

How to Cite:

Jariono, G., Nurhidayat, N., Nugroho, H., Nugroho, D., Amirzan, A., Budiman, I. A., Fachrezzy, F., Sudarmanto, E., & Nyatara, S. D. (2022). Strategies to improve jump service skills at volleyball student activity unit of Muhammadiyah University of Surakarta. *Linguistics and Culture Review*, 6(S3), 37-48.

<https://doi.org/10.21744/lingcure.v6nS3.1906>

Strategies to Improve Jump Service Skills at Volleyball Student Activity Unit of Muhammadiyah University of Surakarta

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Abstract--The purpose of this study is to analyze and describe strategies to improve jump service in the student activity unit of the University of Muhammadiyah Surakarta. The population and sample in this study were students who participated in the volleyball activity unit as many as 60 people, namely 30 sons and 30 daughters, purposive sampling was used in the selection of samples. This type of research presents descriptive research using a quantitative research

type approach. Data analysis techniques use descriptive statistical percentages. Descriptive analysis is the purpose of analyzing and describing the characteristics of this overall data analysis used in the SPSS program version 20.0. The conclusion of this study is a strategy to improve jump service skills in the student activity unit through physical condition training by considering the special preparatory physical condition training program, pre-competition physical condition training program, main competition physical condition training program, transition physical condition training program, and compiling an exercise program. Following the characteristics of the sport of football. However, to determine the exercise program the physical condition needs to be careful, because in this study the sample used is still very little, and the need to consider other variables in conducting further research.

Keywords---improve skills, jump service, strategies, student activity, volleyball.

Introduction

The learning process packaged in training amid the enactment of restrictions on community activities in Indonesia related to minimizing the spread of the covid 19 disease outbreak has its uniqueness, especially lecturers in teaching volleyball games at the student activity unit of the Muhammadiyah University of Surakarta. The volleyball student activity unit is one of the containers formed to facilitate the interest of sports talent in improving achievement in one of the sports fields that are constructed in the form of student activity units and containerized by the University of MuhammadiyahSurakarta.

Volleyball is one of the sports that are widely loved by all levels of society in Indonesia. This sport can be played from the level of children to adults (Hartoto, 2017; Ianda & Richi, 2020; Ramadhan, 2020; Yulifri & Sepriadi, 2018). Volleyball is a sport played by two teams on a field separated by a net. There are different versions of the number of players, the type or size of the field, the winning numbers used, for a specific purpose. But in essence, the game of football intends to spread the playing skills to everyone who wants it (Aouadi et al., 2012; Ciccarone et al., 2005; D'Elia et al., 2020; Forte et al., 2019; Forte & Altavilla, 2018; Hasanbegović et al., 2011; Magalhães et al., 2004; Marcelino et al., 2011; Paulo et al., 2018; Skazalski et al., 2018; Villalon-Gasch et al., 2020). The goal of the ball game is to miss the ball over the net to fall to touch the floor of the opponent's field and to prevent the same effort from the opponent. Each team can play three bounces to return the ball. The ball is declared in the game after the ball is hit by the serviceman over the net into the opponent's area. The game continues until the ball hits the floor, the ball "comes out" or one team fails to return the ball perfectly and one of the players on the team commits a foul or fol, such as touching the net, touching the ball 2 times in a row and so on.

Achievement of high achievement in football requires several conditions (abilities) that must be met. In obtaining high achievements an athlete not only relies on his

talent, but must have good physical, technical, tactical, and mental abilities (Fachrezzy et al., 2020; Fachrezzy et al., 2021). Nature aspects of sports achievement there are several aspects, one of which is the aspect of sports, which consists of: physical coaching, engineering, tactics, maturity of the match, coaches, training programs and evaluation" (Aidar et al., 2017; Kendzierski & DeCarlo, 1991; Malikov et al., 2020). A volleyball game is a team game that requires various basic techniques in making it. Mastering the basic techniques of playing good football will make it easier for a player to carry out a strategy and high confidence and always optimistic in every game. Achieving a victory from every opponent faced is the main goal of the game of football. So, to get a victory in a match in a football game requires technique, good physical ability and tactics, and mental. Basic techniques as intended are service, passing, smash, and block. These techniques must be mastered to support.

In the game of volleyball there are three types of services based on the position of the ball to the body including the lower service and the upper service, of the three types of services there are also several types of service variation techniques. In line with the progress and development experienced by the game volleyball one of the techniques of variation of the upper service that is enough to gain many points up to 24% with a set on the table above, namely jump service, because this type of service will produce a hard service punch and Swoop so that it can cause difficulties for the opposing team to receive service.

Jump service is a service technique performed with the prefix jumping like a smash movement but performed outside the backline of the field (Alminni et al., 2019; Alishah et al., 2017; Charlton et al., 2017; D'isanto et al., 2018; D'Isanto et al., 2017; Loureiro et al., 2017). In performing jump service, the prefix position can vary depending on the player, can use the prefix or without a prefix, if going to do jump service without prefixes the factors that play a role are vertical jump and proper coordination meanwhile if using the prefix jump service is done about three to two Step behind the backline of service, this prefix is very useful to get a good starting position to make a jump to get a high jump, with the right time or time is useful to hit the ball hard and with the right time. This blow will produce a topspin punch as well as inside spin, a server (person who performs the service) that has good anthropometric components and good biomotor capabilities is very important in the mastery of jump service techniques. The assessment of the rally point of the ball game will be faster in completing one game but will be longer if the game is balanced. This means, the basic technique training of jump service in the game of volleyball which is done systematically, continuously, and programmatically if not supported by factors that support it will not be obtained basic jump service technical skills to the maximum.

On the other hand, mastery of basic jump service techniques in the game of volleyball can not be separated from the support of good biomotor abilities. Biomotor ability is in principle an ability carried from birth by every human being. Biomotor capabilities in which consist of several kinds of physical conditions are very important to support basic jump service-engineering skills. Based on the phenomenon in the form of facts, researchers conducted a scientific study related to the strategy of improving jump service in the student activity unit of the muhammadiyah university of Surakarta through physical condition training by

considering the special preparatory physical condition training program, pre-competition physical condition training program, main competition physical condition training program, exercise program physical condition transition period, and arrange an exercise program according to the characteristics of the sport of football (Sozen, 2012; Coutinho et al., 2016).

Method

Descriptive methods use quantitative research-type approaches. The population and samples in this study were students who were members of the student activity unit of 60 people, namely 30 sons and 30 daughters, purposive sampling was used in the selection of samples. This type of research exegetes descriptive research. Data collection techniques using, data reduction, data verification, inference withdrawal. Furthermore, to find out the significant influence related to the strategy of increasing jump service in the student activity unit of the Muhammadiyah University of Surakarta, namely through power tests, strength, and jump service skills tests. The power test consists of a power test using a vertical jump test with a digital vertical jump tool with the best score rating of two trials recorded in scores in centimeter units), with a height of 0.5cm accuracy, arm muscle power using the arm muscle power test using a two-hand medicine ball put test with The ability to exert strength and speed together on the arm, abdominal muscle strength test using a sit-up test for 1 minute, and test jump service skills to hit the service ball with the prefix, bounce the ball forward up, step forward to jump, when aired hit the service ball hard and fast, the ball must pass over the net towards the opponent's target area with the best possible hit at the target point that has been Determined (Pereira et al., 2015; Sabin & Alexandru, 2015).

The jump service volleyball test is measured with the ball service test measured accuracy and speed of the blow with the ratio data scale. The implementation of jump service skills, namely (i) Testi is in the service area and performs service by the rules of legitimate service in the game; (ii) The form of service blow is free; (iii) The opportunity to perform service is 6times; (iv) To the question it is explained that the lower the ball goes beyond the net, then the coefficient multiplied by the target is the greater; and (v) The ball that hits the net or falls outside the boundary of the field is declared a failure and is calculated to have hit, as well as if the ball is hit or serviced in an unauthorized manner.

The assessment of the service skill is (i) the value of each service is determined by the height of the ball when it exceeds the net and the target number at which the ball falls; (ii) the ball that exceeds the net between the upper limit of the net and the rope is 0.5 m above it, then the value is the target number multiplied by 3; (iii) the ball passing between the two stretched ropes, then the value of the target number multiplied by 2; (iv) the ball passing through the net is higher than the highest high rope, then the value is equal to the target number (target number multiplied by 1); (v) the ball touching the boundary rope above the net is declared to have exceeded space and the number of hooks is a larger multiplier; (vi) the ball touching the target boundary line is calculated to have hit the target and calculated its larger target number; (vii) the ball serviced in an unauthorized manner or the ball touches the net and/or falls off the field, then the value is

equal to zero;and(viii) the sum of the six times the best multiplication result is recorded as the final test score (Zhou et al., 2020; Parisi et al., 2011).

Data analysis techniques use descriptive statistical percentages. Descriptive analysis aims to analyze and describe the average value, maximum value, minimum value, range of values, standard deviation, and total amount. Overall the data analysis was used in the SPSS program version 20.0.

Discussion

Based on the results of the descriptive analysis found several things, namely identification related to (i) observation results, (ii) strategies to improve jump service skills; (iii) the results know the significant influence related to the strategy of improving jump service in the student activity unit of Muhammadiyah University of Surakarta, namely through power tests, strength, and jump service skills tests. The power test consists of a power leg test using a vertical jump test, arm muscle strength using a 1-minute push-up test, an abdominal muscle strength test using a 1-minute sit-up test, and a jump service skill test to hit a service ball.

Observation results

Based on the results of direct observations in the learning process that is packaged in exercises from 15 to 30 October 2021, as a basis for conducting research. Observations were made to determine the extent of the strategy to improve jump service skills in terms of power, strength, and jump service skills. Observations are made to find out the extent of strategies to improve jump service skills in terms of power, and strength, and jump service skills. The results of this research observation obtained several problems, namely: (i) students in doing jump service is still not good this is evidenced by the placement of boas that are accurate, power, and strength is not good; (ii) the companion, in this case, the coach has not understood related to physical condition training by considering the special preparatory physical condition training program, pre-competition physical condition training program, main competition physical condition training programs, transition physical condition training program, and compiling an exercise program according to the characteristics of the sport of football. ; (iii) students who are members of the student activity unit still ignore related physical condition training, especially in power and strength (Kruse et al., 2015; Batsunov, 2021; Widana et al., 2020).

Strategies to improve jump service skills

Based on the results of descriptive analysis of frequencies related to strategies to improve jump service skills by considering special preparatory physical condition training programs, pre-competition physical condition training programs, major competition physical condition training programs, transition physical condition training programs, and compiling exercise programs. following the characteristics of the sport of football, with a very useful, useful, limited statement of benefits can be seen in the following table:

Table 1
Strategies improve jump service skills

No.	Category	Number of samples	Percentage (%)
1	Very useful	48	80.00%
2	Useful	11	18.33%
3	Limited Useful	1	1.67%
Sum		60	100%

Table 1 above that there is a strong tendency where strategies improve jump service skills by considering special preparatory physical condition training programs, pre-competition physical condition training programs, major competition physical condition training programs, transition physical condition training programs, and drafting exercise programs. following the characteristics of the sport of football. Table 1 illustrates that 1.67% of respondents are limited in benefits with the existence of an exercise program that was prepared earlier in improving service jump skills. This is a uniqueness of the results of this study because 1.67% of respondents related to the exercise program that was compiled earlier in improving service jump skills. But in this study more than half stated it was very useful with an exercise program that was structured to improve upper service skills or by 80%. With this research, activity has a positive impact by understanding strategies to improve jump service skills in the student activity unit of the Muhammadiyah University of Surakarta to be applied in the training process by understanding training procedures to improve the quality of qualified physical conditions (Sheppard et al., 2011; Sattler et al., 2015).

Power, strength, and jump service skills test results

Descriptive analysis of power frequency consisting of leg muscle power and arm muscle power, abdominal muscle strength, and jump service skills can be seen in the following table.

Table 2
Power, strength, and jump service skills test results

Variable	Gender	Mean	Max	Min	Range	SD
Leg muscles	Male	71.37	83	58	25	5.82
	Female	50.63	65	25	40	8.83
Arm muscles	Male	49.63	57	38	19	5.10
	Female	16.97	23	12	11	3.07
Strength of the abdominal muscles	Male	4.10	5	3.5	1.32	0.43
	Female	2.32	3.5	1.15	2.35	0.54
Jump Service volleyball	Male	28.87	43	23	20	4.26
	Female	16.60	25	10	15	4.14

Based on the table above it can be concluded that there are differences in power, strength, and tests of the skills of the men and daughters jump service in the game of football. In providing exercise weights the need to consider the characteristics of the sex. It is undeniable that males and females have many differences both physically and physiologically. Differences physically and

physiologically will affect the appearance of his movement. "The four main reasons why there are differences in the appearance of motion of male and female: (1) body shape, (2) anatomical structure, (3) physiological function, and (4) cultural factors".

The big difference in the ability to throw at boys with girls occurs from differences in body shape. The tendency of boys to be longer and larger forearms gives an advantage to the strength of the arm and its mechanics. In terms of precision throwing, where strength is not so needed, the difference is not so apparent, but the boys are still better. Differences in the appearance of motion between males and females are due to differences in body shape, anatomical structure, physiological function, and cultural factors. The difference is especially noticeable since the start of puberty. After puberty, boys have a slightly larger body size (including physical abilities) when compared to girls. The growth hormones between men and women are also different. In men, there is an increase in muscle tissue, while in women tends to lead to muscle reduction and fat tissue addition. With these conditions, the average boy has better movement skills than girls ([Absatova et al., 2021](#); [Jancowicz-Pitel, 2019](#)).

Furthermore, the physical elements underlying a child's movement skills consist of: "(a) strength, (b) power, (c) agility, (d) coordination, (e) balance and (f) speed". Components of physical condition are elements that support the appearance of a person's ability to move. The physical ability that a person possesses is manifested in the appearance of his movements. A person whose physical condition is weak tends to have weak movement skills as well. Physical condition is an important factor that will affect the ability of athletes' perform in every sport, one of which is the sport of football. Volleyball is a sport that requires its players to maximize their abilities. For that volleyball is expected to have good physical, technical, tactical, and psychic qualities. Physical quality among others is determined by muscle fitness and energy fitness. The ability of physical condition is strength, speed, flexibility, endurance, power, balance, reaction, agility, perception, and coordination. While energy fitness includes aerobic and anaerobic energy systems, psychic qualities among others influenced by factors of motivation, concentration, anxiety, and tension. So this makes it clear that physical condition plays a role in the sport of football, especially to be able to master the technique in volleyball.

Related to the physical condition in this study which is predicted to have the dominant factor determining the ability of jump service volleyball, namely: power leg muscles, abdominal muscle strength, arm, and shoulder muscle power. The role of limb muscle power, eye-hand coordination, abdominal muscle strength, flexion, arm, and shoulder muscle power with jump service ball capabilities. Power is the ability of the athlete's muscles to overcome load resistance with maximum strength and speed in one whole motion." Explosive power or power is the magnitude of the force deployed at speed." Based on its energy system, volleyball is a fast-moving sport that when carrying out a punch attack that is dominated by an element of a physical condition called power.

Strength is one of the elements that must be possessed by an athlete, 10 because every performance in sports always requires strength" ([Aagaard & Andersen,](#)

2010; Bakhtiar & Ballard, 2015; Yu et al., 2013). The strength of the abdominal muscles is the ability of the abdominal muscles to perform movement activities or support movement. With the strength of the abdominal muscles are expected to be able to perform motion activities that rest on the stomach or support other elements of movement.

Strength is a major factor to create optimal achievement, with the strength of a runner can run faster because he has strength. Similarly, a footballer can perform ball movements well because of the contribution of strength. Strength is the ability of a muscle to contract to generate tension in a prisoner. Looking at the presence of abdominal muscles that are stretched between the pelvic bracelet and chest cavity, if carefully examined the muscles have a very important role in the implementation of upper limb movements such as togok. This is logically understandable because the upper limbs in performing movements, especially in the implementation of jumping require the disarming supported by the joints in the pelvis. Thus because pelvic movement requires support and performance of the abdominal muscles, it is possible that having good abdominal muscles will allow a strong swing of motion on the togok. In the ball, especially when doing jump service punches the element of strength is very important to get a strong and correct resenter result.

A jump service is a service with a prefix and how to hit almost the same as the top service, but done by jumping or floating. The first blow done by jumping is a blow that is relatively difficult to master even though many players try to do it. Service jumping is done with the ball held with one or two hands. Once the ball is surpassed followed by jumping and trying the ball is above the front of the head. If the ball has been in front of the head then immediately the right hand is hit on the ball as soon as possible.

Explosive power or power is the result of the multiplication between power and speed (Nugroho et al., 2021; Santosa, 2015). The implementation of jump service requires strong limb muscle power in encouraging the bottom to produce a maximum high jump to reach and hit the ball. At the time of air, a player must also pay attention to the steps of foot movements when starting from the beginning, when pouring and jumping, and when landing at the final stance. In addition, it must also be supported by the existence of techniques mastered by the perpetrator following the movement of biomechanics to produce services as expected.

In sports activities, force or explosive power is used to exert a set of energies. The strength of the abdominal muscles is also the same function in overcoming the burden even against the burden that occurs in the stomach. At the time of jump service, the footballer must have the power. The results of jump service volleyball are greatly influenced by the strength of the abdominal muscles, in addition to the strength of the arm muscle strength of the abdominal muscles is another supporting factor in the occurrence of jump service volleyball. Good power will not be enough if it is not balanced by good abdominal muscle strength. The strength of the abdominal muscles helps the arm as quickly as possible to narrow the blow so that the faster the ball is in the desired direction followed by the bent movement of the togok. In this case, the swing movement of the arm and togok is

a harmonious and explosive unity of motion (Hidalgo et al., 2019; Singh & Parmar, 2015).

Conclusion

Based on the results of this study it can be concluded that the strategy of improving jump service skills by considering the special preparatory physical condition exercise program, pre-competition physical condition training program, major competition physical condition training programs, transition physical condition training program, and compiling an exercise program following the characteristics of the sport of football. This work also contributes to expanding the latest knowledge about strategies to improve jump service skills through the role of coaches and infrastructure facilities. Given that this study involved only a small sample, caution needs to be exercised in providing more effective and efficient training loads to students who have an interest in soccer talent. However, further research is needed to train students by considering infrastructure facilities, body mass index, injury characteristics, anthropometric factors as well as dominant physical conditions, and those related to strategies to improve jump service skills in the game of volleyball.

Acknowledgments

Thank you to Muhammadiyah University Surakarta for fully supporting this research through individual research funds lecturers in 2021. Thank you to the individual research team lecturers of the student activity unit of the University of Muhammadiyah Surakarta for facilitating and assisting researchers in the collection of research data until completion.

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