Differential Impact of Plyometric training on Speed among University Level Tribal and Non-Tribal Football players

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Introduction:

Plyometric training, based on the stretch-shortening cycle, is widely recognized for enhancing explosive power and speed (Chu, 1998). Modern football demands repeated sprints, rapid direction changes, agility, and speed endurance (Datson et al., 2014). In Northeast India, where football is highly popular among tribal and local youth, especially in regions like Jungle Mahal, players often participate with minimal equipment and limited resources. Plyometrics and progressive speed training therefore offer practical, low-cost methods for improving essential motor abilities such as stride length, stride frequency, and acceleration—key determinants of sprinting performance.

Speed development is influenced by biomechanical, physiological, and anthropological factors. Differences in body structure, growth, and genetic background across ethnic groups may affect training responses. Given the diversity among tribal and non-tribal populations in Northeast India, understanding their adaptation to scientific speed-training methods is crucial. Thus, the present study seeks to examine the effectiveness of plyometric training in enhancing speed among Tribal and Non- tribal footballers of Tripura, enabling them to achieve optimal performance with minimal resources.

1.1. Purpose of the study:

The purpose of the present study is to find-out the relationship of speed between tribal and Non- tribal university football players of Tripura.

2. Methodology:

2.1. Participants:

Total 22 (n=22) East-zone Inter-University participants, Tribal (11) and Non-tribal (11) footballers were included in the study. The mean age, height and weight of the subjects were respectively 22.17±0.79 years, 157.14±3.46 cm and 58.38±4.32 Kg. All the players were participating Inter-university football tournament for at least once and all the sample were collected from different participating university of Tripura state.

2.2. Research Design:

A stratified sampling method was adopted for the divided the total population into strata (Tribal and Non- Tribal players). Then from the Strata actual sample was drawn.

2.3. Data Collection:

The total data collection has been presented below:

Table-1: Data Collection Procedure

Sl. No.	Data	Unit	Equipment/ Test	Procedure
1	Age	Years	Birth Prove	Birth Prove Certificate
2	Height	Centimeter	Stadiometer	WHO STEPS Surveillance Procedure

3	Weight	Kg	Weighing machine	WHO STEPS Surveillance Procedure
4	Speed	Second	50 M Dash	AAPHER test

2.4. Training Protocol:

There was no prior training given to the sample. After taking Pre-data 4-week plyometric training have been given to both the group in alternative 2 days/ week ratio.

Table-2: Training Schedule

Week	Day	Sl. No.	Exercise	Reps × Sets	Density	Equipment Notes
1	**1**	1	Squat jumps	12×3	45s	—
		2	Continuous lunges	12×3	45s	—
		3	Tuck jumps	12×3	45s	—
		4	Skater hops	12×3	45s	—
		5	Continuous broad jump	12×3	45s	—
		6	Lateral single-leg hops	Each side 12×2	45s	—
		7	Calf jumps	12×3	45s	—
		8	Upward stairs jump	12×3	45s	Stairs 9"
1	**2**	1	Pop squats	12×3	45s	—
		2	Reverse lunges	12×3	45s	—
		3	Half burpees	12×3	45s	—
		4	Skater hops	12×3	45s	—
		5	Single-leg baby hurdles jump	12×3	45s	Hurdles 15 cm
		6	Double-leg baby hurdles jump	12×3	45s	Hurdles 15 cm
		7	Jumping crosshair – baby hurdles	12×3	45s	Hurdles 15 cm
		8	Upward stairs jump	12×3	45s	Stairs 9"
2	**1**	1	Jump squat	12×3	45s	—
		2	Continuous jumping lunges	12×3	45s	—
		3	Tuck jump	12×3	45s	—
		4	Lateral double-leg jump – hurdles	Each side 12×2	45s	Hurdles 15 cm
		5	Single-leg hops – hurdles	12×3	45s	Hurdles 15 cm
		6	Double-leg hops – hurdles	12×3	45s	Hurdles 15 cm
		7	Jumping crosshair – hurdles	12×3	45s	Hurdles 15 cm
		8	Upward stairs jump	12×3	45s	Stairs 9"
2	**2**	1	Pop squat	12×3	45s	—
		2	Skater hops	12×3	45s	—
		3	Continuous broad jumps	12×3	45s	—
		4	Lateral single-leg hops – hurdles	Each side 12×2	45s	Hurdles 15 cm
		5	Rocket jumps	12×3	45s	—
		6	Lateral high knees – hurdles	12×3	45s	Hurdles 15 cm

Week	Day	Sl. No.	Exercise	Reps × Sets	Density	Equipment Notes
		7	Calf jumps	12×3	45s	—
		8	Upward stairs jump	12×3	45s	Stairs 9"
3	**1**	1	Squat thruster	15×3	60s	—
		2	Squat with heel tap	15×3	60s	—
		3	Reverse jump lunges	15×3	60s	—
		4	Calf jumps	15×3	60s	—
		5	Single-leg hops – hurdles	15×3	60s	Hurdles 15 cm
		6	Double-leg jump – hurdles	15×3	60s	Hurdles 15 cm
		7	Jumping crosshair – hurdles	15×3	60s	Hurdles 15 cm
		8	Upward stairs jump	15×3	60s	Stairs 9"
3	**2**	1	Pop squat	15×3	60s	—
		2	Lateral hops	15×3	60s	—
		3	Skater hops	15×3	60s	—
		4	Rocket jumps	15×3	60s	—
		5	Broad jumps	15×3	60s	—
		6	Stairs single-leg raise	15×3	60s	Stairs 9"
		7	Lateral high knees (stairs)	Each side 15×2	60s	Stairs 9"
		8	Upward stairs jump	15×3	60s	Stairs 9"
4	**1**	1	Jump squats	15×3	60s	—
		2	Jumping lunges	15×3	60s	—
		3	Half burpees	15×3	60s	—
		4	Tuck jumps	15×3	60s	—
		5	Plyo box jump	15×3	60s	Box 60 cm
		6	Single-leg hops – hurdles	Each leg 15×2	60s	Hurdles 15 cm
		7	Double-leg hops – hurdles	15×3	60s	Hurdles 15 cm
		8	Continuous stairs jump	15×3	60s	Stairs 9"
4	**2**	1	Squats with heel tap	15×3	60s	—
		2	Skater hops	15×3	60s	—
		3	Broad jumps	15×3	60s	—
		4	Rocket jumps	15×3	60s	—
		5	Jumping crosshair – hurdles	15×3	60s	Hurdles 15 cm
		6	Lateral upward high knees – hurdles	Each side 15×2	60s	Hurdles 15 cm
		7	Single-leg raise	Each leg 15×2	60s	—
		8	Hurdles jump	15×3	60s	Hurdles 60 cm

2.5. Statistical Procedure:

The 0.05 level of confidence was set in the present study as level of significance. In descriptive statistics mean was used to determine the average value of the group and standard deviation (SD) was used to examine the consistency of the mean among the group. For finding the significance difference between the groups paired 't-test' was used.

3. Result and Discussion:

Table 3 represents the relationship in speed among Tribal and Non-tribal University football Players, before and after intervention.

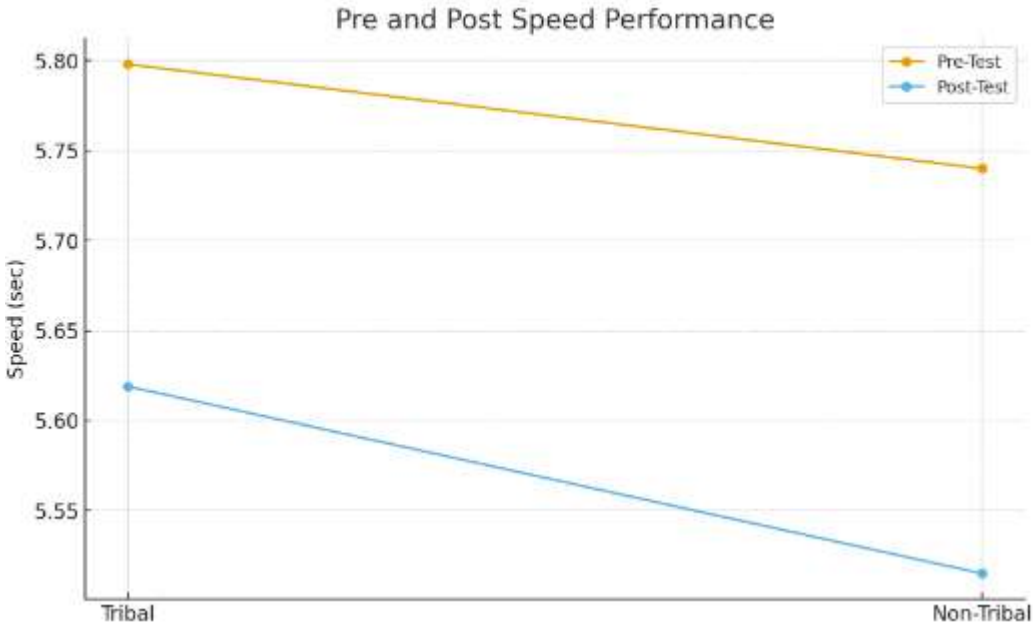
Table-3 Relationship of Speed Between Tribal and Non-Tribal Footballers

Group	Mean (Pre-Test)	Mean (Post-Test)	Mean Difference	Calculated t-value	Table t-value (0.05)
Tribal Players	5.798 sec	5.619 sec	0.179	2.154	2.228
Non-Tribal Players	5.740 sec	5.515 sec	0.225	2.320*	2.228

***significant at 0.05 level**

According to the table-3 the pre-intervention performance seems similar in both the groups i.e., for tribal players 5.798 ± .33 sec and non-tribal 5.740 ± .23 sec. But after the 4-week plyometric intervention the performance has changed upto 5.619 ± .28 sec for Tribal players and 5.515 ± .30 sec for non-tribal players. The above table reflect significant difference before and after of plyometric training on non-tribal players, but not significant according to Tribal players.

Figure-1 Graphical representation of the data



This graph shows after plyometric training both the groups tends to improve performance. But the non-tribal university footballers trend higher improvement among the groups.

4. Discussion:

This study finds progressive improvement after plyometric training on Tribal and Non-tribal University football players. However, this training mostly affective on non-tribal football players rather than Tribal players.

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