

The Influence of Squat Body Training and Vertical Jump Training on the Results of Smash Block Volleyball Game Extracurricular Students

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Abstract: The problem in this research is still the low ability of players to perform block techniques. It can be seen that during training many cannot block the ball when they want to block. Students who have not mastered the correct blocking techniques and students who lack confidence when they want to block. Lack of balance when jumping when blocking. The purpose of this study was to determine the results of Squat Body Training and Vertical Jump exercises on the results of the Smash Block Volleyball Game of Extracurricular Students SMP Negeri 38 Palembang. This research method uses experimental research. This research design uses a pretest-posttest design. The study provided the treatment of exercise A and exercise B without not comparing with the results of the control group. The independent variable in this study was in the form of body training squat exercises and vertical jump exercises, while the dependent variable was in the form of smash block results of extracurricular students of SMP Negeri 38 Palembang. In pretest and posttest charts. The data analysis technique used in this research using SPSS 26 is by using anova at a significant level of $\alpha = 0.05$. The results showed that there is influence of squat body training and vertical jump training on the results of smash block volleyball game extracurricular students.

Keywords: Smash Block, Squat Body Training, Vertical Jump Workout

A. Introduction

The development of the world of sports is currently one that is very popular with many people. Sports are activities to exercise one's body, not only physically but also spiritually. In addition, the benefits of exercise are that the body's metabolism becomes smooth and the absorption of nutrients in the body becomes more effective and efficient. Sports are some organized and planned physical movements that are carried out by a person to achieve a certain goal. One sport that is quite popular in Indonesia is volleyball. This volleyball game that uses hands can be done by children to adults, both male and female and can be played in open rooms and closed rooms.

Volleyball is one of the most popular sports in the world. Volleyball is played by two teams or two teams. Volleyball games are a type of sport by playing it by hitting the ball through the net back and forth whose net height has been determined, the type of sports game namely volleyball games can be done indoors or outdoors. Volleyball is a game that uses the ball to be bounced in the air downstream to the top of the net with the intention of dropping the ball in the opponent's court area in search of victory. Bouncing the ball into the air can use all limbs or parts of the body from the toe to the head with a perfect bounce.

The goal of volleyball is to send the ball over the net to the opponent's court and prevent the opponent from doing the same. Each team can touch or play the ball three times on the bounce. The game of volleyball can be said to be a complex sport and everyone is not easy to do. Because in this sport reliable coordination of movements is needed to carry out all the series of movements contained in the game of volleyball. The basic technicalities in the game of volleyball that need to be mastered are *serve, passing, smash, and block*.

The importance of mastering basic techniques in the game of volleyball requires practice, namely the activity or activity of a person to achieve certain goals. The main function of exercise or training in sports is so that the body is able to exert energy to achieve maximum results. Without preparation and conditions. Training is a process or expressed in other words, a period of time that lasts for several years, until the sportsman or compulsory sport reaches a high standard of performance. Training is neatly structured activities, in order to get maximum results, to get a maximum result, players must do good training, players must understand the techniques in volleyball games.

Volleyball is a game sport that consists of several techniques, including movement techniques using the ball including bottom passing, top passing, *serve, passing, smash, and block*. These basic movements are described as requiring *explosive* movements or jumps up or forward, for example such as *jump serve, block/dam, smash*, even when giving a pass. The development of volleyball at this time is very important about the jumping ability of an athlete and is also very important because most volleyball sports use *explosive* movements or jumping.

One of the volleyball techniques is a *block* that is useful for stemming the opponent's attack. *Block* is a defense that determines the defense that determines changing the direction of the opponent's punch or even being able to directly get points. A *good block* will be able to change and narrow the blow, so that the opponent has no choice but to hit in a more open direction. *Block* is the main defensive fortress to fend off enemy attacks. The success of a *block* is determined by its height and hand reach on

the ball being hit by the opponent. Blocks can be accelerated and slowed down affected by the high and low of the feed given by the *setter*.

Based on research by Lestari *et al.*, (2019), the results of block jumps in students can be influenced by frequent exercises and the ability of students to perform movements to achieve maximum *block* jump results, from the results of the study it was found that vulnerable short training time will cause changes and it will be easy to return to its original state. The more often you do block jumping exercises, the longer the changes will be due to the exercise, so that the results of *student block* jumps will reach the maximum. The ability of trainers in providing varied exercises to be able to make students not saturated in exercise also needs to be done. A student's *block* jump can increase if the exercises are programmatic, planned, and done correctly.

Block jump results can be done with squat body training and vertical jump exercises. Squat jump exercise is a kind of form of exercise in which two hands are hooked behind the head, then squat to a squat position, press the toes and push the body into the air as high as possible and when descending, immediately bend the knees, drop back to the squat position and jump again. The movement of this squat jump exercise is to jump vertically as hard as possible, try to position the legs straight when floating in the air, land back to the starting position and do it repeatedly depend on the set and reps.

Vertical jump is the ability to jump up as high as a person has by utilizing the explosive power of leg muscles. The ability of *Vertical jump* possessed by someone is different from one another. This is influenced by the anatomy of the person's body. *Vertical jump* is a fitness test that is commonly done to determine the strength of a leg muscle or the explosive power of an athlete. This test is often used by professional athletes, especially to find out the progress of an athlete during training. The higher the jump, the stronger the leg muscles/explosive power of an athlete.

Based on the results of research Bakar *et al.*, (2021), that the results of *plyometric rim jump* training on *block* technique jumps have an influence. The influence is by combining power and explosive power. So, it can affect the height of a person's jump when doing blocks in a volleyball game. Systematic, planned training also affects the results of movements or jumps to volleyball players. Long-term exercise is required that is progressively increased. Doing the correct *block* technique or high jump to prevent the opponent from sending the ball to the field area requires a high jump.

The right method to produce maximum jump or *jump blocks* is also needed. Many methods are used, one of which is with *plyometric exercises*. This means that the exercise can both increase the stepping power of a volleyball player. One of the

methods that will be applied to this study is exercises to increase jumping or *jumping blocks*, so *squat body training* and *vertical jump* exercises are needed.

Based on the results of field observations on students who participated in extracurricular volleyball at SMP Negeri 38 Palembang, the player's low ability to perform *block techniques*. It can be seen that during training many cannot block the ball when they want to *block*. Students who have not mastered the correct blocking techniques and students who lack confidence when they want to *block*. Lack of balance when jumping when *blocking*. Because of the lack of high jumps when doing *block techniques*, to get high jump results, training with the right method is needed for maximum results. Basically, *in a blocking volleyball game* to block the opponent's attack.

B. Methods

This study uses experimental research. This research design uses a *pretest-posttest design*. The study provided the treatment of exercise A and exercise B without not comparing with the results of the control group. The independent variable in this study was in the form of *squat body training* and *vertical jump exercises*, while the dependent variable was in the form of *block jump results* of extracurricular students of SMP Negeri 38 Palembang. In order for the data produced in a study to be of high quality, techniques are needed in data collection. As stated by (Sugiyono, 2016) there are two main things that affect the quality of research data, namely the quality of research instruments, and the quality of data collection. Therefore, instruments that have been tested for validity and reliability may not necessarily be able to produce valid and reliable data, if the instrument is not used appropriately in data collection. Thus, it is necessary to systematically collect data in accordance with predetermined procedures.

The implementation techniques in conducting this research are 1) *Pretest*, the initial test is carried out at the first meeting to find out and also to obtain data on the results of *student block jumps* using *one group pretest and posttest design* tests; 2) *Treatment*, it is carried out in this study is to provide additional exercises in the form of *squat body training* and *vertical jump* exercises. Treatment will be given as many as 8 meetings. 3) *Final Test (Posttest)*, the final test was given at the 8th meeting and was carried out to determine the results of *the jump block* after 8 treatments. Then the final test results will be compared with the initial test results.

The variables in this study consist of two *independent manipulated variables*, namely *squat body training* and *vertical jump* exercises, while the dependent variable is the result of *block jumps*. The explanation of these variables in this study: 1) *Squat body training* is weight training to increase or develop strength, especially in the leg

muscles. The weights here are used as the basic basis of the exercise; 2) *Vertical jump* exercise is a jumping movement as high as possible upright with a focus on leg muscle strength to achieve maximum jumping; 3) Block jumps are the main defensive fortress to fend off enemy attacks.

The instrument grid in this study is in the form of an initial test (pretest) by measuring the results of the jump before being treated, then the treatment is given *treatment* in the form of *squat body training* and *vertical jump* then the final test (*posttest*) or the last measurement that has been given treatment. Treatment was given as many as 8 meetings. The data analysis technique used in this research using SPSS 26 is by using anova at a significant level of $\alpha = 0.05$.

C. Results and Discussion

Volleyball is a game sport played by two opposing groups. Each group has six players (Marques et al, 2009). Volleyball is a game that uses the ball to be bounced in the air downstream to above the net with the intention of dropping the ball in the opponent's court area in order to find victory. Volleyball is a game played by two teams separated by a net, a game using hands by bounce. While the goal of the volleyball game is to pass the ball from the top of the net so that it can fall to touch the base (floor) of the opponent's court area and to prevent the same ball from hitting the opponent. Each team can play three rebounds to return the ball outside the block. Bouncing the ball is one of the characteristics of a volleyball game that is carried out a maximum of three times, after which the ball must be immediately crossed into the opponent's territory.

The goal in a volleyball game is to hit the ball towards the enemy's field in such a way that the opponent cannot return the ball. Volleyball is a complex game that is not easy for people to do (Fadhlan et al., 2022). Because, the game of volleyball requires coordination of movements that can really be relied on to do all the movements in the game of volleyball. Volleyball games have several basic techniques that must be mastered, one of which is *block* to master the technique, it takes basic technique exercises continuously so that the results become maximum.

Volleyball is a sport played by two teams separated by a net. Volleyball is a game that is played on a rectangular court with a width of 900 cm and a court length of 1800 cm, limited by a line of 5 cm wide (Stankovic, 2017). In the center is installed a net with a width of 900 cm, which stretches strongly and climbs at a height of 244 cm for males and 224 cm for females. The number of players in a volleyball game is 6 players, three are sheer and 3 are in front. The circumference of the ball is 65-67 cm and its weight is 260-280 grams. Ball pressure should be 0.30-0.325 kg/cm².

Basic Volleyball Game Techniques

Service, serving is a blow or presentation of the ball as a first attack to the opponent's area as a sign of a game, how to serve in general can be done in 4 ways, namely: 1) lower hand service; 2) service expands; 3) topspin servicing; and 4) circular floating servicing. According to Wallace (2006), a serve is a ball shot that is done behind the end line of the court beyond the net into the opponent's area, the service shot is done at the beginning and after each mistake. Because the service stroke plays a big role in getting points, the service stroke must be convincing, directed, hard and can make it difficult for the opponent.

Passing in a volleyball game is the effort of a volleyball player by using certain techniques to pass the ball played by his teammate's head. Passing consists of: 1) *bottom passing*; and 2) *top passing*. According to Raihanati and Wahyudi (2021), *passing* is passing the ball with teammates with a certain technique and tactic for the first step as an attack on the opposing team. The basic passing technique is to pass the theme's own head ball at a certain point as a first step to arrange an attack pattern on the opponent.

Smash is by forming a hard punch attack while the volleyball is over the net, to be inserted into the opponent's area (Suhairi et al., 2020). To perform well it is necessary to pay attention to the following factors: prefix, repulsion, blow and landing. The order in the smash method is: 1) Prefix; 2) Repulsion; 3) Attitude at imposition; and 4) Final Attitude.

Smash has the characteristics of diving, sharp, and fast, by forming a hard punch attack when the ball is above the net to be inserted in the opponent's area. So that a hard hit made can kill the opponent's area because the ball is difficult to receive or difficult to return with an effort to obtain value in a volleyball game.

Block is the main defensive fortress to fend off enemy attacks. *Blocks* are done with active hand movements (Riyandi et al., 2023) (left and right when the hand *blocks* or passive hands, meaning that the player just extends his hand up without being moved. *Blocks* can be done with one, two or three players 1) *Block* by one player (individual); and 2) *Block* by two or three people.

According to Febrianto and Fahmi, (2022) *blocking* the form of movement of a person or several players who are near the net/forward with the aim of closing or stemming the arrival of the ball from the opponent's field. You do this by extending both hands up with the right height higher than the edge or lip of the net. The *blocking* technique consists of four parts of movement as follows: 1) preparing attitude, which is the attitude of standing near the net with feet as wide as bahu, both knees bent, and both

arms as high and in front of the chest; 2) moving and jumping, which is the movement of shifting feet parallel to the net. After shifting then proceed with the motion of rejecting both legs up from the front of the chest; 3) both hands are near the net and the distance is less than the diameter of the ball. The fingers of the palm are open and slightly bent. The position of the wrist adjusts to the direction in which the ball comes; and 4) Down stance, which is an attitude to neutralize energy or control movement. The downward movement of the foot that first touches the ground is the front of the sole of the foot, then the front of the chest, and the gaze is fixed to the front up.

Mastering basic techniques in volleyball is an important factor in being able to play volleyball skillfully. Basic technique is a process of physical activity and proof in practice as best as possible to complete the task completely in the volleyball game.

Understanding *Squat body training*

Squats are weight training to increase or develop strength, especially in the leg muscles. The weights here are used as the basic basis of the exercise. This squat exercise is done by overloading the body organ with a barbell or with the body itself with the intensity of the length of the exercise.

The purpose of doing *body training squat movements*

The purpose of *squat body training* is to develop/increase strength, explosive power, and endurance, especially leg muscles. The purpose of *squat body training* can strengthen the legs, calves, thighs (Cormie et al, 2007).

How to do *body training squats*

The steps to do squats are as follows: 1) position the body standing upright and position the legs open hip-width apart; 2) lower the body by pushing your back with your hands raised straight forward to maintain balance; 3) Align the lower body with the floor and chest in a state of edema but not bending; 4) Lower your body and lift your body back in a standing position as before; and 5) do these activities repeatedly.

Benefits of *Squat Body Training*

It can burn belly fat, tighten buttocks and thighs, train muscle flexibility, helps train body balance, strengthens the lower muscles, and shape the posture to be more ideal.

Vertical jump

Vertical jump is a jumping movement as high as upright with a focus on leg muscle strength to achieve maximum jumping (Young et al, 1999). The height and low of the *vertical jump* are influenced by the strength of the limbs. The ability to do *vertical jumps* in volleyball is an absolute necessity so it must be owned by everyone in playing volleyball. In order for *vertical jump* to be done optimally, massive muscle strength is needed in order to minimize the risk of injury.

The purpose of performing the Vertical jump movement

Vertical jump is done in order to focus on leg muscle strength with the aim of achieving a straight jump up to the maximum (Unick et al, 2005).

How to do the Vertical jump movement

Stand with your leg's waist apart, both hands at your sides. Jump and open your legs wider. At the same time, raise both hands above your head until you almost meet. Return to the original position. Do 2-5 sets with reps 10-20 times.

Practice is an activity to improve sports skills by using various equipment according to the goals and needs of the sport (Falaahudin et al., 2020). *Exercises* are the main tool in the process of daily exercise to improve the quality of function of organ systems of the human body. *Training* can be concluded as a process of perfecting sports skills that contains theoretical and practical material, using methods, and implementation rules with a scientific approach (Weinberg & Gould, 2023).

The results of this paper showed that there is influence of squat body training and vertical jump training on the results of smash block volleyball game extracurricular students.

D. Conclusion

There is influence of squat body training and vertical jump training on the results of smash block volleyball game extracurricular students.

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