

RESULTS & DISCUSSIONS

CHAPTER IV

RESULTS AND DISCUSSIONS

4.1 OVERVIEW

This chapter deals with the analysis of data collected from the samples under study. The purpose of the study was to find out the effects of neuromotor facilitatory training on determinants of athletic performance in young adults. To achieve the purpose of the study, the investigator selected 90 active young adults studying in colleges, between age group of 18 to 25 years. The subjects were asked to give consent to participate in the study and fill up a brief questionnaire about the previous occurrence of leg injury and not participating in any other lower extremity exercise programme six months prior to / during the interventional period. Based on the information gathered through the questionnaire, the subjects who had history of lower limb musculoskeletal pathology (eg. fracture, muscular strain, ligament sprain, rheumatologic disease), surgery, systemic diseases, like cardiovascular conditions (eg. IHD, valvular disease, peripheral vascular disease); Respiratory problems (eg. infections /bronchial asthma); Neurological disease (eg. epilepsy, neuropathy, dementia) were excluded from participating in this study. Random group design was used to find out the effects of neuromotor facilitatory training on determinants of athletic performance in young adults. And for experimental purposes, pre test post test

random group design was followed in this research. Ninety (90) male college students selected as subjects based on inclusion and exclusion criteria were randomly divided into three groups, namely, experimental group I, experimental group II and control group. Experimental group I underwent 8 weeks neuromotor facilitatory training, experimental group II underwent placebo 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, speed, agility, static balance (ECS dominant leg and non dominant leg) dynamic balance (ECD dominant leg and non dominant leg) 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 on determinants of athletic performance.

4.2 TEST OF SIGNIFICANCE

This is the vital portion of thesis achieving the conclusion by examining the hypotheses. The procedure of testing the hypotheses was either by accepting the hypotheses or rejecting the same in accordance with the results obtained in relation to the level of confidence.

The test is usually called the test of significance since we test whether the differences between three groups or within many groups scores were significant or not. In this study, if the obtained F-value were greater than the table value, the hypotheses were accepted to the effect that there existed significant difference among the means of the groups compared and if the obtained values were lesser than the required values, then the null hypotheses were accepted to the effect that there existed no significant differences among the means of the groups under study.

4.2.1 LEVEL OF SIGNIFICANCE

The subjects were compared on the effect of Neuromotor Facilitatory training on determinants of athletic performance. The selected criterion variables were speed, agility, eyes closed static balance – dominant leg, eyes closed static balance – non dominant leg, eyes closed dynamic balance – dominant leg, and eyes closed dynamic balance – non dominant leg. The analysis of covariance (ANCOVA) was used to find out the significant difference if any, between the groups on selected criterion variables separately. In all the cases, 0.05 level of confidence was fixed to test the significance, which was considered as appropriate.

In this study, if the obtained F ratio value were greater than the table value, the null hypotheses were rejected to the effect that there existed significant

difference among the means of the groups compared and if the obtained values were lesser than the required values at 0.05 level, then the null hypotheses were accepted to the effect that there existed no significant differences among the means of the groups under study.

4.3.1 RESULTS ON SPEED

The statistical analysis comparing the initial and final means of Speed due to Neuromotor facilitatory training and Placebo training on determinant of athletic performance, such as, Speed, in young adults is presented in Table VIII

Table VIII
COMPUTATION OF ANALYSIS OF COVARIANCE OF SPEED (in secs.)

	NEUROMOTOR FACILITATORY TRAINING	PLACEBO TRAINING	CONTROL GROUP	SOURCE OF VARIANCE	SUM OF SQUARES	df	MEAN SQUARES	OBTAINED F
Pre Test Mean	9.45	9.57	9.39	Between	0.55	2	0.28	0.27
				Within	88.70	87	1.02	
Post Test Mean	8.60	9.48	9.54	Between	16.83	2	8.42	9.96*
				Within	73.56	87	0.85	
Adjusted Post Test Mean	8.61	9.40	9.61	Between	16.60	2	8.30	35.47*
				Within	20.12	86	0.23	
Mean Diff	0.85	0.09	0.16					

Table F-ratio at 0.05 level of confidence for 2 and 87 (df) =3.10, 2 and 86 (df) =3.10.

*Significant

As shown in Table VIII, the obtained pre test means on Speed on Neuromotor facilitatory training group was 9.45, Placebo training group was 9.57 and control group was 9.39. The obtained pre test F value of 0.27 was lesser than the required table F value of 3.15, which proved that there was no significant difference among initial scores of the subjects.

The obtained post test means on Speed on Neuromotor facilitatory training group was 8.60, Placebo training group was 9.48 and control group was 9.54. The obtained post test F value of 9.96 was greater than the required table F value of 3.10, which proved that there was significant difference among 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. The obtained F value of 35.47 was greater than the required value of 3.10 and hence it was accepted that there was a significant difference 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 are presented in Table IX.

Table IX
Scheffe's Confidence Interval Test Scores on Speed (in secs.)

MEANS				Required C I
Neuromotor facilitatory training Group	Placebo training Group	Control Group	Mean Difference	
8.61	9.40		0.79*	0.31
8.61		9.61	1.00*	0.31
	9.40	9.61	0.21	0.31

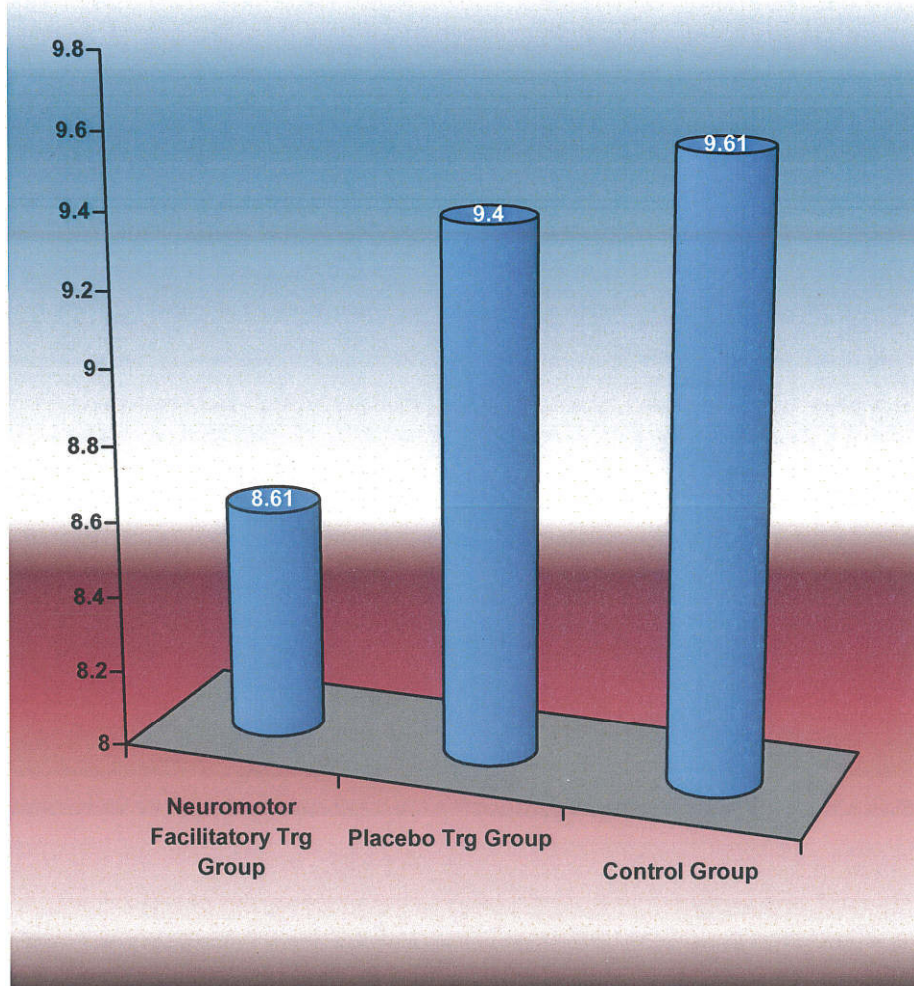
* Significant

The post hoc analysis of obtained ordered adjusted means proved that there was significant differences between Neuromotor facilitatory training group and control group (MD: 1.00), there was insignificant difference between Placebo training group and control group (MD: 0.21) and there was a significant difference between treatment groups, namely, Neuromotor facilitatory training group and Placebo training group. (MD: 0.79).

The ordered adjusted means are presented through bar diagram for better understanding of the results of this study in Figure 1.

Figure 1

BAR DIAGRAM ON ORDERED ADJUSTED MEANS ON SPEED (in secs.)



4.3.2 DISCUSSIONS ON FINDINGS

The effect of Neuromotor facilitatory training and Placebo training on Speed is presented in Table VIII. The analysis of covariance proved that there was significant difference between the experimental group and control group as the obtained F value 35.47 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 IX proved that there was significant difference between Neuromotor facilitatory training group and control group (MD: 1.00) and There was no significance difference between Placebo training group and control group (MD: 0.21). Comparing between the treatment groups, it was found that there was significant difference between Neuromotor facilitatory training and Placebo training group on determinant of athletic performance, such as, Speed, among young adults. Thus, it was found that neuromotor facilitatory training contributes for the improvement of athletic performance of young adults.

4.4.1 RESULTS ON AGILITY

The statistical analysis comparing the initial and final means of Agility due to Neuromotor facilitatory training and Placebo training on determinant of athletic performance, such as, Agility, in young adults is presented in Table X

Table X

**COMPUTATION OF ANALYSIS OF COVARIANCE OF AGILITY
(in secs.)**

	NEUROMOTOR FACILITATORY TRAINING	PLACEBO TRAINING	CONTROL GROUP	SOURCE OF VARIANCE	SUM OF SQUARES	df	MEAN SQUARES	OBTAINED F
Pre Test Mean	12.61	12.97	12.76	Between	1.99	2	0.99	0.887
				Within	97.43	87	1.12	
Post Test Mean	11.10	12.69	12.72	Between	52.08	2	26.04	29.97*
				Within	75.58	87	0.87	
Adjusted Post Test Mean	11.21	12.56	12.74	Between	41.27	2	20.63	63.83*
				Within	27.80	86	0.32	
Mean Diff	1.52	0.28	0.03					

Table F-ratio at 0.05 level of confidence for 2 and 87 (df) =3.10, 2 and 86 (df) =3.10.

*Significant

As shown in Table X, the obtained pre test means on Agility on Neuromotor facilitatory training group was 12.61, Placebo training group was 12.97 was and control group was 12.76. The obtained pre test F value of 0.887

was less than the required table F value of 3.15, which proved that there was no significant difference among initial scores of the subjects.

The obtained post test means on Agility on Neuromotor facilitatory training group was 11.10, Placebo training group was 12.69 and control group was 12.72. The obtained post test F value of 29.97 was greater than the required table F value of 3.10, which proved that there was significant difference among 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 of 63.83 was greater than the required value of 3.10 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 are presented in Table XI.

Table XI
Scheffe's Confidence Interval Test Scores on Agility

MEANS				Required C I
Neuromotor facilitatory training Group	Placebo training Group	Control Group	Mean Difference	
11.21	12.56		1.35*	0.37
11.21		12.74	1.53*	0.37
	12.56	12.74	0.18	0.37

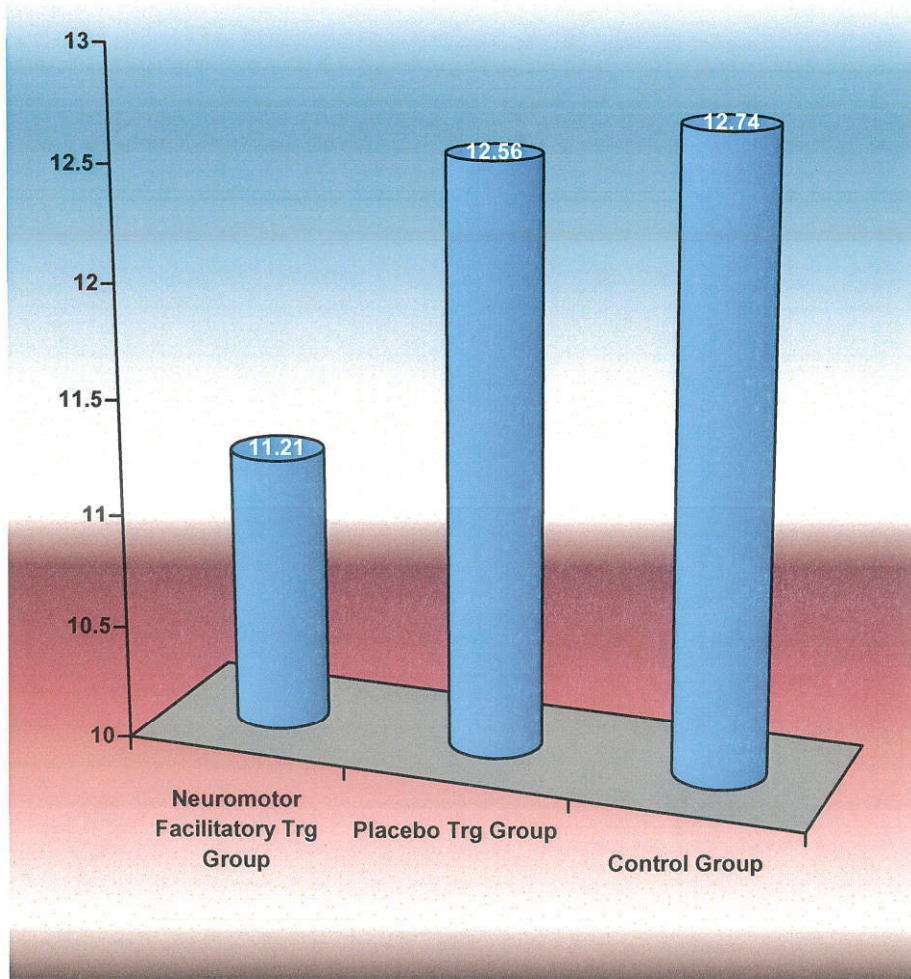
* Significant

The post hoc analysis of obtained ordered adjusted means proved that there was significant difference between Neuromotor facilitatory training group and control group (MD: 1.53). There was insignificant difference between Placebo training group and control group (MD: 0.18). There was significant difference between treatment groups, namely, Neuromotor facilitatory training group and Placebo training group. (MD: 1.35).

The ordered adjusted means are presented through bar diagram for better understanding of the results of this study in Figure 2.

Figure 2

BAR DIAGRAM ON ORDERED ADJUSTED MEANS ON AGILITY(in secs.)



4.4.2 DISCUSSIONS ON FINDINGS

The effect of Neuromotor facilitatory training and Placebo training on Agility is presented in Table X. The analysis of covariance proved that there was significant difference between the experimental group and control group as the obtained F value of 63.83 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 XI proved that there was significant difference between Neuromotor facilitatory training group and control group (MD: 1.53) and there was no significant difference between Placebo training group and control group (MD: 0.18). Comparing between the treatment groups, it was found that there was significant difference between Neuromotor facilitatory training and Placebo training group on determinant of athletic performance, such as, Agility, among young adults. Thus, it was found that neuromotor facilitatory training contributes for the improvement of athletic performance of young adults.

4.5.1 RESULTS ON EYES CLOSED STATIC BALANCE - DOMINANT LEG

The statistical analysis comparing the initial and final means of EC Static Balance - Dominant leg due to Neuromotor facilitatory training and Placebo training on determinant of athletic performance, such as, EC Static Balance - Dominant leg, in young adults is presented in Table XII

Table XII

COMPUTATION OF ANALYSIS OF COVARIANCE OF EYES CLOSED STATIC BALANCE DOMINANT LEG

	NEUROMOTOR FACILITATORY TRAINING	PLACEBO TRAINING	CONTROL GROUP	SOURCE OF VARIANCE	SUM OF SQUARES	df	MEAN SQUARES	OBTAINED F
Pre Test Mean	26.77	25.03	28.66	Between	197.96	2	98.98	0.40
				Within	21561.30	87	247.83	
Post Test Mean	40.22	24.65	27.94	Between	4040.50	2	2020.25	9.75*
				Within	18034.14	87	207.29	
Adjusted Post Test Mean	40.27	26.15	26.39	Between	3916.97	2	1958.49	57.91*
				Within	2908.61	86	33.82	
Mean Diff	13.45	0.38	0.73					

Table F-ratio at 0.05 level of confidence for 2 and 87 (df) =3.10, 2 and 86 (df) =3.10.

*Significant

As shown in Table XII, the obtained pre test means on EC Static Balance - Dominant leg on Neuromotor facilitatory training group was 26.77, Placebo training group was 25.03 was and control group was 28.66. The obtained pre test

F value of 0.40 was less than the required table F value of 3.15, 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 40.22, Placebo training group was 24.65 and control group was 27.94. The obtained post test F value of 9.75 was greater than the required table F value of 3.10, which proved that there was significant difference among 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 of 57.91 was greater than the required value of 3.10. 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 are presented in Table XIII.

Table XIII

**Scheffe's Confidence Interval Test Scores on Eyes Closed Static Balance -
Dominant leg**

MEANS				Required C I
Neuromotor facilitatory training Group	Placebo training Group	Control Group	Mean Difference	
40.27	26.15		14.11*	3.74
40.27		26.39	13.87*	3.74
	26.15	26.39	0.24	3.74

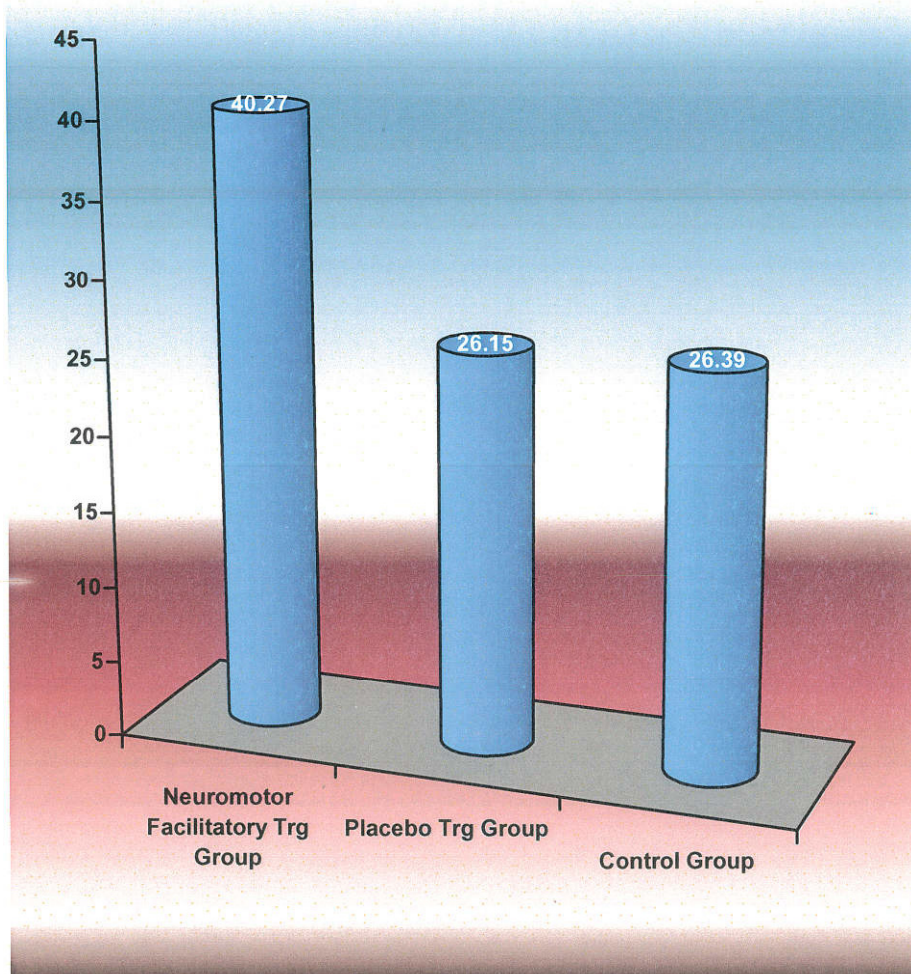
* Significant

The post hoc analysis of obtained ordered adjusted means proved that there was significant difference between Neuromotor facilitatory training group and control group (MD: 13.87). There was insignificant difference between Placebo training group and control group (MD: 0.24). There was significant difference between treatment groups, namely, Neuromotor facilitatory training group and Placebo training group. (MD: 14.11).

The ordered adjusted means are presented through bar diagram for better understanding of the results of this study in Figure 3.

Figure 3

**BAR DIAGRAM ON ORDERED ADJUSTED MEANS ON EYES CLOSED
STATIC BALANCE - DOMINANT LEG (in secs.)**



4.5.2 DISCUSSIONS ON FINDINGS

The effect of Neuromotor facilitatory training and Placebo training on EC Static Balance - Dominant leg is presented in Table XII. The analysis of covariance proved that there was significant difference between the experimental group and control group as the obtained F value 57.91 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 XIII proved that there was significant difference between Neuromotor facilitatory training group and control group (MD: 13.87) and there was no significant difference between Placebo training group and control group (MD: 0.24). Comparing between the treatment groups, it was found that there was significant difference between Neuromotor facilitatory training and Placebo 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 contributes for the improvement of athletic performance of young adults.

**4.6.1 RESULTS ON EYES CLOSED STATIC BALANCE - NON
DOMINANT LEG**

The statistical analysis comparing the initial and final means of EC Static Balance - Non dominant leg due to Neuromotor facilitatory training and Placebo training on determinant of athletic performance, such as, EC Static Balance - Non dominant leg, in young adults is presented in Table XIV

Table XIV

**COMPUTATION OF ANALYSIS OF COVARIANCE OF EYES CLOSED
STATIC BALANCE - NON DOMINANT LEG (in secs.)**

	NEUROMOTOR FACILITATORY TRAINING	PLACEBO TRAINING	CONTROL GROUP	SOURCE OF VARIANCE	SUM OF SQUARES	df	MEAN SQUARES	OBTAINED F
Pre Test Mean	29.50	25.29	30.05	Between	407.54	2	203.77	0.59
				Within	30217.40	87	347.33	
Post Test Mean	37.73	23.48	30.09	Between	3053.47	2	1526.73	5.16*
				Within	25724.39	87	295.68	
Adjusted Post Test Mean	36.72	25.96	28.62	Between	1877.55	2	938.77	16.20*
				Within	4984.64	86	57.96	
Mean Diff	8.23	-1.81	0.03					

Table F-ratio at 0.05 level of confidence for 2 and 87 (df) =3.10, 2 and 86 (df) =3.10.

*Significant

As shown in Table XIV, the obtained pre test means on EC Static Balance - Non dominant leg on Neuromotor facilitatory training group was 29.50, Placebo

training group was 25.29 was and control group was 30.05. The obtained pre test F value of 0.59 was less than the required table F value was 3.15, which proved that there was no significant difference among initial scores of the subjects.

The obtained post test means on EC Static Balance - Non dominant leg on Neuromotor facilitatory training group was 37.73, Placebo training group was 23.48 was and control group was 30.09. The obtained post test F value of 5.16 was greater than the required table F value of 3.10, which proved that there was significant difference among 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 of 16.20 was greater than the required value of 3.10 and hence it was accepted that there was significant difference 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 are presented in Table XV.

Table XV

**Scheffe's Confidence Interval Test Scores on Eyes Closed Static Balance -
Non dominant leg**

MEANS				Required C I
Neuromotor facilitatory training Group	Placebo training Group	Control Group	Mean Difference	
36.72	25.96		10.77*	4.89
36.72		28.62	8.11*	4.89
	25.96	28.62	2.66	4.89

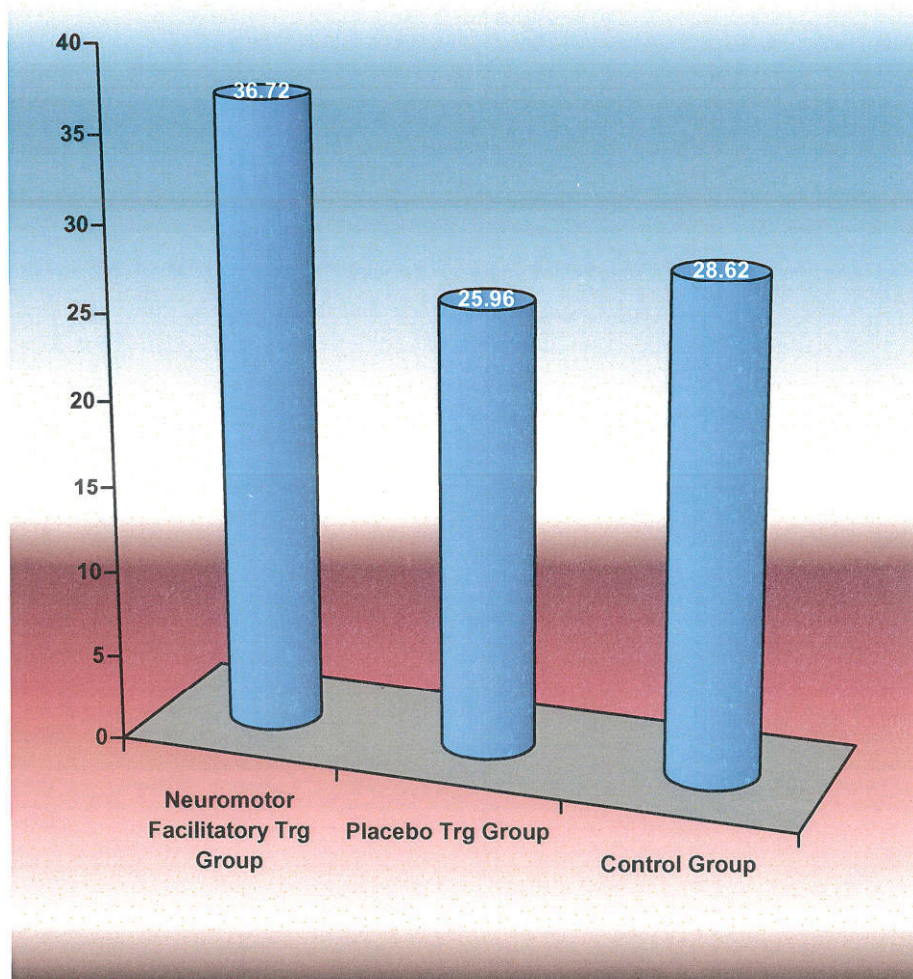
* Significant

The post hoc analysis of obtained ordered adjusted means proved that there was significant difference between Neuromotor facilitatory training group and control group (MD: 8.11). There was insignificant difference between Placebo training group and control group (MD: 2.66). There was significant difference between treatment groups, namely, Neuromotor facilitatory training group and Placebo training group. (MD: 10.77).

The ordered adjusted means were presented through bar diagram for better understanding of the results of this study in Figure 4.

Figure 4

BAR DIAGRAM ON ORDERED ADJUSTED MEANS ON EYES CLOSED
STATIC BALANCE - NON DOMINANT LEG(in secs.)



4.6.2 DISCUSSIONS ON FINDINGS

The effect of Neuromotor facilitatory training and Placebo training on EC Static Balance - Non dominant leg is presented in Table XIV. The analysis of covariance proved that there was significant difference between the experimental group and control group as the obtained F value of 16.20 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 XV proved that there was significant difference between Neuromotor facilitatory training group and control group (MD: 8.11) and there was no significant difference between Placebo training group and control group (MD: 2.66). Comparing between the treatment groups, it was found that there was significant difference between Neuromotor facilitatory training and Placebo training group on determinant of athletic performance, such as, EC Static Balance - Non dominant leg, among young adults. Thus, it was found that neuromotor facilitatory training contributes for the improvement of athletic performance of young adults.

4.7.1 RESULTS ON EC DYNAMIC BALANCE - DOMINANT LEG

The statistical analysis comparing the initial and final means of EC Dynamic Balance - Dominant leg due to Neuromotor facilitatory training and Placebo training on determinant of athletic performance, such as, EC Dynamic Balance - Dominant leg, in young adults is presented in Table XVI

Table XVI

COMPUTATION OF ANALYSIS OF COVARIANCE OF EYES CLOSED DYNAMIC BALANCE - DOMINANT LEG

	NEUROMOTOR FACILITATORY TRAINING	PLACEBO TRAINING	CONTROL GROUP	SOURCE OF VARIANCE	SUM OF SQUARES	df	MEAN SQUARES	OBTAINED F
Pre Test Mean	5.28	5.12	5.26	Between	0.44	2	0.22	0.12
				Within	158.43	87	1.82	
Post Test Mean	8.01	5.26	5.28	Between	150.51	2	75.25	29.89*
				Within	219.04	87	2.52	
Adjusted Post Test Mean	7.97	5.32	5.25	Between	143.79	2	71.90	43.92*
				Within	140.78	86	1.64	
Mean Diff	2.73	0.13	0.02					

Table F-ratio at 0.05 level of confidence for 2 and 87 (df) =3.10, 2 and 86 (df) =3.10.

*Significant

As shown in Table XVI, the obtained pre- test means on EC Dynamic Balance - Dominant leg on Neuromotor facilitatory training group was 5.28, Placebo training group was 5.12 was and control group was 5.26. The obtained

pre- test F value of 0.12 was lesser than the required table F value of 3.15, which proved that there was no significant difference among initial scores of the subjects.

The obtained post- test means on EC Dynamic Balance - Dominant leg on Neuromotor facilitatory training group was 8.01, Placebo training group was 5.26 and control group was 5.28. The obtained post- test F value of 29.89 was greater than the required table F value of 3.10, which proved that there was significant difference among 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 of 43.92 was greater than the required value of 3.10 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 are presented in Table XVII.

Table XVII

Scheffe's Confidence Interval Test Scores on Eyes Closed Dynamic Balance - Dominant leg

MEANS				Required C I
Neuromotor facilitatory training Group	Placebo training Group	Control Group	Mean Difference	
7.97	5.32		2.65*	0.82
7.97		5.25	2.72*	0.82
	5.32	5.25	0.07	0.82

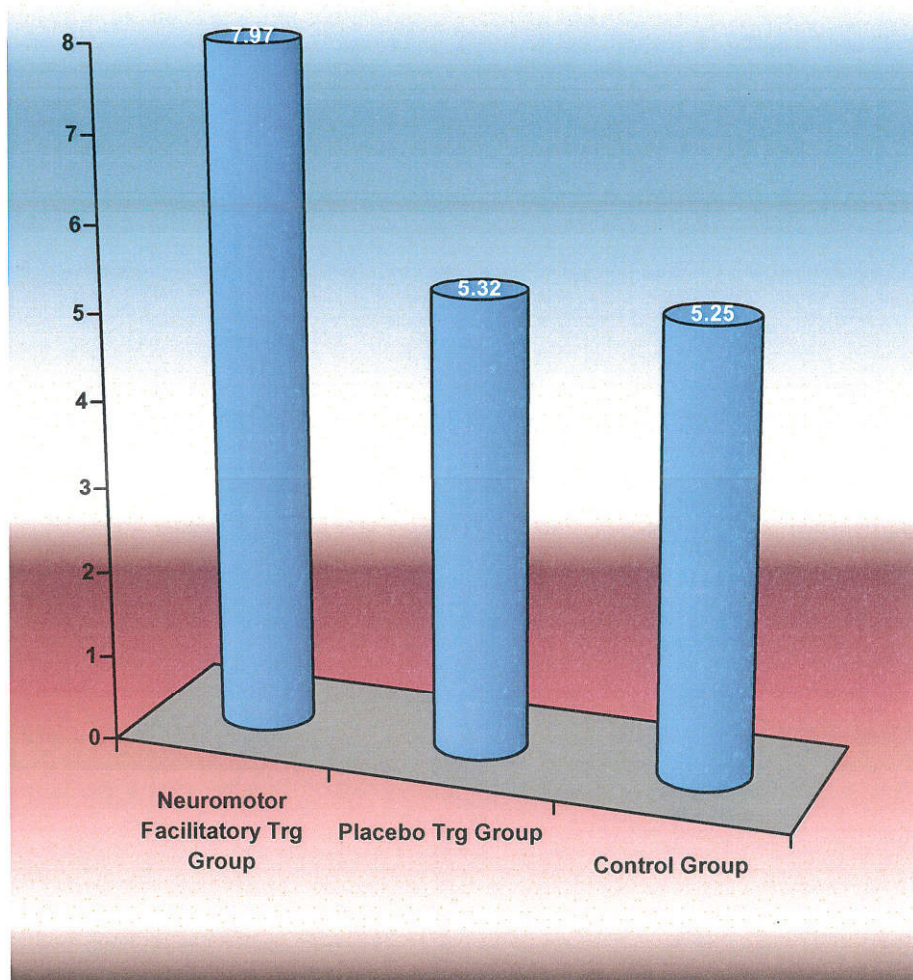
* Significant

The post hoc analysis of obtained ordered adjusted means proved that there was significant differences between Neuromotor facilitatory training group and control group (MD: 2.72). There was no significant difference between Placebo training group and control group (MD: 0.07). There was significant difference between treatment groups, namely, Neuromotor facilitatory training group and Placebo training group. (MD: 2.65).

The ordered adjusted means are presented through bar diagram for better understanding of the results of this study in Figure 5.

Figure 5

BAR DIAGRAM ON ORDERED ADJUSTED MEANS ON EYES CLOSED
DYNAMIC BALANCE - DOMINANT LEG



4.7.2 DISCUSSIONS ON FINDINGS

The effect of Neuromotor facilitatory training and Placebo training on EC Dynamic Balance - Dominant leg is presented in Table XVI. The analysis of covariance proved that there was significant difference between the experimental group and control group as the obtained F value of 43.92 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 XVII proved that there was significant difference between Neuromotor facilitatory training group and control group (MD: 2.72) and there was no significant difference between Placebo training group and control group (MD: 0.07). Comparing between the treatment groups, it was found that there was significant difference between Neuromotor facilitatory training and Placebo training group on determinant of athletic performance, such as, EC Dynamic Balance - Dominant leg, among young adults. Thus, it was found that neuromotor facilitatory training contributes for the improvement of athletic performance of young adults.

4.8.1 RESULTS ON EYES CLOSED DYNAMIC BALANCE - NON DOMINANT LEG

The statistical analysis comparing the initial and final means of EC Dynamic Balance - Non dominant leg due to Neuromotor facilitatory training and Placebo training on determinant of athletic performance, such as, EC Dynamic Balance - Non dominant leg, in young adults is presented in Table XVIII

Table XVIII

COMPUTATION OF ANALYSIS OF COVARIANCE OF EYES CLOSED DYNAMIC BALANCE - NON DOMINANT LEG

	NEUROMOTOR FACILITATORY TRAINING	PLACEBO TRAINING	CONTROL GROUP	SOURCE OF VARIANCE	SUM OF SQUARES	df	MEAN SQUARES	OBTAINED F
Pre Test Mean	5.22	5.23	5.14	Between	0.17	2	0.09	0.04
				Within	199.99	87	2.30	
Post Test Mean	8.22	4.88	5.33	Between	196.67	2	98.34	31.36*
				Within	272.85	87	3.14	
Adjusted Post Test Mean	8.20	4.86	5.37	Between	194.42	2	97.21	46.05*
				Within	181.56	86	2.11	
Mean Diff	2.99	-0.35	0.19					

Table F-ratio at 0.05 level of confidence for 2 and 87 (df) =3.10, 2 and 86 (df) =3.10.

*Significant

As shown in Table XVIII, the obtained pre test means on EC Dynamic Balance - Non dominant leg on Neuromotor facilitatory training group was 5.22, Placebo training group was 5.23 was and control group was 5.14. The obtained

pre test F value of 0.04 was less than the required table F value of 3.15, which proved that there was no significant difference among initial scores of the subjects.

The obtained post- test means on EC Dynamic Balance - Non dominant leg on Neuromotor facilitatory training group was 8.22, Placebo training group was 4.88 and control group was 5.33. The obtained post- test F value of 31.36 was greater than the required table F value of 3.10, which proved that there was significant difference among 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. The obtained F value of 46.05 was greater than the required value of 3.10 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 are presented in Table XIX.

Table XIX**Scheffe's Confidence Interval Test Scores on Eyes Closed Dynamic Balance -
Non dominant leg**

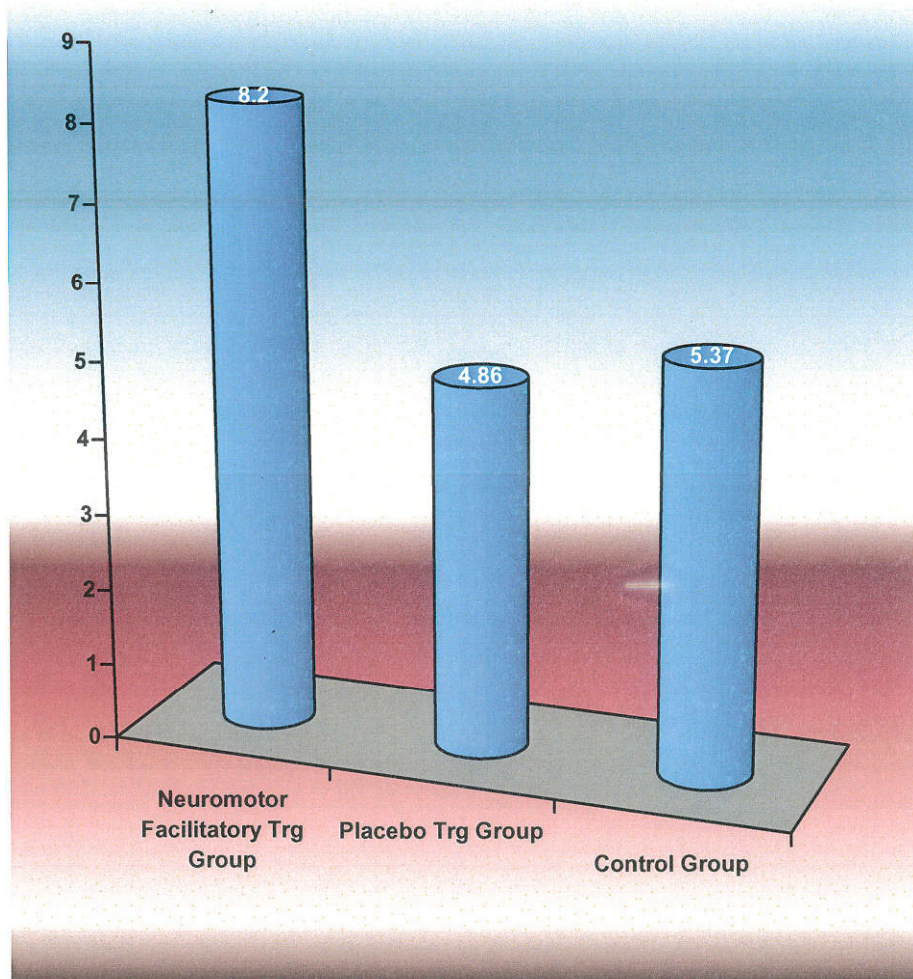
MEANS				Required C I
Neuromotor facilitatory training Group	Placebo training Group	Control Group	Mean Difference	
8.20	4.86		3.34*	0.93
8.20		5.37	2.83*	0.93
	4.86	5.37	0.51	0.93

* Significant

The post hoc analysis of obtained ordered adjusted means proved that there was significant difference between Neuromotor facilitatory training group and control group (MD: 2.83). There was no significant difference between Placebo training group and control group (MD: 0.51). There was significant difference between treatment groups, namely, Neuromotor facilitatory training group and Placebo training group. (MD: 3.34).

The ordered adjusted means are presented through bar diagram for better understanding of the results of this study in Figure 6.

Figure 6

BAR DIAGRAM ON ORDERED ADJUSTED MEANS ON EC DYNAMIC BALANCE - NON DOMINANT LEG

4.8.2 DISCUSSIONS ON FINDINGS

The effect of Neuromotor facilitatory training and Placebo training on EC Dynamic Balance - Non dominant leg is presented in Table XVIII. The analysis of covariance proved that there was significant difference between the experimental group and control group as the obtained F value of 46.05 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. The results presented in Table XIX proved that there was significant difference between Neuromotor facilitatory training group and control group (MD: 2.83) and there was no significant difference between Placebo training group and control group (MD: 0.51). Comparing between the treatment groups, it was found that there was significant difference between Neuromotor facilitatory training and Placebo training group on determinant of athletic performance, such as, EC Dynamic Balance - Non dominant leg, among young adults. Thus, it was found that neuromotor facilitatory training contributes for the improvement of athletic performance of young adults.

4.9 DISCUSSIONS ON HYPOTHESIS

A mounting body of evidence indicates that proprioceptive training can improve athletes' strength, coordination, muscular balance, and muscle-reaction times, and studies have linked proprioceptive work with a reduced risk of injury during sporting activity. Leanderson J et.al. (1996) suggested future investigations to be likely to find that improved proprioception can also boost athletic performance. Neuromotor facilitation techniques emphasizing PNF and closed kinetic chain exercises form the mainstay in balance rehabilitation, reversing the joint instability resulting from the injury by regaining joint position sense and kinaesthetic acuity- the two most commonly attributed factors to be affected following injury (Garn SN, and Newton RA, 1988), and so does the ability to detect the actual position of the ankle joint in space (Glencross D. and Thornton E. (1981)

It remains to be established whether the improved awareness attributed to proprioceptive training translates to enhanced functional capacity or balance ability in uninjured individuals. Additionally it would be prudent to identify the variable most influenced by this form of training among the athletic performance indicators. Hence a need was identified to study the influence of neuromotor facilitatory training on determinants of athletic performance, such as, static balance, dynamic balance, agility, and speed among healthy (uninjured) young

adults. With these objectives, the study hypothesized the following to be tested in this research:

- a. It was hypothesized that there would be significant difference among neuromotor training group, placebo training group and control groups in altering the determinants of selected athletic performance of young adults.
- b. It was hypothesized that neuromotor facilitatory training which includes proprioceptive and stabilization exercises would improve determinants of athletic performance such as speed, agility, static balance and dynamic balance in healthy young adults.
- c. It was hypothesized that placebo training which performed open chain exercises would not improve determinants of athletic performance such as speed, agility, static balance and dynamic balance in healthy young adults.

The formulated hypothesis No. 1 stated that there would be significant difference among neuromotor training group, placebo training group and control groups in altering the determinants of selected athletic performance, namely, speed, agility, static balance and dynamic balance of young adults. The results presented in Table VIII, X, XII, XIV, XVI and XVIII on athletic determinants, namely, speed, agility, eyes closed static balance –dominant leg, eyes closed static

balance – non dominant leg, eyes closed dynamic balance – dominant leg, eyes closed dynamic balance – non dominant leg respectively. The obtained F values on adjusted means of the selected variables were greater than the required table F values to be significant at 0.05 level. Hence, it was proved that there were significant differences among neuromotor training group, placebo training group and control group in altering the determinants of athletic performance among young adults and the formulated hypothesis was accepted at 0.05 level.

The formulated hypothesis No. 2 stated that neuromotor facilitatory training which includes proprioceptive and stabilization exercises would improve determinants of athletic performance such as speed, agility, static balance and dynamic balance in healthy young adults. Since the obtained F values on selected athletic determinants were greater than the required table F values to be significant at 0.05 level, post hoc analysis was made through Scheffe's Confidence Interval Test and the results presented in Tables IX, XI, XIII, XV, XVII and XIX. The paired mean difference comparisons between neuromotor facilitatory training group and control group proved to be greater than the required confidence interval values and proved that neuromotor facilitatory training was significantly better than control group. Further the paired mean difference comparisons between neuromotor facilitatory training group and placebo training group proved that the obtained mean difference values were greater than the required confidence interval to be significant at 0.05 level. Hence, it was proved

that neuromotor facilitatory training significantly improved determinants of athletic performance among young adults and the formulated hypothesis No. 2 was accepted at 0.05 level.

The formulated hypothesis No. 3 stated that placebo training which performed open chain exercises would not improve determinants of athletic performance such as speed, agility, static balance and dynamic balance in healthy young adults. Since the obtained F values on athletic determinants, namely, speed, agility, static balance and dynamic balance were greater than the required table F values to be significant at 0.05 level, post hoc analysis was made through Scheffe's Confidence Interval Test and the results presented in Tables IX, XI, XIII, XV, XVII and XIX proved that placebo training which performed open chain exercises failed to significantly improve selected athletic determinants as the paired mean differences between placebo group and control group on the selected variables were less than the required confidence intervals. Thus, the formulated hypothesis that placebo training group, which performed open chain exercises would not improve determinants of athletic performance among young adults was accepted at 0.05 level.

The theoretical foundations on similar researches were that Place N, et.al. (2013) found that self-administered proprioceptive neuromuscular facilitation (PNF) paradigm with short periods of stretching and contraction on quadriceps neuromuscular function failed to significantly alter vertical jump and flexibility.

Cervantes SJ, and Snyder AR. (2011) experimented with static stretching, proprioceptive neuromuscular facilitation (PNF) stretching, dynamic warm-ups, and sport-specific activities among college athletes and concluded that while dynamic warm-up is generally thought to be superior to other common warm-up techniques, there remains uncertainty regarding the best method to prepare for intercollegiate athletic participation.

Hoogenboom BJ, et.al. (2009) documented that therapeutic use of the developmental pattern of rolling with techniques derived from PNF is a hallmark in rehabilitation of patients with neurologic dysfunction, but can be creatively and effectively utilized in musculoskeletal rehabilitation.

Ryan EE, et.al. (2010) investigated the effects of the contract-relax-antagonist-contract (CRAC) form of proprioceptive neuromuscular facilitation (PNF) stretching, with and without a warm-up, on postural stability and reported that it was a useful protocol for improving Medial / Lateral stability among men and women.

The findings of this research were in agreement with the findings of Cervantes SJ, and Snyder AR. (2011), Ryan EE et.al. (2010), Hoogenboom BJ (2009) who found that neuromotor facilitatory training group significantly improved selected performance variables.