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The Influence of Medicine Ball Throw and Resistance Bands on Throwing Ability in Football Games of SSB Joma Putra Sunda Students

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Abstract: This research is an experiment with the pretest-posttest control group design method. The type of research used in this study is a type of experimental research with a quasi-experimental design. This research is experimental research and the research design used is Quasi Experimental Design, namely the Group Pretest Posttest Design. The sample used in this study were SSB Joma Putra Sunda Palembang players aged 10-16 years in 2023, totaling 15 players. The sampling technique in this study used a systematic sampling technique and an ordinal pair system. This research as a whole used test, measurement and documentation methods. The results of the study mean/average results of throws in SSB Joma Putra Sunda Palembang players in the medicine ball practice group after being treated experienced an increase from the pre-test of 7.62 to the post-test of 8.65 or with an increase percentage of 12.90%, for the mean/average results of throws in the SSB Joma Putra Sunda Palembang Resistance band training group from the pre-test of 7.49 to the post-test of 8.64 or with a percentage increase of 14.48%. while for the mean/average result of throwing in the SSB Joma Putra Sunda Palembang group from the pre-test of 9.60 to the post-test of 10.75 or with an increase percentage of 9.71%. So that it can be concluded that there is a significant influence between medicine ball throw and resistance bands on the ability to throw into football games in SSB Joma Putra Sunda Palembang students.

Keywords: Football Games, Medicine Ball, Throw-in Skills, Resistance Bands

A. Introduction

Sport is a hobby that is often done by almost everyone in the world. In human life, sport is an important thing that must be done by humans because it makes a person healthy and happy (Anwari, 2017). In sports there are many activities that can be done, namely gymnastics, running, basketball, volleyball, badminton, cycling, and football. Football is a very popular sport in the world and in Indonesia. Football is the most popular sport by all levels of society in Indonesia, both in urban areas, in rural areas and even remote areas, ranging from children, youth and the elderly, as well as men and women (Al-Amien et al, 2019).

Football is a team game that requires good teamwork and cooperation (Firmansyah, 2016). 11 players for each team play a soccer game, they play with their feet except the goalkeeper who has the right to use his hands. The aim of this game is to score as many goals as possible against the opponent's goal and defend the goal so that the ball is not conceded (Susanto et al, 2019). To be a good soccer player, soccer players really need good mastery of basic techniques. This is because mastering the basic techniques of playing soccer is the main capital in playing soccer, in playing soccer the basic techniques must be mastered by a player (Satriawan, 2016). The basic techniques of playing soccer are divided into two, namely body techniques (techniques without the ball) including: how to run, how to jump, movements without the ball and also basic techniques with the ball including: controlling the ball, kicking the ball, heading the ball, catching the ball, throwing it in and keep goal (Iyakrus & Ramadhan, 2021).

There are several basic techniques that a soccer player must have, namely kicking, stopping, dribbling, heading, attacking, throwing and keeping the goal (Suhendra, 2017). In the game of football almost all of these techniques are used during the game, although sometimes techniques without the ball or movement without the ball make a big contribution to help attack and defense (Prasetyo, 2018). As mentioned above, one of the basic techniques in playing soccer is throwing. In today's soccer game, a soccer player must correctly execute a throw-in. Throws that are hard, strong, good, careful, and on target will make it easier to create scoring opportunities (Yasin, 2020). This is because a good throw-in skill can be used to start an attack. There are times when a throw-in is a factor that is profitable and plays a big role in a team's victory (Nurvitha, 2018). It is said to be profitable and plays a big role in a team's victory when the match is almost over play with the ball leaving the pitch near the opponent's defensive zone, this can be used to create a scoring opportunity with a long throw at the opponent's goal (Hadi & Soegiyanto, 2013). For this reason, a Jew is expected to have good luck. For a Jew to have good throwing skills, he needs to be properly trained in the ways of training and continue the work he is supposed to do (Sugianto & Iyakrus, 2019).

The shape that can be used will enlarge the eye, which is very different because it was developed to increase the cast in relation to the muscles of the hand and forearm (Nurmansyah, 2021). Some of the Oops methods that can improve your throwing are the search for medicine balls, Resistance Band Exercises, and Pushes (Rohmah, 2018). In some of these cases the goal is good throwing ability and more specifically it is expected to increase arm strength, and to increase power will give arm muscles so they can throw well (with long distances) (Elinopita, 2021). Throw-in is very useful for short-range and long-range bait according to the desired target as grant the belly of the opponent's goal how before attacking. A much better throw-in and will make a team score goals and win the game which is the main goal of the coach's promise is not one of them to find the ability of the Jew's throw-in (Darmawan, 2015). While

there, physics, engineering, and tactics and game-play skills are mobilized in the versatile task of marking brain objects against opponents, and preventing goals conceded to their own. Technical metrics as a guide for developing quality in a game and competition. Given the importance of multiple players in gaming, these few days should have received serious attention in the development of America's achievements (FIFA, 2014). Every Jew needs to have a lot of people that he throws well.

Based on the results of observations and observations of researchers at a football school (SSB) in the city of Palembang. One of the successfully observed SSBs is the Joma Putra Sunda Palembang SSB. From the observations of researchers from all 30 students at SSB Joma Putra Sunda Palembang, almost 90% of students had not mastered throwing techniques properly and correctly. Lack of power in throwing, the other 4 people are good in throwing but can't maximize the moment of throw-in. This can be seen from the researchers' observations that SSB students often during matches or practice often throw in which are not used properly, and the strength of their throws is still weak, not strong and difficult.

Many training methods are used and applied in performance sports, which require a coach to develop his knowledge. A trainer must be able to apply training methods to his team, so that the training atmosphere is not boring and monotonous. In addition, the application of training methods must be in accordance with the athletes being trained. Likewise, to improve throwing-in skills for students participating in SSB Joma Putra Sunda Palembang. So far, throwing exercises have not been carried out so that the ability of students to participate in extracurricular activities has not increased and still needs to be improved. In this case, the exercises used are medicine balls and resistance bands which will be packaged as exercises.

With this method the researcher hopes that students will understand better what can be done to improve their throwing skills, and SSB students can use throwing as a way to win matches. To get a good throw-in ability is not only seen from how good the direction of the ball is produced. But the speed of the ball must be considered, how the resulting ball can be directed and the speed of the hard ball. To get a long and directional throw, a soccer player must have good physical condition as well as hand muscle skills and preparation. Based on the description above, the researcher is interested in conducting research on the influence of medicine ball throw and resistance bands on the throwing ability in football games in SSB Joma Putra Sunda Palembang students.

B. Methods

The type of research used in this study is a type of experimental research with a quasi-experimental design. This research is experimental research and the research design

used is Quasi Experimental Design, namely the Group Pretest Posttest Design. The population in this study were all SSB Joma Putra Sunda Palembang players covering various age groups, namely age groups from U10-U12, U13-U15, to U16-U23, so that a total of 30 people. The sample used in this study was SSB Joma Putra Sunda Palembang players aged 10-16 years in 2023, totaling 15 players. The sampling technique in this study used a systematic sampling technique and an ordinal pair system.

This research as a whole uses test methods, measurement and documentation methods. The research was conducted at SSB Joma Putra Sunda Palembang. The research time was determined after the researcher received a research permit from PSSI Palembang. The data analysis method is the method used to obtain or analyze the data obtained. The data analysis technique used in this study was the t-test with a 95% confidence level. To calculate the percentage increase in throwing ability in a soccer game by throwing medicine balls, resistance bands and push up, the following formula is used:

$$\text{Percentage increase} = \frac{\text{Mean different}}{\text{Mean Pretest}} \text{ X } 100\%$$

Mean different = mean posttest-mean pretest

C. Results and Discussion

Medicine Ball practice

Table 1. Descriptive Statistics for Medicine Ball Exercises

No	Category	Pre-test	Post-test
1	Means	7,62	8.65
2	Median	8.93	9,11
3	Sum	86,24	96.58
4	Highest score	8.57	9,46
5	Lowest score	6.35	7,38
6	Standard deviation	0.66	0.62

From the results of data analysis calculations, it was obtained that the pre-test data of SSB Joma Putra Sunda Palembang football players before being given medicine ball training obtained a mean value or an average of 7.62, a median value of 8.93, a sum value or a sum of 86.24, the highest score was 8.67, the lowest score was 6.35 and the standard deviation (std) was 0.66 while the post-test data of SSB Joma Putra Sunda Palembang players after being given medicine ball training obtained a mean or average value of 8.65, the median value was 9.11, the sum or sum of 96.58 the highest score is 9.46 the lowest score is 7.35 and the standard deviation value (std) is 0.62. After the data is obtained, normative calculations are then carried out to categorize the results of throwing into the SSB Joma Putra Sunda Palembang players before being

given treatment or treatment with medicine ball exercises, along with the results of the categorization as follows:

Table 2. Normative Calculations for Medicine Ball Practice *Pre-Test*

No	Intervals	Frequency	Percentage %	Category
1	70 > X	0	0%	Very well
2	59 > X < 69	0	0%	Good
3	47 > X < 58	9	60%	Currently
4	36 > X < 46	6	40%	Not enough
5	X < 35	0	0%	Less
	Amount	15	100%	

From the table above it can be seen that the pre-test players or 0%, the good category has 0 athletes or 0%, for the medium category there are 9 players or 60%, the less category has 6 players or 40% and the very poor category has 0 players or 0%. Furthermore, for the categorization of the results of the medicine ball practice post-test as follows:

Table 3. Normative Calculations for The Post-Test Medicine Ball Exercises

No	Intervals	Frequency	Percentage %	Category
1	70 > X	0	0%	Very well
2	59 > X < 69	0	0%	Good
3	47 > X < 58	13	86.67%	Currently
4	36 > X < 46	2	13.33%	Not enough
5	X < 35	0	0%	Less
	Amount	15	100%	

From the table above it can be seen that the post-test for medicine ball practice, SSB Joma Putra Sunda Palembang players who are in the very good category, 0 medicine ball practice players, SSB Joma Putra Sunda Palembang players who are in the very good category 0 or 0%, in the good category there are 0 athletes or 0 %, for the moderate category there are 13 players or 86.67%, for the less category there are 2 players or 13.33% and for the very poor category there are 0 players or 0%. Furthermore, based on the results of the above categorization, an illustration of an image in the form of a bar chart can be presented, as follows:

Resistance Band Exercises

Table 4. Descriptive Statistics for Resistance Band Exercises

No	Category	Pretest	Postest
1	*Means*	7,49	8,64
2	*Median*	7,81	8.99
3	*Sum*	84.99	96.42
4	Highest score	8,42	9.55
5	Lowest score	6.00	7,42
6	Standard deviation	0.73	0.64

From the results of data analysis calculations, it was obtained that the pre-test data of the SSB Joma Putra Sunda Palembang players before being given Resistance band training obtained a mean or average value of 7.49, a median value of 7.81, a sum value or a sum of 84.99, the highest score was 8.42, the lowest score was 6 .00 and the standard deviation value (std) is 0.73 while the posttest data of the Joma Putra Sunda SSB players after being given Resistance band training obtained a mean or average value of 8.64, a median value of 8.99, a sum value or a total score of 96.42 highest 9.55 lowest score 7.42 and standard deviation value (std) 0.64. After the data is obtained, normative calculations are then carried out to categorize the results of throwing into the SSB Joma Putra Sunda Palembang players before being given treatment or treatment with resistance band exercises, along with the results of the categorization as follows:

Table 5. **Normative Calculations for Pre-Test Resistance Band Exercises**

No	Intervals	Frequency	Percentage %	Category
1	70 > X	0	0%	Very well
2	59 > X < 69	0	0%	Good
3	47 > X < 58	9	60%	Currently
4	36 > X < 46	6	40%	Not enough
5	X < 35	0	0%	Less
	Amount	15	100%	

From the table above it can be seen that the resistance band training pre-test for SSB Joma Putra Sunda Palembang players in the very good category is 0 players or 0%, in the good category there are 0 athletes or 0%, for the medium category there are 9 players or 60%, there are less categories 6 players or 40% and very few categories have 0 players or 0%. Furthermore, for the categorization of the results of the resistance band exercise post-test as follows:

Table 6. Normative Calculations for Post-Test Resistance Band Exercises

No	Intervals	Frequency	Percentage %	Category
1	70 > X	0	0%	Very well
2	59 > X < 69	0	0%	Good
3	47 > X < 58	13	90%	Currently
4	36 > X < 46	2	10%	Not enough
5	X < 35	0	0%	Less
	Amount	15	100%	

From the results of data analysis calculations, it was obtained that the pre-test data of the SSB Joma Putra Sunda Palembang players before being given push-up exercises obtained a mean or average value of 9.60, a median value of 9.92, a sum value or a sum of 87.03, the highest score was 10.53, the highest score was 10.53. The lowest is 8.11 and the standard deviation value (std) is 1.84 while the posttest data of SSB Joma Putra Sunda Palembang players after being given push up exercises obtained a mean or average value of 10.75, a median value of 11.01, the sum value or total 98.53 the highest score is 11.66 the lowest score is 9.53 and the standard deviation value (std) is 1.75. After the data is obtained, normative calculations are then carried out to categorize the results of throwing into the SSB Joma Putra Sunda Palembang players before being given treatment or treatment with resistance band exercises, along with the results of the categorization as follows:

Results of Analysis of Both Groups

Table 7. Descriptive Analysis

No	Category	*Pre-test* practice *medicine balls*	*Post- test* practice *medicine balls*	*Pre-test* practice *Resistance bands*	*Post- test* practice *Resistance bands*
1	Means	7,62	8.65	7,49	8,64
2	Median	8.93	9,11	7,81	8.99
3	Sum	86,24	96.58	84.99	96.42
4	Highest score	8.57	9,46	8,42	9.55
5	Lowest score	6.35	7,8	6.00	7,42
6	Standard deviation	0.66	0.62	0.73	0.64

In accordance with the description of the data above, it can be explained that the mean/average results of throwing to the SSB Joma Putra Sunda Palembang players in the medicine ball practice group after being given treatment experienced an increase from the pre-test of 7.62 to the post-test of 8.65 while for the the mean/average result of throwing into the SSB Joma Putra Sunda Palembang. Resistance band training group from the pre-test was 7.49 to the post-test was 8.64. and the mean/average results of throwing into the SSB Joma Putra Sunda Palembang players in the push-up

practice group after being treated experienced an increase from the pre-test of 9.60 to the post-test of 10.75. The following are the results of the percentage increase in throws to the SSB Joma Putra Sunda Palembang players as follows:

Table 8. Percentage Increase

Variable	*Means*	Enhancement
Pre-test medicine ball	7,62	12.90 %
Post-test medicine ball	8.65	
Pre-test resistance bands	7,49	14.48 %
Post-test resistance bands	8,64	
Pre-test push ups	*9.60*	*9.71%*
Post-test push ups	*10.75*	

From the calculation of the increase in the mean or average percentage of the resistance band training group and medicine ball training group, it was obtained that the medicine ball training group increased by 12.90%. For the resistance band exercise group, the percentage increase was 14.48% while for the push up group the percentage increase was 9.71%. It can be concluded that the increase in the results of long throws in SSB Joma Putra Sunda Palembang players through resistance band training is better than medicine ball training and push up. Based on the above statistical analysis calculations, the mean/average results of throwing into the SSB Joma Putra Sunda Palembang players in the medicine ball practice group after being treated experienced an increase from the pre-test of 7.62 to the post-test of 8.65 or with an increase percentage of 12.90%, for the mean/average result of throwing in the SSB Joma Putra Sunda Palembang Resistance band training group from the pre-test of 7.49 to the post-test of 8.64 or with a percentage increase of 14.48%. While for the mean/average result of throwing in the SSB Joma Putra Sunda Palembang. It can be concluded that the increase in the results of the long throw in SSB Joma Putra Sunda Palembang players through resistance band exercises is better than medicine ball exercises.

Table 9. Paired t-test

Variable	t-count	Sig.	Level of Significant
Pre-test & Post-Test	11,629	0.000	0.05

Based on Table 9, the results of the statistical calculation of the "t test" obtained the results of the Sig. 0.000 < α: 0.05, meaning that there is an average difference in the results of the throw-in between before and after the medicine ball practice.

Table 10. Paired t-test

Variable	t-count	Sig.	Level of Significant
Pre-test & Post-Test	9,593	0.000	0.05

Based on Table 10, the results of the statistical calculation of the "t test" obtained the results of the Sig. 0.000 < α: 0.05, meaning that there is an average difference in the results of the throw-in between before and after the resistance band exercise.

Table 11. Paired t-test

Variable	t-count	Sig.	Level of Significant
Pre-test & Post-Test	15,782	0.000	0.05

Based on Table 11, the results of the statistical calculation of the "t test" obtained the results of the Sig. 0.000 < α: 0.05, meaning that there is an average difference in the results of the throw-in between before and after doing the push-up exercise. From the results of the t test above, it can be stated that there is a significant effect between Medicine Ball Throw, Resistance Bands, and Push Up Exercises on the Throwing Ability in Football Games in SSB Joma Putra Sunda Palembang Students.

D. Conclusion

The conclusion of this study is that there is a significant influence between Medicine Ball Throw, Resistance Bands, and Push Up Exercises on the Throwing Ability in Football Games of SSB Joma Putra Sunda Palembang Students. Suggestions for coaches are expected to be able to provide Medicine Ball Throw Exercises and Resistance Bands for Throw-in Ability in Football Games as additional exercises to improve throw-in results.

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