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Effect of neuromotor facilitatory training and core training on static balance of athletic performance in young adults

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Abstract

The method by which athletes are selected for a team can have a significant impact on that team's success. In the past, decisions have been made based largely on judgments of an individual's physical characteristics with little attention given to the psychological factors that contribute to athletic success. The purpose of the study was used to find out the effect of neuromotor facilitatory training and core training on static balance of athletic performance in young adults. For this purpose, pre- test post-test random group design was followed in this research. Subjects, college students were randomly selected based on inclusion and exclusion criteria were divided into three groups, namely, experimental group I, experimental group II and control group consisting of 20 subjects in each group. Experimental group I underwent 8 weeks neuromotor facilitatory training, experimental group II underwent core training for eight weeks and the control group was kept strictly under control and not involved in any special activities. Prior to experimental treatment, all the subjects were measured of selected variables, namely, determinants of athletic performance, balance (static, dynamic), Scores on completion of experimental treatment on 2nd, 4th, 6th and 8th weeks were collected After the experimental treatment for a period of eight weeks the subjects were measured on the criterion variables, which formed the final scores. The difference between the initial and final means was considered as the effects of neuromotor facilitatory training and core training on determinants of athletic performance. The obtained data were subjected to statistical analysis using ANCOVA to compare the initial and final scores. The results and discussions presented in the previous chapter proved that neuromotor facilitation training and core training contributed for athletic performance determinants, speed, stride length, stride frequency, EC static balance, EC dynamic balance and agility compared to control group.

Keywords: Static, balance & neuromotor facilitatory training and core training.

Introduction

The method by which athletes are selected for a team can have a significant impact on that team's success. In the past, decisions have been made based largely on judgments of an individual's physical characteristics with little attention given to the psychological factors that contribute to athletic success. Coaches are experts in identifying the physical characteristics needed for success in their field; however, they lack the skills necessary to assess the psychological factors that have been proven to have a significant impact on athletic performance. Coaches have relied on informal judgments of constructs such as an athlete's motivation and level of aggression to determine their potential to succeed. The terms "core" or "core strength" are some of the most common words / phrases heard around the gym or track in recent years. Many runners would accept the idea that it would be desirable to have a strong core, but rarely do we think about what that really means or why exactly it would be helpful. (Dena Evans, 2013) Core strength training may be a relatively new, buzz term in the fitness industry but coaches and athletes have understood its value for many years. The core region consists of far more than just the abdominal muscles. In fact core strength training aims to target all the muscles groups that stabilize the spine and pelvis. It's these muscle groups that are critical for the transfer of energy from large to small body parts during many sporting activities.

Objectives of the study

To estimate the effects of neuromotor facilitatory training on the determinants of athletic performance, such as static balance.

1. To estimate the effects of core training on the determinants of athletic performance, such as static balance
2. To compare the effects of neuromotor facilitatory training and core training on athletic performance determinants such as static balance.

Methodology

This study deals with the analysis of data collected from the samples under study. The purpose of the study was to find out the effect of neuromotor facilitatory training and core training on determinants of athletic performance in young adults. Subjects (N=60) were randomly allocated into three groups,

namely, experimental group I, experimental group II and control group. Those in the interventional groups were oriented to the exercise program that needed to be followed along the course of study. Method of training, duration and the testing procedures were explained in detail. The investigator selected the following variables for the purpose of this study.

Results and discussions

Computation of analysis of variance and post hoc test

Results on EC static balance - dominant leg

The statistical analysis comparing the initial and final means of eyes closed (EC) Static Balance - Dominant leg due to Neuromotor facilitatory training and Core training on determinant of athletic performance, such as, EC Static Balance - Dominant leg, in young adults is presented in Table 1.

Table 1: Computation of analysis of covariance of EC static balance - dominant leg

	Neuromotor Facilitatory Training	Core Training	Control Group	Source of Variance	Sum of Squares	DF	Mean Squares	Obtained F
Pre Test Mean	27.36	24.10	28.73	Between	225.87	2	112.93	0.37
				Within	17338.73	57	304.19	
Post Test Mean	40.52	33.98	27.17	Between	1784.08	2	892.04	3.83*
				Within	13283.23	57	233.04	
Adjusted Post Test Mean	40.00	36.15	25.52	Between	2243.72	2	1121.86	42.77*
				Within	1469.05	56	26.23	
Mean Diff	13.17	9.88	-1.56					

Table F-ratio at 0.05 level of confidence for 2 and 57 (df) =3.16, 2 and 56 (df) =3.16.

*Significant as shown in Table III, the obtained pre-test means on EC Static Balance - Dominant leg on Neuromotor facilitatory training group was 27.36, Core training group was 24.10 and control group was 28.73. The obtained pre-test F value was 0.37 and the required table F value was 3.16, which proved that there was no significant difference among initial scores of the subjects. The obtained post-test means on EC Static Balance - Dominant leg on Neuromotor facilitatory training group was 40.52, Core training group was 33.98 and control group was 27.17. The obtained posttest F value was 3.83 and the required table F value was 3.16, which proved that there was significant difference among post test scores of the subjects. Taking into consideration of the pre-test means and post-test means adjusted post-test means were determined and analysis of covariance was done and the obtained F value 42.77 was greater than the required value of 3.16 and hence it was accepted that there was significant differences among the treated groups. Since significant differences were recorded, the results were subjected to post hoc analysis using Scheffe's Confidence Interval test. The results were presented in Table V.

(MD: 14.49). There was significant difference between Core training group and control group (MD: 10.63). There was insignificant difference between treatment groups, namely, Neuromotor facilitatory training group and Core training group. (MD: 3.85).

The ordered adjusted means were presented through bar diagram for better understanding of the results of this study in Figure I

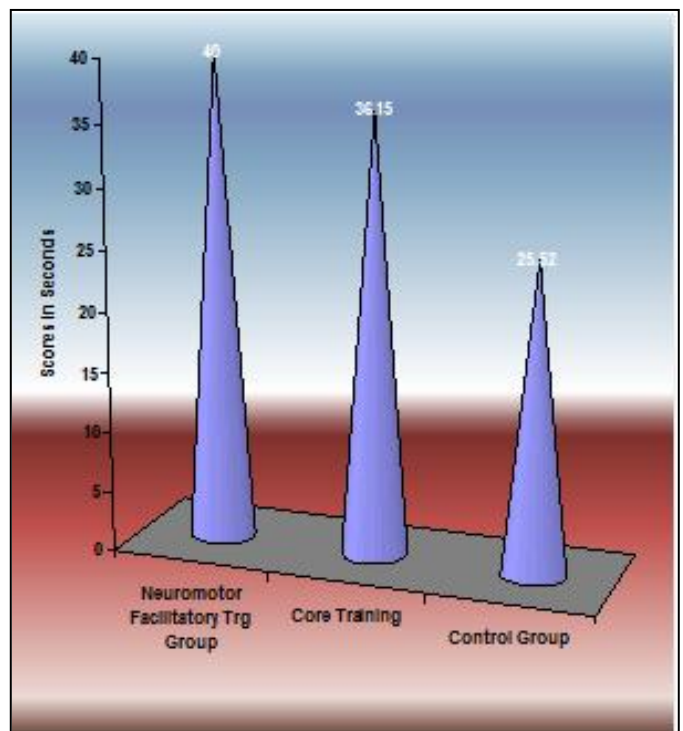


Fig 1: Bar diagram on ordered adjusted means on EC static balance - dominant leg

Table 2: Scheffe's Confidence Interval Test Scores on EC Static Balance - Dominant leg

Means				Required. C I
Neuromotor facilitatory training Group	Core training Group	Control Group	Mean Difference	
40.00	36.15		3.85	4.07
40.00		25.52	14.49*	4.07
	36.15	25.52	10.63*	4.07

* Significant

The post hoc analysis of obtained ordered adjusted means proved that there was significant differences existed between Neuromotor facilitatory training group and control group

Discussions on findings

The effect of Neuromotor facilitatory training and Core training on EC Static Balance - Dominant leg is presented in Table V. The analysis of covariance proved that there was significant difference between the experimental group and control group as the obtained F value 42.77 was greater than the required table F value to be significant at 0.05 level. Since significant F value was obtained, the results were further subjected to post hoc analysis and the results presented in Table 2. proved that there was significant difference between Neuromotor facilitatory training group and control group (MD: 14.49) and Core training group and control group (MD: 10.63). Comparing between the treatment groups, it was found that there was no significant difference between Neuromotor facilitatory training and Core training group on determinant of athletic performance, such as, EC Static Balance - Dominant leg, among young adults. Thus, it was found that neuromotor facilitatory training and core training contribute for the improvement of athletic performance of young adults.

Conclusions

Within the limitations and delimitations of the study, the following conclusions were drawn.

1. It was concluded that neuromotor facilitation training and core training significantly altered athletic determinant, eyes closed (EC) static balance dominant leg of the subjects. It was also found that comparing between treatment groups, there was no significant difference.
2. It was concluded that neuromotor facilitation training and core training significantly altered athletic determinant, eyes closed (EC) static balance non dominant leg of the subjects. It was also found that comparing between treatment groups, there was no significant difference.

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