

## **Effect of PNF Stretching, Plyometric and Combined Training on Passing and Dribbling Skills among Football Players**

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### **Abstract**

This study was to make a comparative analysis on the effect of PNF stretching, plyometric and combined training on passing and dribbling skills among football players. For the purpose, 80 inter collegiate level football players in the age group of 19 to 23 were randomly selected as subjects. The subjects were randomly divided into four groups, experimental group I, experimental group II, experimental group III and control group consisting of 20 subjects respectively in each groups. Pre test scores were obtained prior to experimental treatment on passing and dribbling using standard tests. Immediately after the completion of the experimental period, post test scores were obtained on passing and dribbling. The results presented proved that combined group improved passing ability with mean value of 4.97, followed by PNF stretching with mean value of 4.69 and high intensity plyometrics mean value of 4.68 and control group was 4.16. The results on dribbling proved that high intensity plyometric exercises with the mean value of 11.89 seconds, followed by combined group mean value of 11.90 seconds and PNF stretching mean value of 11.99 seconds. The ANCOVA results and post hoc results proved that there were significant difference due to treatments, namely, PNF stretching, high intensity plyometrics and combined training. However, paired comparisons between treatments groups proved that there was no significant difference on dribbling ability in football. It was concluded that PNF Stretching, high intensity plyometric and combined exercises can be successfully provided to football players to improve their skills in football.

**KEYWORDS:** PNF Stretching, High Intensity Plyometric Training, Passing, Dribbling.

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### **INTRODUCTION**

In the development of the game of football, skills have come into play an increasingly vital role in the quest for victory. Stretching can be used either for injury prevention or to gain improvements in the muscle's elasticity. This can be useful in football in situations that require stretching to reach the ball or a tackle. Stretching will allow you to reach further, quicker and with greater ease. Stretching also helps loosen muscles, which can be useful in injury prevention. If muscles are tight this can cause individuals to run with poor technique which can lead to more serious injuries. PNF stretching is the most difficult type to perform. It requires an additional person to hold the stretches and is rather time consuming. It also involves a few actions for each stretch performed. PNF stretching is recognised as the best if looking for greater range of motion, which is important in football. Research shows it gives similar, if not greater improvements to dynamic stretching. (A.S. Medvedev, V.V. Marchenko, S.V. Fomichenko (1983) Research has shown that a muscle stretched before contraction will

contract more forcefully and rapidly. Plyometric exercises stretch muscles rapidly and then immediately demand a powerful concentric contraction. The very first phase of this movement has to be a downward thrust. As one "dip" down just before a standing jump he is stretching muscle groups like the quadriceps and hip extensors. These are the muscles that will contract very forcefully a split second later to produce the jump.( Yuri Verkhoshansky, Natalia Verkhoshansky (2011) It's not just jumping that requires this "pre-stretching" type of movement. Any explosive movement - rapid changes in direction, sprinting (as each leg is planted on the ground) and of course, kicking, will all benefit from plyometrics for football.

Sedano Campo, et. al., (2009) found that a 12-week plyometric program can improve explosive strength in female soccer players and that these improvements can be transferred to soccer kick performance in terms of ball speed. However, players need time to transfer these improvements in strength to the specific task. Regular soccer training can maintain the improvements from a plyometric training program for several weeks. Meylan (2009) demonstrated that a plyometric program within regular soccer practice improved explosive actions of young players compared to conventional soccer training only. Therefore, the short-term plyometric program had a beneficial impact on explosive actions, such as sprinting, change of direction, and jumping, which are important determinants of match-winning actions in soccer performance. Perez – Gomez, et. al., (2008) 6 weeks of strength training combining weight lifting and plyometric exercises results in significant improvement of kicking performance, as well as other physical capacities related to success in football (soccer).

de Villarreal, et. al., (2009) has done a research on plyometric training improves vertical jump height (VJH). Subjects with more experience in sport obtained greater enhancements in VJH performance ( $p < 0.01$ ). Subjects in either good or bad physical condition benefit equally from plyometric work ( $p < 0.05$ ), although men tend to obtain better power results than women after plyometric training ( $p < 0.05$ ). To optimize jumping enhancement, the combination of different types of plyometrics (squat jump + countermovement jump + drop jump) is recommended rather than using only 1 form ( $p < 0.05$ ). Thomas (2009) was compared the effects of two plyometric training techniques on power and agility in youth soccer players. both depth jumps and counter movement jump plyometrics are worthwhile training activities for improving power and agility in youth soccer players. Cervantes SJ, and Snyder AR. (2011) found effectiveness of different types of PNF stretching warm-up on college athlete performance measures such as vertical jump, agility, and sport-specific activities (eg, sprint performance) Franco NR, et.al. (2011) determined the effect of a 6-week specific-sprinter proprioceptive training program on core stability and gravity centre control in sprinters. Found A sprinter-specific proprioceptive training program provided postural stability with eyes open and gravity centre control measures improvements. Caplan, et. al., (2009) studied the effect of proprioceptive neuromuscular facilitation and static stretch training on running mechanics. Found both Static Stretch (SS) and PNF training improved hip flexion (HF) RoM and running mechanics during high-velocity running.

The theoretical foundations made through previous researches proved that there were attempts made to find out the effect of plyometric exercises on footballers and PNF

stretching exercises on selected skills in football. Further, it was found that there was further scope for research to compare the effects of PNF stretching, high intensity plyometric training and combination of PNF and plyometric training on selected skills in football, namely, passing and dribbling among college football players.

## METHODOLOGY

For this purpose college level football players who participated at inter-collegiate level competitions were selected from different colleges in Delhi. 80 inter collegiate level football players in the age group of 19 to 23 were randomly selected as subjects for this study. The subjects were randomly divided into four selected into four groups, experimental group I, experimental group II, experimental group III and control group consisting of 20 in each. Pre test scores were obtained prior to experimental treatment on passing and dribbling using standard tests. Immediately after the completion of the experimental period, post test scores were obtained on passing and dribbling. To test statistical significance on the differences in means, ANCOVA was used. In all cases 0.05 level was fixed to test the hypothesis.

## RESULTS

**Table I: ANCOVA Results on Passing and Dribbling due to PNF stretching, High Intensity Plyometrics and Combined Training**

PASSING									
	PNF Stretching Trg Group	H I plyometric training Group	Combined Group	Control Group	SOV	Sum of Squares	df	Mean Squares	Obtained F
Pre Test Mean	4.05	4.20	4.10	4.25	B	0.50	3	0.17	0.19
Std Dev	1.05	0.90	0.78	0.98	W	65.70	116	0.86	
Post Test Mean	4.65	4.70	4.95	4.25	B	5.85	3	1.95	4.80*
Std Dev	0.76	0.65	0.78	0.98	W	30.90	116	0.41	
Adjusted Post Test Mean	4.69	4.68	4.97	4.16	B	6.84	3	2.28	8.51*
					W	20.09	115	0.27	
DRIBBLING									
	PNF Stretching Trg Group	H I plyometric training Group	Combined Group	Control Group	SOV	Sum of Squares	df	Mean Squares	Obtained F
Pre Test Mean	12.50	12.43	12.89	13.0	Between	4.44	3	1.48	2.97*
Std Dev	0.72	0.67	0.74	0.71	Within	37.92	76	0.50	

Post Test Mean	11.83	11.68	12.05	13.1	Between	25.84	3	8.61	22.34*
Std Dev	0.61	0.56	0.65	0.67	Within	29.30	76	0.39	
Adjusted Post Test Mean	11.99	11.89	11.90	12.9	Between	14.03	3	4.68	67.22*
					Within	5.22	75	0.07	

SOV: Source of Variance; B: Between W: Within

Required  $F_{(0.05), (df 3,116)} = 2.73$ ; Required  $F_{(0.05), (df 3,115)} = 2.73$

\* Significant at 0.05 level of confidence

Since significant F values were obtained, the results were further subjected to post hoc analysis using Scheffe's post hoc test and results presented in Table 2.

**Table II: Multiple comparisons of paired Adjusted Means of PNF Stretching, High Intensity Plyometric, Combined Training and Control Groups on Passing and Dribbling.**

PASSING					
PNF Stretching Trg Group	H I plyometric training Group	Combined Group	Control Group	MEAN DIFF	C.I
4.69	4.68			0.01	0.46
4.69		4.97		0.28	0.46
4.69			4.16	0.53*	0.46
	4.68	4.97		0.29	0.46
	4.68		4.16	0.52*	0.46
		4.97	4.16	0.81*	0.46
DRIBBLING					
11.99	11.89			0.09	0.24
11.99		11.90		0.09	0.24
11.99			12.91	0.92*	0.24
	11.89	11.90		0.01	0.24
	11.89		12.91	1.02*	0.24
		11.90	12.91	1.01*	0.24

\* Significant at 0.05 level.

## DISCUSSIONS

The results presented in Table I proved that combined group improved passing ability with mean value of 4.97; followed by PNF stretching with mean value of 4.69 and high intensity plyometrics mean value of 4.68 and control group was 4.16. The ANCOVA results (Table II) and post hoc results proved that there was significant difference due to treatments, namely, PNF stretching, high intensity plyometrics and combined training. However, paired comparisons between treatment groups proved that there was no significant difference on passing ability in football.

Similarly, the results proved that high intensity plyometric exercises with mean time of 11.89 seconds, followed by combined group 11.90 seconds and PNF stretching mean value of 11.99 seconds. The ANCOVA results (Table II) and post hoc results proved that there was significant difference due to treatments, namely, PNF stretching, high intensity plyometrics and combined training. However, paired comparisons between treatment groups proved that there was no significant difference on dribbling ability in football.

The findings of this study are in agreement with the findings of Sedano Campo, et. al., (2009) plyometric program can improve explosive strength in female soccer players; and that these improvements can be transferred to soccer kick performance in terms of ball speed. Meylan (2009) that short-term plyometric program had a beneficial impact on explosive actions, such as sprinting, change of direction, and jumping, which are important determinants of match-winning actions in soccer performance.

## CONCLUSIONS

It was concluded that PNF Stretching, high intensity plyometric and combined exercises can be successfully provided to football players to improve their skills in football.

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