

The Effect of Exercise and Balance on the Accuracy of the Service Corner in the Takraw Game on Tondano 3 High School Students

¹Alen Inlans Lanongbuka, ²Ellen Lomboan,

¹Fakultas Ilmu Keolahragaan, Universitas Negeri Manado, Manado, Indonesia

Email: ¹alenlanongbuka25@gmail.com, ²ellen.b.lomboan@unima.ac.id,

Abstrak

This research uses a quantitative approach with an experimental method. This study aims to determine the ability of the service corner between plyometric training and weight training, find out the interaction between training and balance of the ability of the service corner, know the ability of the service corner between plyometric training and weight training for those who have high balance and know the ability of the service corner between plyometric training and weight training for those who have low balance in students of SMA Negeri 3 Tondano. In this study, the instrument was used as a data collection tool, namely the accuracy of the service corner test. To test the research hypothesis two-way ANAVA analysis was used as a factorial design with a significance level of $\alpha = 0.05$ which was then followed by the Tukey test to find out which groups were superior. The results showed no difference in the effect of plyometric training and weight training. There is no interaction between training and balance of corner service abilities in the soccer takraw game. For groups of students who have high balance it is better to use weight training compared to plyometric training to improve corner service abilities. For groups of students who have a low balance, it is better to use plyometric training than weight training to improve corner service ability.

Keywords: Training, Balance, Service Corner

INTRODUCTION

Takraw is one of the traditional sports games which is a modification of the game of sports with modern games. This sport is often found in all corners both in urban and rural areas. Many people like this sport even though it is played simply, because the infrastructure of this game is very easy to obtain and does not require large tracts of land.

To be able to play the ball well, the basic techniques of the game need to be owned and mastered by every player. The abilities referred to according to Ratinus Darwis and Penghulu Basa are "Sacking using parts of the foot, playing the ball with the head, playing the ball with the chest, playing the ball with the thigh and playing the ball with the shoulder". Suhud also added that the basic techniques in the soccer game include the following techniques: "1) Service that is done tekong, 2) Pet, 3) Smash, 4) Head the ball (heading), and 5) Block".

One of the most important basic techniques in the game of takraw and in accordance with the purpose of the game is to try to turn the ball as soon as possible in the opponent's field area then the basic service techniques need to be mastered properly by the player. There are several types or types of services in the game of takraw, including: "1) Freestyle service (frostyle), 2) Fast and sharp service (spike service), 3) High service (lob service), 4) Trick service (trick service), 5) Corner service (corner / angle service), 6) Screw service."

Of the several types of services, one type of service that can be relied upon to obtain numbers is the corner service. This type of service aims to place the ball at both the back and front corners of the field which, according to tekong view, the area is not guarded by opposing players. If this service is right at the intended angle it will be difficult for the opposing player to return the ball.

If you see the ability of SMA Negeri 3 Tondano students, there are still many who are not yet perfect in doing corner service. This appears in physical education learning more specifically in the soccer takraw material, students have not been able to do service aimed at the target which is the opponent's weaknesses. Most students in serving only aim to simply cross the ball to the

opponent's field and not rely on that service is part of the attack.

To be able to do the right corner service every player needs to get the right form of training through a training program that will later be presented to students. Physical education coaches or teachers who foster or train takraw sports branches need to understand which muscles and forms of training support the implementation of corner service movements.

Components of physical conditions that need to be considered and developed in training are explosive power and balance. Takraw players who have explosive power and good balance will be able to do corner service efficiently and not spend a lot of energy to produce a perfect service.

Based on the description and problems mentioned above, the writer was drawn to elaborate and raise the title of: The effect of training and balance on the accuracy of corner service in the game of takraw on SMA Negeri 3 Tondano students.

This study aims to determine the accuracy of service corners between plyometric training and weight training, determine the interaction between training and balance of service corner capabilities, find out the accuracy of service corners between plyometric exercises and weight training for those who have high balance, and find out the accuracy of service corners between plyometric exercises and weight training for those who have a low balance in high school students 3 Tondano.

This research is expected to be useful to increase general knowledge, especially specifically about the development of takraw sports and as an input to sports coaches and physical education teachers and players about forms of training that can improve the accuracy of corner service in takraw games.

RESEARCH METHODS

This study uses an experiment with a 2 x 2 factorial design (treatment through a design block).

Population, Samples, and Sampling Techniques

From an affordable population of 100 students, 80 students were then taken using a standard table taken from Gempur Santoso. Of the 80 male students taken, a balance test was then held to find out the balance level [1]. The balance test that will be used is the Balance in this study is the position of the feet in a state of rest of the feet attached to the floor, by not doing the movement, togok straight (not bent), straight eye sight ahead. Both arms straight hanging beside the body. The results of the measurement of the balance are then ranked from high to low. To determine groups representing high balance and low balance, the percentage technique used is 27% for the upper limit and 27% for the lower limit (Table 1)

Table 1. Student Group Design

Balance (B)	Practice (A)		Amount
	Plyometrics (A1)	Load (A2)	
High (B1)	10	10	20
Low (B2)	10	10	20
Total	20	20	40

Data Collection Technique

The data needed in this study is based on the variables included, including the balance data and the accuracy of the service corner data.

Data Analysis Technique

Testing the research hypothesis used a two-way analysis of variance (two-way ANAVA) as in the factorial design with a significance level $\alpha = 0.05$, which was then followed by the Tukey test

RESULT AND DISCUSSION

Table 2. Summary of Calculation Results for X, S and X Values

Balance	Practice		Total
	Plyometrics	Load	
High	$\sum XA = 131$	$\sum XB = 139$	$\sum X_{r1} = 270$
	$\sum XA^2 = 1737$	$\sum XB^2 = 1947$	$\sum X_{r1}^2 = 3684$
	nA = 10	nB = 10	n = 20
	S = 1.52	S = 1.29	S = 2.81
	X = 13.1	X = 13.9	X = 27
Low	$\sum XC = 101$	$\sum XD = 95$	$\sum X_{r2} = 196$
	$\sum XC^2 = 1025$	$\sum XD^2 = 915$	$\sum X_{r2}^2 = 1940$
	nc = 10	N4 = 10	N = 20
	S = 0.74	S = 1.18	S = 1.92
	X = 10.1	X = 9.5	X = 19.6
Total	$\sum X_{c1} = 232$	$\sum X_{c2} = 234$	$\sum X_t = 466$
	$\sum X_{c1}^2 =$	$\sum X_{c2}^2 =$	$\sum X_t^2 = 5624$
	2762	2862	nt = 40
	nc1 = 20	nc2 = 20	S = 4.73
	S = 2.26	S =	X = 46.6
	X = 23.2	2.47	
		X =	
	23.4		

Testing requirements analysis is a requirement that must be met before an analysis of variance (Anava) is held. The requirements referred to before conducting the analysis of variance, namely: 1) data normality test or also commonly called data normality test, and 2) homogeneity variance test of population. For normality test data or normality test data in this study using the Lilliefors test and for the homogeneity test for population variance using the Bartlett test using a significance level $\alpha = 0.05$.

Table 3. Calculation Results for Normality Test Data for the Corner Capability of the Four Groups

Group	n	Lo	Lt	Conclusion
1	10	0.0790	0.258	Normal
2	10	0.1079	0.258	Normal
3	10	0.0820	0.258	Normal
4	10	0.1143	0.258	Normal

The results of the calculation of the normality test of the ability of the corner service of the four groups that have been presented in Table 3, then obtained the highest difference of each group or observation of 0.0790, 0.1079, 0.0820, and 0.1143. Based on the table of critical values of the Lillifors test at $\alpha = 0.05$ with $n = 10$, found L_{table} worth 0.258. So observations from all four groups are smaller than L_{table} . Based on the testing criteria if $Lo < Lt$, H_0 is accepted. Thus the test results are the sample comes from populations that are normally distributed.

Table 4. Summary of Calculation Results Using the Bartlett Test Corner Service Capability

Sample	Varian	Combined variance	X_{count}	X_{table}	Conclusion
1	2.32	1.47	0.61	7.81	Homogeneous
2	2.54				
3	2.54				
4	1.38				

Based on the homogeneity test calculation results using the Bartlett test listed in Table 4. It

can be seen that the calculated X^2 value = 0.61 is smaller than the X^2 table price = 7.81 so $H_0: \sigma_{12} = \sigma_{22} = \sigma_{32} = \sigma_{42}$ is accepted at the real level $\alpha = 0.05$. Thus it was found that all four populations have homogeneous variance.

After testing the normality and homogeneity are met, then the analysis of variance requirements can also be done. For that hypothesis testing can be used two-way analysis of variance (Anava).

Table 5. Summary of Anova for the First Hypothesis Test

Source of Variance	SS	df	MS	F_o	F_t
Inter Column (Treatment / Exercise)	0.1	1	0.1	0.677	4.11
Between Lines / Balance	136	1	136		
Interaction of Exercise and Balance	5.8	1	5.8	3.924	4.11
Between groups	141.9	3	47.3		
In Groups (Mistakes)	53.2	36	1.478		
Total	195.1	39			

From the results of testing the research hypotheses in Table 5, $F_{count} = 0.677$ is obtained while $F_{table} = 4.11$ or $F_{count} \leq F_{table}$. Thus based on testing criteria if $F_o \leq F_{table}$ then H_0 is accepted. Where H_0 states that there is no difference in the effect of plyometric training and weight training. Based on this, it was found that overall there was no difference in the accuracy of the service corner between plyometrics and weight training. Therefore, the provision of plyometric training and weight training cannot be applied to improve the accuracy of the service corner on students of SMA Negeri 3 Tondano.

From the results of testing the research hypothesis, $F_{count} = 3.924$ was obtained while $F_{table} = 4.11$ or $F_{count} \leq F_{table}$. Thus the research on the second hypothesis is obtained that there is no interaction between training and balance with the accuracy of the service corner in the takraw game. Based on the results of this study, the provision of plyometric exercises and weights combined with balance to improve the accuracy of the service corner cannot be applied because it has been proven and proven true.

Table 6. Summary for the Tukey Test

Compared Group	Total score	Difference (Q_{count})	CD (Q_{table})	Significance
II versus I	131 - 139	8	(3.79)	Significant

From the results of testing the research hypothesis (Table 6) obtained $Q_{count} = 8$ while $Q_{table} = 3.79$ or $Q_{count} \geq Q_{table}$ at a significant level $\alpha = 0.05$. Thus the null hypothesis is rejected where (H_0) which states that the average accuracy of service corners given plyometric exercises that have high balance is less than the average accuracy of service corners given training with weights. Based on the foregoing it is found that for groups of students who have high balance it is better to use weight training compared to plyometric training on the accuracy of the service corner because it has been tested.

Table 7. Summary of Tukey Test Calculation Results

Compared Group	Total score	Q_{count}	Q_{table}	Significance
III versus IV	101 - 95	6	3.79	Significant

From the results of testing the research hypothesis (Table 7), obtained $Q_{count} = 6$ while $Q_{table} = 3.79$ or $Q_{count} \geq Q_{table}$. At a significant level $\alpha = 0.05$. Thus the null hypothesis is rejected where

(H₀) which states that the average accuracy of service corners given weight training that has a low balance is less than the average accuracy of service corners given plyometric training. Based on this it was found that for groups of students who have a low balance it is better to use plyometric exercises compared to weight training on the accuracy of the service corner because this has been proven true.

CONCLUSION

1. There is no difference in the effect of plyometric training and weight training.
2. There is no interaction between training and balance with the accuracy of the service corner in the takraw.
3. For groups of students who have high balance it is better to use weight training compared to plyometric training to improve the accuracy of the service corner.
4. For groups of students who have low balance, it is better to use plyometric training than weight training to improve the accuracy of the service corner.

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