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Effects of Constant Training Method and Variable Training Method on Football Dribbling Ability in Indian Tribal Boys

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Abstract: Purpose: The effects of a six-week constant training programme and variable training program on the dribbling ability of Indian Tribal football players. **Methods:** Forty-five Tribal boys football players (age: 15.45 ± 0.75 years) were randomly assigned to one of the three groups: constant training method group (CTMG, $N=15$), variable training method group (VTMG, $N=15$), and control group (CG, $N = 15$). The constant training method group (CTMG) and variable training method group (VTMG) trained six sessions per week for 6 weeks. All football players were chosen from Bankura Football Academy, Bankura, West Bengal, India. Both before and after the intervention, dribbling efficiency was assessed. Football dribbling and passing skills were studied using a two-time repeated measures analysis of covariance (ANCOVA) on the constant training group, the variable training group, and the control group. All of the aforementioned abilities were evaluated using the Mor-Christian soccer dribbling ability skill test both before and after the 6-week training programme. **Conclusions:** According to this study's findings, both constant and varied training methods significantly improved a youngster from an Indian tribal community's dribbling skills compared to the control group. The improvement of dribbling ability was greatly influenced by variable training methods.

Keywords: Constant training, variable training, dribbling skill, performance, tribal boys.

I. INTRODUCTION

Football is one of the most well-liked games and sports in the contemporary world. The football World Cups are, in reality, the most watched sporting event in the history of sports and games. Everyone now appreciates football because it has become a global phenomenon. This has a greater impact on Europe's economic predicament. A ball is used in the team sport of football (sometimes known as "soccer"). It was referred to as Sphaira and Ollis in classical Greece and Rome. A more challenging version of this game was called as "Calcio" in Renaissance Italy. However, the modern game of football was invented in England in the middle of the 19th century (1848). The Football Association (FA) Challenge Cup was the first event. Football is a complex sport that requires players to have high levels of physical proficiency as well as high levels of skill. Players must be able to jump, change direction, accelerate quickly, decelerate quickly, and perform a variety of single- and multiple-attitude actions, such as shooting and dribbling, at high levels of physical proficiency (Smpokos, Mourikis, Theos, & Linardakis, 2018). The capacity to coordinate physical and mental actions is directly tied to the fundamental abilities in developing football prowess. Running, dribbling, passing, braking, and shooting are just a few of the fundamental abilities used in football movement techniques, all of which are crucial for promoting the growth of physical stamina, speed, endurance, and general sensitivity (Xie, 2019). Players need to have good physical skills in addition to adequate technique to play football accurately and efficiently. At the absolute least, a football player needs to be able to dribble, pass, and receive the ball since it is crucial while planning or executing assaults and dribbling past opponents before passing to teammates and taking shots at the goal. Through consistent practice, one can hone the abilities required to play football. Supporting the player's talent and physical development is also crucial for achieving peak performance.

A. Dribbling

Dribbling is prevalent in football. Football dribbling involves a player racing past one or more opponents while holding the ball at his foot and frequently twisting. According to Danny Mielke (2007). Dribble is a basic skill in football because all players must be able to move, stand, or prepare to pass or shoot.

Basically, dribbling is kicking intermittently or slowly, therefore the part of the foot used to kick the ball. Dribbling aims to approach the distance to the target, pass the opponent, and hinder the game. A player will dribble in an effort to outmanoeuvre a rival who is in possession of the ball (Gong, Cui, Gai, Yi, & Gomez, 2019).

B. Constant Method and Variable Method

Constant practice entails repeatedly practising a skill under the same strain or stress. The athlete immediately recognises the movement solution and repeats it with a high level of precision, similar to blocked practice. Variable practice involves repeatedly performing a skill while altering the loads or stressors so that the elements that characterise the movement pattern change with each repetition. For instance, in swimming, tempo (stroke rate), times (intensity), strokes per length, and resistance can all be changed to alter the stress. The athlete is constantly forced to think quickly and come up with fresh movement strategies for every repetition, much like random practice. Michael Brookes (2011). Whether practicing with some amount of variability or continuous repetition is better for skill learning is a vital question for coaches to explore. Should players be expected to repeatedly pass the ball back and forth over a certain distance when learning to pass the ball, or should they be allowed to experiment with different parameters such as distance, angle, and speed? While the latter is referred to as "variable training," the former is known as "continuous or specified training." In order to create a broad, generative "rule" to handle a number of comparable but different situations, Schmidt's schema theory (1975) contends that flexibility in movement and context features is vital. (Williams A. Mark & Reilly Thomas, 2003).

Contextual interference is the name of the practice variable used by Shea and Morgan in their study. Contextual interference basically refers to how much the order of practice trials affects how much interference a person experiences while practicing a skill. Because skills are practiced in the same setting from trial to trial, blocked practice is thought to support little contextual interference because the memorial representation of any given ability is relatively steady over practice attempts. Random practice, on the other hand, is thought to encourage significant contextual interference since the context of practice is continually changing, causing a constant shifting in memory states between practice attempts. Researchers exploring the effects of numerous practice variables on learning have developed a solid and wide research agenda as a result of Shea and Morgan's original work on the effects of contextual interference on motor learning. Many questions are currently being researched and argued (Brady, 1998; Lee and Simon, 2004; and Magill and Hall, 1990). A practice regimen where in a skill is practiced repeatedly in the same manner, without change. Alternatively stated, "the practice plan is referred to be consistent practice when the skill is attempted in the same manner and under the same conditions each time it is practiced. a practice regimen that includes numerous distinct approaches of practicing the same skill. In other words, the programme is known to as varied practice when variations of the skill are attempted within practice, often varying from trail to trail. (Edwards William H,2011).

II. MATERIAL AND METHODS

A. Participants

Forty-five Tribal boys football players (age: 15.30 ± 0.68 years; weight: 48.01 ± 6.38 kg; height: 164.5 ± 11.50 cm) with a good state of health from Bankura district in West Bengal located in the eastern region of India participated in the study. A signed copy of the declaration of consent and willingness from each participant and their guardians was also obtained prior to the study's start in order to enrol the subjects in it. The proposal of the research work was placed and duly approved by the Departmental Research Committee (DRC) of the Banaras Hindu University Department of Physical Education by satisfying the research aims, procedures and requirements. Before beginning the training programme, individuals were given a one-week rest period following the collection of baseline data for the trial.

Demographic details of the information of the participants have been presented in Table 1.

Table 1. Demographic details of the subjects

Groups	No.of subjects	Age (years)	Height (cm.)	Weight (Kg.)	BMI (Kgm ²)	RSBP (mmHg)	RDPP (mmHg)	RHR (beats/minute)
	(N=45)	Mean ± S.D	Mean ± S.D	Mean ± S.D	Mean ± S.D	Mean ± S.D	Mean ± S.D	Mean ± S.D

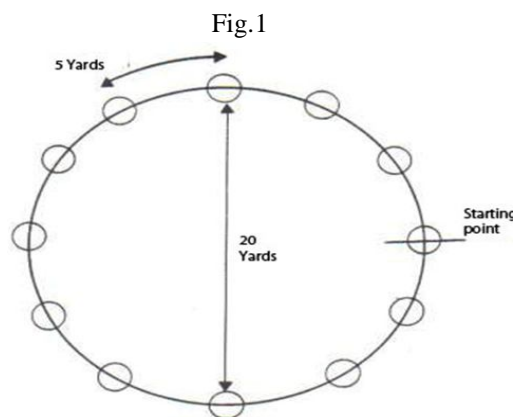
CTMG	15	15.60	153.92	47.09	20.20	124.45	83.54	67.80
		± 0.80	± 7.44	± 6.36	± 1.73	± 1.96	± 1.60	± 0.80
VTMG	15	14.90	157.30	49.54	21.35	124.30	84.65	66.85
		± 0.68	± 8.17	± 5.40	± 1.99	± 1.89	± 1.95	± 0.84
CG	15	15.40	152.40	47.40	20.82	123.25	79.65	67.20
		± 0.57	± 4.91	± 7.39	± 1.57	± 1.57	± 1.73	± 0.65

CTMG=Constant training method group; VTMG= variable training method group; CG=Control group; BMI=Body mass index; RSBP= Resting systolic blood pressure; RDBP=Resting diastolic blood pressure; RHR=Resting heart rate.

In this research work, football dribbling ability was considered the dependent variables. Dribbling ability was measured by Mor-Christian soccer dribbling ability skill test.

B. Mor-Christian soccer Dribbling ability test

Purpose: To measure the dribbling ability in soccer. Equipment: Measuring tape, Lime powder, football, whistle, stop watch, 18 inch. high plastic training cones. Test Dimension: A circular course of 20 yards in diameter was drawn. The starting line is a 1-yard line drawn perpendicular to the circumference of the circle. Plastic cones of 18 inches high were placed at 5 yards interval around the circle. Procedure: The ball was placed on the starting line. On the signal ready!go‘ the subject dribbled the ball around the cones by weaving around the cones until getting back to the starting line. The dribble was performed in the least possible time. Three trials were given. The first trial was performed in the clockwise direction, the second trial in the anti-clockwise direction and the third trial was in the direction according to the subject’s choice. Scoring: The combined best two of the three trials was the test score.



C. Procedure Of Data Collection

To find out the comparative effects of constant method and variable method of training on football dribbling ability in Indian Tribal Boys the data was collected through administration of pre-test and post-test on selected variables and data was collected through standard procedure.

Experimental design & Training Protocol

In this study, a single pre-test-post-test control group design was employed where two experimental training groups and one control group were recruited for six weeks. Experimental group-1 CTMG=Constant training method group(N=15); experimental group-2 VTMG= variable training method group(N=15). But control group(N=15) did not receive any treatments as mentioned above. All the groups were given a proper warm-up before starting the training program every day, and they were also provided proper cooling down exercises when the training was completed. The total schedule of the daily session was 75 min including warm-up and cool down. The subjects were involved in the training six days a week for a total period of 6 weeks. The total time frame of the present study was eight weeks including data collection and rest periods. Experimental time frame: Pre-test data collection week 1; constant and variable training for 2-7 weeks and post experimental data collection week 8

Table2

Comparative training schedule for constant method training group-I and variable method training group-II

Training parameters	Training methods & Groups	Week 2-3	Week 4-5	Week 6-7
Dribbling	Constant training method (Experimental group-I)	Free running with the ball (in-step & out-step), zigzag dribbling, centre circle dribbling.	Repetition of the previous + test drills	Repetition of the previous + test drills
	Variable training method (Experimental group-II)	Free running with the Ball (in-step & out-step), zigzag dribbling with variations, center circle dribbling with variations, 2 cone dribbling.	Repetition of the previous + 1 vs. 2 dribble, 4 goal dribble, Pressure dribble etc.	Repetition of the previous + Winterbottom dual (1 vs. 1 dual), step over drills.

Daily training schedule

Activities	First 10 mins.	Next 20 mins.	Last 10 mins.
	Warming up	Passing training	Cooling down

III. STATISTICAL ANALYSIS

All the data are presented in the form of mean and standard deviation. The reliability of data was calculated by the coefficient of correlation in the pre-test (baseline). Kolmogorov–Smirnov test was used for testing data normality. This test confirmed the normality of the data. Thus, analysis of covariance (ANCOVA) was used as necessary parametric statistics between the pre-test (baseline) and Post-test (post-intervention) data to draw the inference in dribbling ability among the experimental groups. Tukey's LSD post-hoc test was also employed to identify the location of the difference exactly between the groups. Statistical inference was drawn at $p < .05$ level. To calculate the percentage of change in dribbling ability the following equation was used: $\Delta \% = [(post\text{-}test\ mean - pre\text{-}test\ mean) \times 100 / Pre\text{-}test]$. The Kolmogorov-Smirnov test of normality was calculated by social science statistics software. The ANCOVA was performed by Vassar Stats, a statistical computation software package, and Tukey's post hoc LSD test and other calculations were performed by an excel spreadsheet of Microsoft office software in Windows version 10.

IV. RESULTS

All the data pertaining to the present study were examined by Analysis of covariance (ANCOVA) to find out whether any significance difference between the means of pre and post test score of the three groups before and after the period of six weeks training program. Two different training groups i.e., the Constant training method group (CTMG) and variable training method group (VTMG) were improved significantly (in adjusted post-test $F=51.64$; $p < .00001$) in comparison with the control group (CG) in Football dribbling ability. It was also observed that after the intervention of training the percentage of change in dribbling ability for CTMG, CTMG and CG were 4.83%; 9.40% and 0.20% respectively. Thus, variable training method group (VTMG) improved best in dribbling ability (9.40%) due to the six-week training intervention among the groups. The details of the results are shown in Table 3, 4 and Fig. 2 for a better understanding of the research outcomes.

The following notions were used for all the subsequent tables for elaborations. CTMG=Experimental Group I (constant training method group), VTMG= Experimental Group II (variable training method group), CG=Control Group-III, ST->Statistical technique applied, N->Number of subjects in group, μ ->Pre-test mean & post-test mean, MD->Mean difference between pre-test & post-test scores, SD->Standard deviation, SV->Source of variance (W=Within, B=Between), SS->Sum of squares, MSS->Mean sum of squares, H_0 ->Null hypothesis, df->degree of freedom, $\Delta \% =$ Percentage of Improvement in dribbling ability CD-> Critical difference at 5% level.

Table-3

Test	ST	CTMG	VTMG	CG	SV	df	SS	MSS	F-ratio	P-Value
Pre-test	μ	63.19	63.32	63.52	B	2	0.84	0.42	0.079	.924177
	SD	2.37	2.28	2.25	W	42	221.7	5.28		
Post-test	μ	60.14	57.37	63.56	B	2	288.6	144.3	20.66*	<.00001
	SD	2.35	3.31	2.11	W	42	293.3	6.984		
Adjusted Post-test	μ	60.28	57.39	63.40	B	2	270.13	135.06	51.64*	<.00001
					W	41	107.23	2.62		
(Δ %)		4.83	9.40	0.20						

Computation of analysis of covariance of pre-test, post-test & adjusted post-test on dribbling ability among the two experimental groups and the control group (scores in seconds)-

*Significant at 0.05 level

Tab. F.05(2,42) =3.22 & Tab. F.05(2,41) =3.23

To find out the intergroup exact mean difference Tukey’s LSD (Least significant difference) post-hoc test was performed. Dribbling capacity differences between the paired adjusted final means among the two experimental groups and the control group indicate that significant differences between the two experimental groups when compared with control group. The details of the results are shown in Table II for a better understanding of the research outcomes.

Table-4

Least significance difference post-hoc test between adjusted means among the three groups in dribbling ability-

CTMG	VTMG	CG	MD	CD
60.28	57.39	-	2.89*	1.19
60.28	-	63.40	3.12*	
-	57.39	63.40	6.01*	

*Significant at 0.05 level

V. DISCUSSION

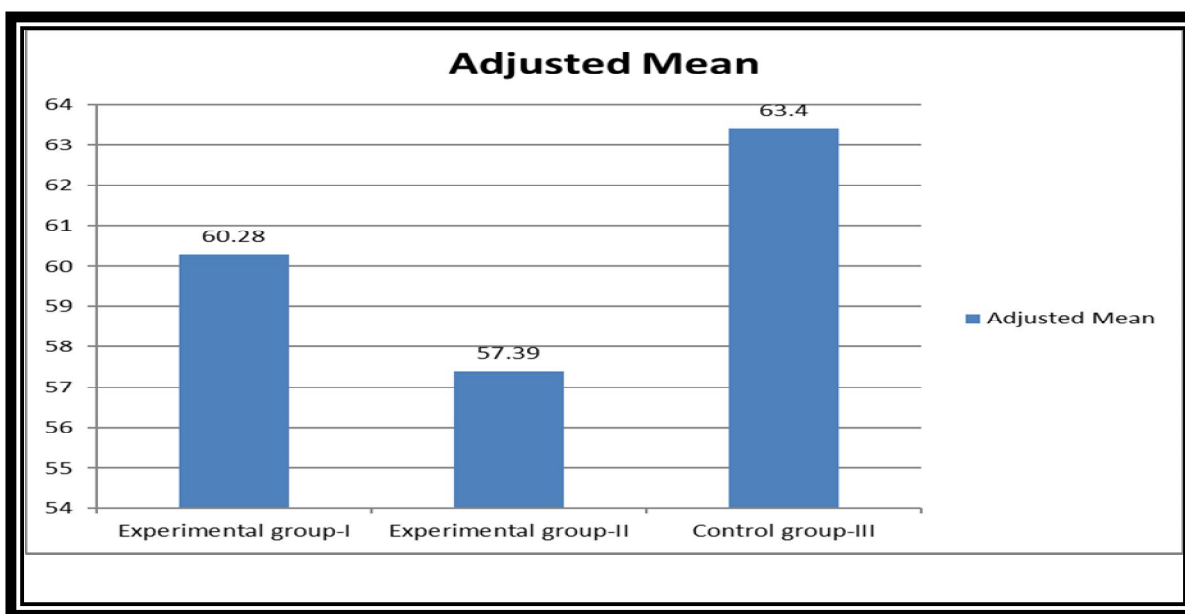
The findings of the present study indicated a significant improvement in dribbling ability (F= 51.64*, p<.00001) measured through Mor-Christian soccer dribbling ability skill test in two groups i.e., constant training method group and variable training method group in comparison with the control group. The result was accorded with the findings of this study come to disagreement with those of Zelaznik (1977), Pigott and Shapiro (1984), Wrisberg and Ragsdale (1979), Yao et al. (2012). But on the other side, Kelso and Norman (1978), Pipes Thomas (1978), Lee et al. (1985), Hall et al. (1994), Shea et al (2001), Shoenfelt et al. (2002), Douvis Stavros(2005), Harrison and Keane (2007), Berslin et al. (2012), Zetou et al(2014) accept that variability in practice is superior. Several studies also led to mixed results (reviewed by Van Rossum 1990; Manning1990; Heitman et al 2005; Yao et al. 2009; Tsutsui, Lee & Hodges 1998; Travlos Antonios K 2010;). Williams (1998) examining the usefulness of variable practice in soccer, argued that practice variability increases generalization of a skill and is an important parameter in motor learning. Furthermore, Williams and Hodges (2005) supported the positive effect of variability as a breakthrough in modern coaching process. Another study that supported the theory of practice variability was Hernandez et al. (2014). They examined the learning of service skill in tennis and showed that the variability of practice was the best way for participants to improve the service skill.

For the improvement in dribbling ability, by constant training method group and variable training method group intervened for six weeks on the experimental groups (improvement percentage or CTMG,VTMG was 4.83 %, 9.40% respectively), the researcher is of the opinion that the training schedule which was used in the present study, long in duration (about seventy five minutes per day & six times per week for six weeks) and repetitive middle-intensity training exercises (for constant training) with approximately 60-70% of max HR in nature that have been adapted in the training schedule that might cause a significant improvement in the dribbling ability.

The pre-test mean scores on dribbling ability is presented in table-3 indicated that insignificant differences among the groups as the obtained F-ratio of 0.079 was less than Tab. $F_{.05(2,42)} = 3.22$. This means that the two experimental groups and the control group were equal on dribbling ability. A significant f-ratio 20.66 for the post mean scores on dribbling ability the two experimental groups and the control group were statistically significant at 0.05 level of confidence. This indicated significant differences from the pre-test to post-test means among the groups. In case of adjusted post-test means the obtained value of F-ratio was found 51.64, which was greater than the Tab. $F_{.05(2,41)} = 3.23$. Therefore, significant difference in adjusted post-test mean scores for two experimental groups and the control group were found. This indicated that there was significant improvement from the pre-test to post-test means among the groups in the dribbling ability.

Table-4 concerning differences between the paired adjusted final means among the two experimental groups and the control group indicate that significant differences between the two experimental groups when compared with control group. However, the differences between the experimental groups were also significant as the mean difference values were more than the critical difference value of 1.19 at 0.05 level of significance. The data further indicated that the mean differences between CTMG & VTMG (2.89), CTMG & CG (3.12) and VTMG & CG (6.01) were greater than the critical difference value of 1.19 at 0.05 level of significance. The Variable method of training has produced significant improvement on dribbling ability greater than constant method of training and the Control group an Indian tribal boy. The constant method of training has produced significant improvement on dribbling ability greater than the Control group of an Indian tribal boys.

Adjusted post-test mean values of the two Experimental groups and the control group on dribbling ability have been graphically presented in Fig.2.



Graphical representation of adjusted mean differences in dribbling ability among the two experimental groups and the control group- Fig.2

VI. CONCLUSIONS

Six weeks of constant training method and variable training method significantly improved on performance (football dribbling ability) in comparison to the control group and also confirmed that the variable training method improved better than the constant training method. Insignificant difference was also found in the constant training method group vs. variable training method group for improving football dribbling ability. Based on the findings of the present study following generalised conclusions can be drawn

- 1) The dribbling ability of the tribal boys in two experimental groups (EGs) had improved significantly in comparison with the control group (CG) due to the effect of six weeks constant and variable training. Thus, constant and variable training method are effective training method for developing football dribbling ability.
- 2) Variable method of training was highly influential on improving football dribbling ability of Indian tribal boys than the constant method of training.

A. Acknowledgments

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B. Conflicts of Interest

There are no conflicts of interest to declare.

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