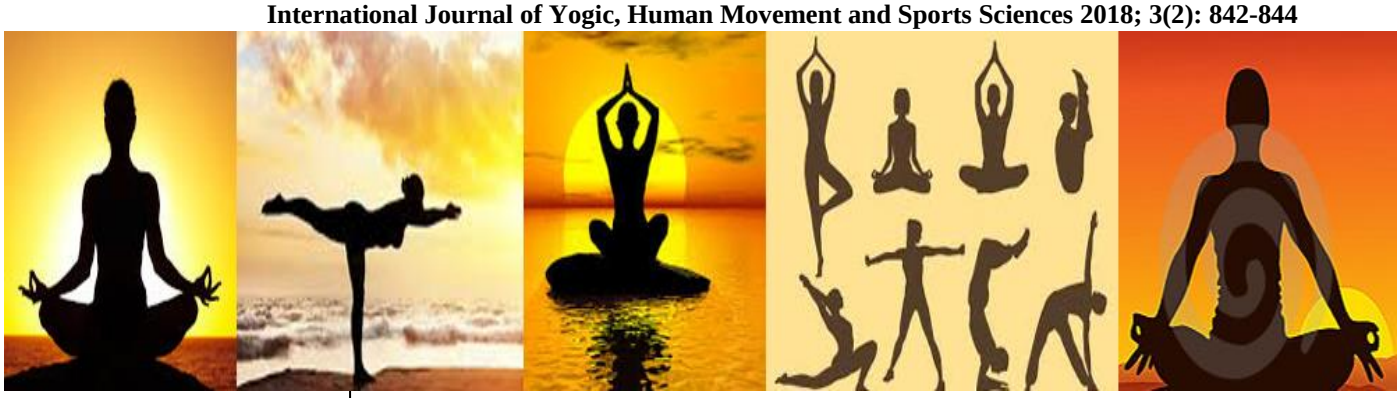
International Journal of Yogic, Human Movement and Sports Sciences 2018; 3(2): 842-844



ISSN: 2456-4419
Impact Factor: (RJIF): 5.18
Yoga 2018; 3(2): 842-844

www.theyogicjournal.com
Received: 20-05-2018
Accepted: 22-06-2018

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Effect of specific training programme in altering the reaction time of the hurdlers

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Abstract
The objective of this study was to examine the effect of specific training programme in altering the reaction time of the hurdlers. To achieve the purpose of the study thirty male students studying bachelor's degree in physical education in the Department of Physical Education, Annamalai University Chidambaram, Tamilnadu, India, were selected as participants and their age ranged from 18 to 22 years. The selected participants (N=30) were classified into three equal groups of ten each (n=10) at random. Group-I underwent speed training, group-II underwent plyometric training and group-III acted as control. The training regimen lasted for twelve weeks. The selected dependent variable reaction time was assessed using standard tests and procedures, before and after the training regimen. Analysis of covariance was used to determine the significant difference existing between pretest and posttest on selected dependent variables. The results suggest that both the speed training and plyometric training are significantly improved the reaction time of the hurdlers however, speed training was found better than plyometric training in improving reaction time.

Keywords: Specific training, reaction time, hurdlers

Introduction
Of all human skills, speed is the hardest and most difficult to improve when compared to other factors such as strength and endurance (Grosser, 1991) [5]. For this reason many attempts have been made by coaches during the last 50 years to invent new training methods, in order to improve the speed of their athletes. To attain peak performance in hurdles, the specific training workouts are to be employed in different proportions. Since very few studies have been done on this aspect, there is a need to have ideal properties of specific training workouts for hurdlers.

Among sport conditioning coaches, there is considerable discussion regarding the efficiency of training methods that improve body speed and power. But the best method for achieving improvement in speed and muscular power are disputed. Specific training are well-established training method and vital necessary for athletes; however, there is a lack of information regarding specific training impact among hurdlers. Though all methods lead to sound programming of sports training with a view to enhance sports performance, sports scientists join their hands in the combination of different training methods as sound and scientific.

It has been observed that sprint training is one of the most effective and efficient way to enhance various aspects of physical fitness components. During sprint training changes occur on speed and power parameters. How far these changes vary due to the combination of various training has not been explored so far. It is important to know the effect of specific training, which can determine its influence on speed and power parameters, so as to address the more specific and individual needs.

Speed and strength are integral components of fitness found in varying degrees in virtually all athletic movements. Simply put the combination of speed and strength is power. For many years, coaches and athletes have sought to improve power in order to enhance performance. Throughout this century and no doubt long before, jumping, bounding and hopping exercises have been used in various ways to enhance athletic performance. In recent years, this distinct method of training for power or explosiveness has been termed plyometric (Bompa *et al*, 2005) [2].

Most of the earlier studies on specific training have, however, been performed among team players. More data are needed to confirm the beneficial effects specific training on parameters determining the performance of hurdles. However, there still exists uncertainty as to the mechanism by which improving performance within various training methods. Thus, the investigator interested to investigate the effect of specific training programme on parameters determining the performance of hurdles.

Methodology

Subjects and Variables

To achieve the purpose of the study thirty male students studying bachelor's degree in physical education in the Department of Physical Education, Annamalai University, Chidambaram, Tamilnadu, India, were selected as participants and their age ranged from 18 to 22 years. The selected participants (N=30) were classified into three equal groups of ten each (n=10) at random. Group-I underwent speed training, group-II underwent plyometric training and group-III acted as control. The selected dependent variables reaction time was assessed by using Reaction Time Ruler Test.

Training Protocol

The experimental groups were trained at the same time of day in the morning session, three days a week, for 12 weeks. During the training, all subjects were under direct supervision and were instructed on how to perform each exercise. The experimental group-I performed speed training, group-II performed plyometric training. Group-II was the control group which did not undergo any training. The speed training programme includes acceleration sprint, alternative pace run, speed endurance run, and resisted sprint are performed by experimental group-I. The plyometric training exercises such as double footed jumps over low hurdle, bunny hops, press ups & hand clap, depth jumping, lateral jump single leg, medicine ball side throw are performed by experimental group-II.

Statistical Procedure

The data collected from the experimental and control groups on selected dependent variable was analyzed statistically by paired't' test to analyze the significant differences if any between the pre and post-test. Further, percentage of changes was calculated to find out the chances in selected dependent variable due to the impact of experimental treatment. The data collected from the three groups prior to and post experimentation on selected dependent variable was analyzed statistically in order to find out the significant difference if any, by applying the analysis of covariance (ANCOVA). This is carried out in order to nullify the initial mean differences. Scheffe's test was applied as post hoc test to determine the paired mean differences and this test is applicable whenever the obtained 'F' ratio value in the adjusted post-test mean is significant.

Result

The descriptive analysis of the data showing mean, range, standard deviation, mean differences, 't' ratio and percentage of improvement on reaction time of experimental groups are given in table-I.

Table I: Descriptive Analysis of the Pre and Post Test Data and 'T' Ratio on Reaction Time of Experimental Groups

Group	Test	Mean	SD	Range	Mean Difference	't' ratio	% of Changes
Speed Training Group	Pre test	0.193	0.027	0.08	0.045	14.34*	23.32 %
	Post-test	0.148	0.022	0.7			
Plyometric Training Group	Pre-test	0.208	0.031	0.10	0.038	13.46*	18.27 %
	Post-test	0.170	0.031	0.09			

Table t-ratio at 0.05 level of confidence for 9 (df) =2.26
*Significant

Table-I shows that the mean, standard deviation, range and mean difference values of the pre and post test data collected from the experimental groups on reaction time. Further, the collected data was statistically analyzed by paired't' test to find out the significant differences if any between the pre and post data on reaction time. The obtained't' values of speed training and plyometric training groups are 14.34 and 13.46 respectively which are greater than the required table value of 2.26 for significance at 0.05 level for 9 degrees of freedom. It revealed that significant differences existed between the pre and post-test means of experimental groups on reaction time. The result of the study also produced 23.32% of improvement due to speed training, and 18.27% of improvement due to plyometric training.

The pre-test and post test data collected from the experimental and control groups on reaction time is statistically computed by using analysis of covariance and the results are presented in table–II.

Table 2: Analysis of Covariance on Reaction Time of Experimental and Control Groups

	Speed Training Group	Plyometric Training Group	Control Group	SoV	Sum of Squares	df	Mean Squares	'F' ratio
Pre-test Mean SD	0.193	0.208	0.202	B	0.001	2	0.0005	0.50
	0.027	0.031	0.024	W	0.037	27	0.001	
Post-test Mean SD	0.148	0.170	0.206	B	0.021	2	0.011	11.00*
	0.022	0.031	0.025	W	0.031	27	0.001	
Adjusted Post-test Mean	0.155	0.164	0.205	B	0.018	2	0.009	45.00*
				W	0.005	26	0.0002	

Table F-ratio at 0.05 level of confidence for 2 and 27 (df) = 3.35, 2 and 26 (df) = 3.37
*Significant

Table-II shows that the pre-test means and standard deviation on reaction time of speed training, plyometric training and control groups are 0.193 ± 0.027, 0.208 ± 0.031 and 0.202 ± 0.024 respectively. The obtained 'F' value 0.50 of reaction time is lesser than the required table value of 3.35 at 2, 25 df at 0.05 level of confidence. This proved that the random assignment of the subjects was successful and their scores on reaction time before the training were equal and there was no

significant difference among groups.

The post-test means and standard deviation on reaction time of speed training, plyometric training and control groups are 0.148 ± 0.022, 0.170 ± 0.031 and 0.206 ± 0.025 respectively. The obtained 'F' value of 11.00 on reaction time is greater than the required table value of 3.35 at 2, 25 df at 0.05 level of confidence. It implied the existence of significant difference among three groups during the post test on reaction time.

The adjusted post-test means on reaction time of speed training, plyometric training and control groups are 0.155, 0.164 and 0.205 respectively. The calculated 'F' value of 45.00 on reaction time is very much greater than the expected table value of 3.37 of 2, 26 df at 0.05 level of confidence. Hence, it is concluded that significant differences existed between the adjusted post-test means of experimental and control groups on reaction time.

Since, the adjusted post-test 'F' ratio value was found to be significant the Scheffe's test was applied as post-hoc-test to determine the paired mean differences, and it is presented in table-III.

Table 3: Scheffe's Test for the Difference between the Adjusted Post Test Paired Means of Reaction Time

Variable	Adjusted Post Test Means			Difference between Means	Confidence Interval
	Speed Training Group	Plyometric Training Group	Control Group		
Reaction time	0.155	0.164		0.009*	0.001
	0.155		0.205	0.050*	0.001
		0.164	0.205	0.041*	0.001

*Significant

Table-II showed that there was significant difference existed between speed training and plyometric training groups; speed training and control groups, plyometric training and control groups on reaction time. Since, the mean differences are higher than the confidence interval value 0.001. It reveals that both experimental groups had significantly increased the reaction time. However, speed training was found better than plyometric training in improving the reaction time.

The pre, post and adjusted post-test mean values on reaction time of the experimental and control groups is graphically represented in figure- I for better understanding.

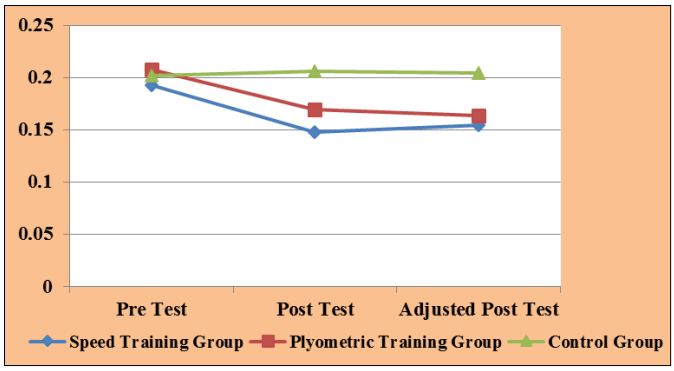

Fig 1: Per, Post and Adjusted Post Test Mean Scores of Experimental and Control Groups on Reaction Time

Discussions

Visual reaction time is the time the athlete receives information from the environment and decides to act on it in a certain way (Abernethy, 1991) [1]. Tate et.al., (2008) [7] concluded that the visual training program improves visual skills such as reaction time, depth perception, accommodation and saccadic eye movements of cricketers, which could lead to improvement in the batting performance. According to Planer (1994) [6] "if play encourages normal gross motor development and improves eye-hand and eye-body co-ordination and peripheral vision helps develop these basic motor skills, it is then clear that vision and motor skills are linked to sports performance".

The sprinter has to react quickly (reflex speed), accelerate as fast and for as long as possible (power), reach the highest possible running speed (maximum velocity), maintain this for as long as possible (maximum speed endurance) and minimize the loss of velocity caused by fatigue (sub- maximal speed endurance) (Letzelter, 2006).

Dawson *et al*., (1998) [4] suggested that increases in the proportion of type-II muscle fibers are also possible with six weeks of short sprint training sessions. In addition, Casey *et al*., (1996) [3] reported that during sprints, type-II muscle fibers are recruited to a large extent to produce high power output as fast as possible. Therefore, it is observed from the above findings that exercising at higher intensity for short bursts followed by a low intensity recovery resulted in an elevation of speed parameters.

Conclusions

The result of this study demonstrated that, speed training and plyometric training had significant impact on reaction time of the hurdlers. However, speed training was found better than plyometric training in improving the reaction time.

References

1. Abernethy B. Acquisition of motor skills, In: Pyke FS (Ed). Better coaching, advanced coach's manual. Improving the athlete, Australian Coaching Council, Canberra. 1991; 6:69-98.
2. Bompa TO, *et al*. Periodisation Training for Sports. 2nd ed. USA: Human Kinetics, 2005.
3. Casey A, *et al*. Metabolic Response of Type I and II Muscle Fibers during Repeated Bouts of Maximal Exercise in Human, Am J Physiol. 1996; 34:38-43.
4. Dawson B, *et al*. Changes in Performance, Muscle Metabolites, Enzymes and Fibre Types after Short Sprint Training, Eur J Appl Physiol Occup Physiol. 1998; 78:2.
5. Grosser M. Schnell igke its training Greek Edition, 1991.
6. Planer PM. Sports vision manual, International Academy of Sports Vision, Harrisburg, 1994.
7. Tate Balasaheb, Paul Maman, Jaspal, Sandhu. The impact of visual skills training program on batting performance in cricketers, Serbian Journal of Sports, 2008, 1.