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IMPACT OF PNF STRETCHING ON SELECTED BIO-MOTOR VARIABLES AMONG HOCKEY PLAYERS

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Abstract

This study was designed to determine effect of PNF stretching on bio motor variables among male hockey players. To achieve the purpose of the study twenty school male hockey players were selected from various schools in and around Chennai, Tamilnadu. Their age ranged between 15 and 17 years. The selected subjects were divided into two groups. Group I underwent PNF Stretch training and Group II acted as control. The experimental group was given PNF Stretch training for three days a week, for a period of 12 weeks. Before and after the training all the subjects were measured Sprinting ability, Agility and flexibility. Sprinting performance was measured by 50 meters sprinting test, agility was measured by shuttle run and flexibility was measured by sit and reach test. The data collected from the subjects were statistically analyzed with'ANCOVA' to find out significant improvement at 0.05 level of confidence. The results reveal that the 12 weeks PNF Stretch training programme significantly improved the sprinting ability, agility and flexibility performance of male hockey players.

Key words: *PNF, Sprinting, agility and flexibility.*

Introduction

Sports have a very important role in modern society. It is important for an individual, a group, a nation and indeed the world. Sports performance is the result and expression of the total personality of a sports man. Different activities make different demands on the organism with respect to circulatory, respiratory, metabolic and neurological and temperature regulating functions (Anaheim , 1987) .

Sports training is the total process of preparation of a sportsman, through different means and forms for better performance. The Sports performance is the result and expression of the total personality of the sportsman. The educational aspect of sports training is unfortunately overlooked by coaches and physical education teacher in India (Hardayal Singh 1984).

PNF stretching is currently the fastest and most effective way known to increase static-passive flexibility. PNF is an acronym for proprioceptive neuromuscular facilitation. It is not really a type of stretching but is a technique of combining passive stretching and isometric stretching in order to achieve maximum static flexibility. PNF was initially developed as a method of rehabilitating stroke victims. PNF refers to any of several post-isometric relaxation stretching techniques in which a muscle group is passively stretched, then contracts isometrically against resistance while in the stretched position, and then is passively stretched again through the resulting increased range of motion. PNF stretching usually employs the use of a partner to provide resistance against the isometric contraction and then later to passively take the joint through its increased range of motion. It may be performed, however, without a partner, although it is usually more effective with a partner's assistance. Most PNF stretching techniques employ isometric agonist contraction/relaxation where the stretched muscles are contracted isometrically and then relaxed. Some PNF techniques also employ isometric antagonist contraction where the antagonists of the stretched muscles are contracted. In all cases, it is important to note that the stretched muscle should be rested for at least 20 seconds before performing another PNF technique (Westerterp, 1999) .

Methodology

To achieve the purpose of the study twenty school male hockey players were selected from various schools in and around Chennai, Tamilnadu. Their age ranged between 15 and 17 years. The selected subjects were divided into two groups. Group I underwent PNF Stretch training and Group II acted as control. The experimental group was given PNF Stretch training for three days a week, for a period of 12 weeks. Before and after the training all the subjects were measured Sprinting ability, Agility and flexibility. Sprinting performance was measured by 50 meters sprinting test, agility was measured by shuttle run and flexibility was measured by sit and reach test. The data collected from the subjects were statistically analyzed with'ANCOVA' to find out significant improvement at 0.05 level of confidence. The

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Result and discussion

TABLE-I
COMPUTATION OF MEAN AND ANALYSIS OF COVARIANCE OF AGILITY OF EXPERIMENTAL AND CONTROL GROUPS

Test	Control group	Experimental group	Sum of squares	df	Mean square	F ratio
Pre test mean SD (±)	10.11 0.16	10.09 0.11	0.001	1	0.001	0.06
			0.36	18	0.02	
Post test mean SD (±)	10.13 0.29	9.84 0.11	0.43	1	0.43	8.69
			0.89	18	0.05	
Adjusted mean	10.13	9.85	0.40	1	0.40	8.736
			0.78	17	0.046	

* Significant at 0.05 level
(Table value for df 1 and 18 was 4.41, Table value for df 1 and 17 was 4.45)

The above table indicates that the adjusted mean value of agility of control and experimental groups were 10.13 and 9.85 respectively. The obtained F-ratio of 8.739 for adjusted mean was greater than the table value 4.45 for the degree of freedom 1 and 17 required for significance at 0.05 level of confidence. The result of the study indicates that there was a significant difference between experimental and control group on agility. The above table also indicates that both pre and post test of control and experimental groups have significant difference.

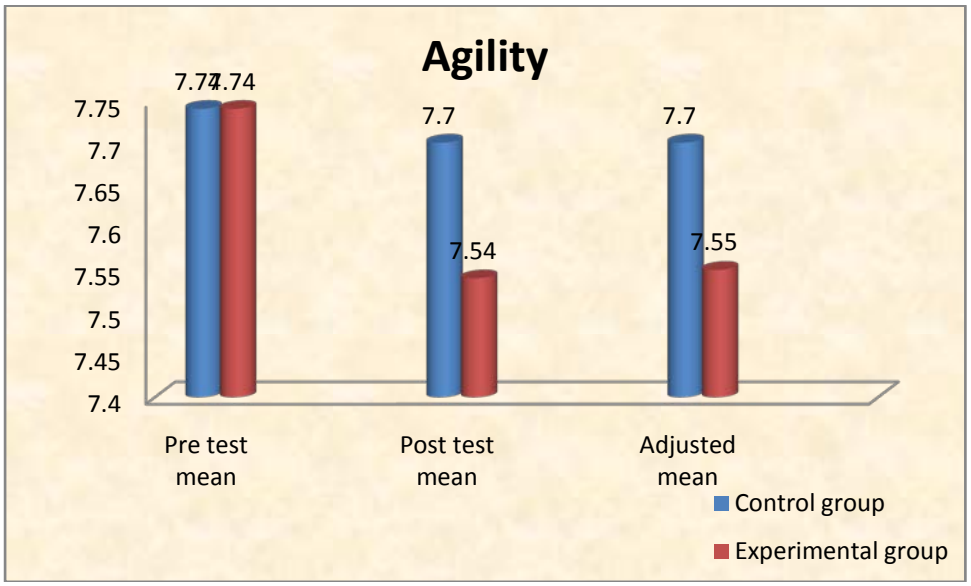

Figure I
The pre, post and adjusted mean values of agility of both control and experimental groups are graphically represented in the figure I

TABLE-II
COMPUTATION OF MEAN AND ANALYSIS OF COVARIANCE OF FLEXIBILITY OF EXPERIMENTAL AND CONTROL GROUPS

Test	Control group	Experimental group	Sum of squares	df	Mean square	F ratio
Pre test mean SD (±)	15.80 1.75	15.90 1.91	0.05	1	0.05	0.015
			60.50	18	3.36	
Post test mean SD (±)	15.80 1.87	18.60 2.22	39.20	1	39.20	9.28
			76.0	18	4.22	
Adjusted mean	15.85	18.54	36.25	1	36.25	78.27
			7.87	17	0.46	

* Significant at 0.05 level
(Table value for df 1 and 18 was 4.41, Table value for df 1 and 17 was 4.45)

The above table indicates that the adjusted mean value of flexibility of control and experimental groups were 15.85 and 18.54 respectively. The obtained F-ratio of 78.27 for adjusted mean was greater than the table value 4.45 for the degree of freedom 1 and 17 required for significance at 0.05 level of confidence. The result of the study indicates that there was a significant difference between experimental and control group on flexibility. The above table also indicates that both pre and post test of control and experimental groups have significant difference

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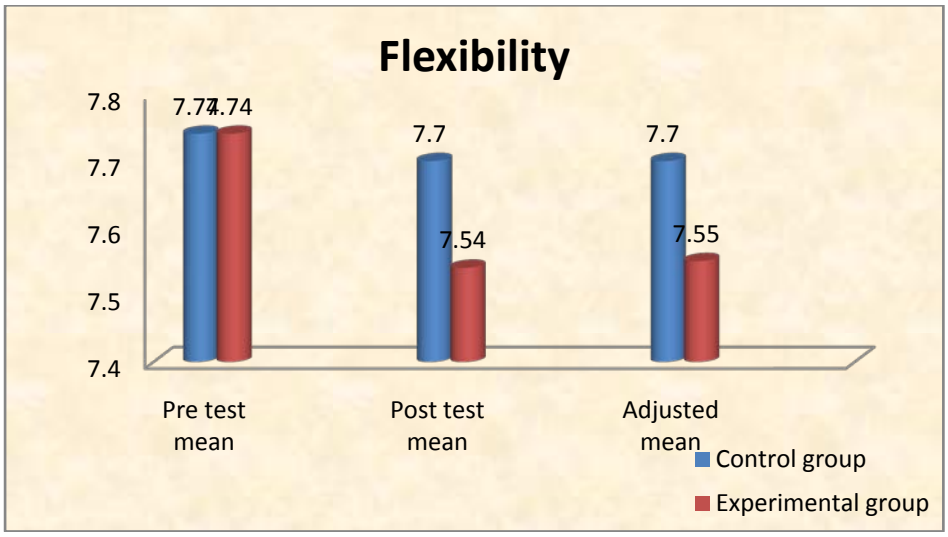

Figure II

The pre, post and adjusted mean values of flexibility of both control and experimental groups are graphically represented in the figure II

TABLE-III
COMPUTATION OF MEAN AND ANALYSIS OF COVARIANCE OF SPEED OF EXPERIMENTAL AND CONTROL GROUPS

Test	Control group	Experimental group	Sum of squares	df	Mean square	F ratio
Pre test mean SD (±)	7.74 0.08	7.74 0.09	.001	1	.003	0.002
			0.13	18	0.007	
Post test mean SD (±)	7.70 0.14	7.54 0.08	0.122	1	0.122	9.05
			0.243	18	0.014	

Adjusted mean	7.70	7.55	0.12	1	0.12	11.59
			0.17	17	0.01	

*Significant at 0.05 level

(Table value for df 1 and 18 was 4.41, Table value for df 1 and 17 was 4.45)

The above table indicates that the adjusted mean value of speed of control and experimental groups were 7.70 and 7.55 respectively. The obtained F-ratio of 11.59 for adjusted mean was greater than the table value 4.45 for the degree of freedom 1 and 17 required for significance at 0.05 level of confidence. The result of the study indicates that there was a significant difference between experimental and control group on speed. The above table also indicates that both pre and post test of control and experimental groups have significant difference

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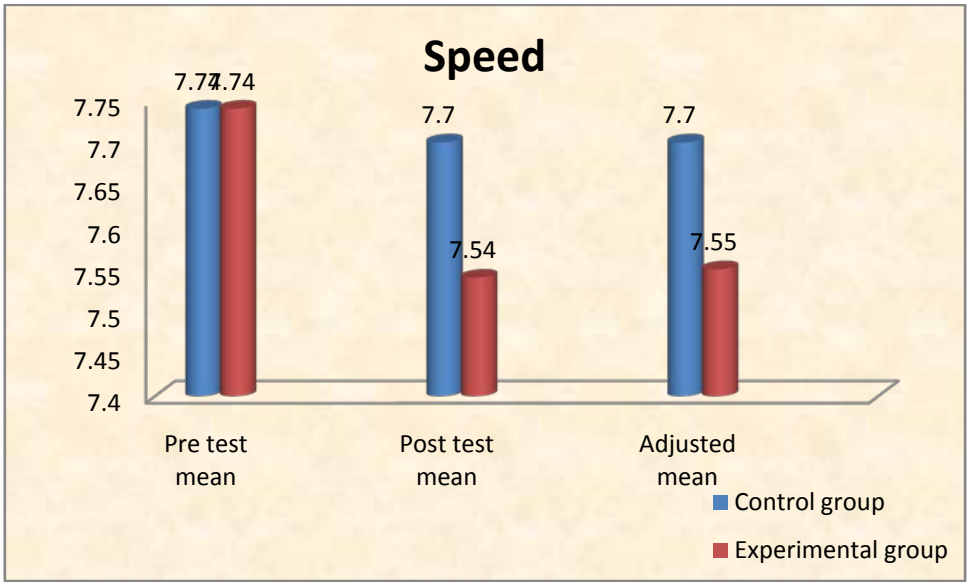

Figure III

The pre, post and adjusted mean values of speed of both control and experimental groups are graphically represented in the figure III

Discussion

Singh, Nabhendra, (2010) aimed to identify the player's motor performance differences, as well as determine the significance of the identified differences on and skill performance variables. James (2004) suggested that Proprioceptive training is not only for rehabilitation but also for improvement of skills and sport performance. Shields et al., (2005) concluded that the nervous system processes kinesthetic input related to joint rotation of the ankle with central mechanisms to execute a planned coordinated task with upper extremity.

Conclusions

The experimental group school hockey players improved significantly in all the selected variables namely agility, flexibility and speed. The control group did not improve significantly in all the selected parameters.

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