



Relationship of Coordination for Handling and Force of Shoulder Muscles in Power of Volleyball Teams in MAN 1 Indragiri Hilir Students

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Abstract. Aim of this reseasih was to determine the effect of eye coordination and shoulder arm strength on the passing capacity of the Man 1 Indragiri Hilir volleyball team. This is correlational research by comparing the results of measurements of two different variables to determine the level of correlation between these variables. The population in this reseasih was 6 students of class X, 6 students of class XI and 4 students of class XII. The data collection technique in this reseasih uses total sampling because it calculates a sample that is not too large, uses this correlation test and then tests the data using the normality test, product test of moment, correlation, variable normality test $X_1 L_0$ maks (0.1194) < Ltable (0.213), normality test for variables $X_1 L_0$ maks (0.1556) < Label (0.213) and variable normality test $Y L_0$ max (0.1414) < Label (0.213). In other words, normal data and research conclusions discuss where there is a correlation. The results of the correlation analysis state that there is a significant joint correlation between eye and hand coordination and arm and shoulder muscle power compared to the passivity of the voiball team in Indragiri Hilir Male 1 Students with $r = (1,126) > rtable = (0,514)$.

Keywords: Hand eye · strength of the shoulder arm. Muscle · top party · volleyball

1 Introduction

Exercise is part of human daily activities that are useful for forming a healthy body and spiritual. To date exercise has made a positive and tangible contribution to the improvement of public health. In addition, sports also play a role in improving the nation's ability to implement a sustainable development system.

Through physical education and health, it is expected that students' health will be maintained. A student who has a good level of physical health will easily do learning activities smoothly. Thus the motivation to follow the lesson will increase because of

a good physique. So that sports achievements can be improved and find the seeds of sportsmen from the junior level. In The Constitution No. 3 of 2005 Article 21 paragraph 4 states that “the development and development of sports is carried out through family channels, educational paths, and community paths based on the development of sports for all people that lasts for life”.

In the above law that grouping in the implementation in the field can be carried out in the scope of the family which is only done by family members, then in the level of education where sports are directed at levels of achievement. Furthermore, in the scope of society this is usually done because of the same hobbies, trends or provisions from an agency. Exercise is a medium to encourage motor development, physical sustainability, knowledge and imagination, values (attitude-mental-emotional-spiritual-social), and habituation of a healthy lifestyle that boils down to stimulate balanced growth and development. One sport that is often done in the scope of education is the sport of volleyball.

Volleyball is one of the sports of the game that is included in the main subject matter of physical education. Many of the benefits obtained by playing volleyball include being able to form a good body attitude including anatomical, physiological, health and physical abilities. The benefits for the spiritual are psychiatric, personality and character will grow in a direction that is in accordance with the guidance of the community. One of the sports that are quite popular and his achievements to the world level is volleyball. Volleyball is a group sport consisting of two teams of six people each competing to score points by turning off the opponent's spaciousness ball. Volleyball is very good to watch because it can be played in a closed or open sports room. In addition, volleyball is easy to learn because the shape of the ball is not too big.

The game of volleyball always has the character of the match and therefore every player is required to try their best. The elements of the game are professionally easy to learn, because in a short time can already be obtained results. In addition, the game of volleyball offers for the whole family an active recreation (recovery), because the game does not depend on age and gender, then the danger of injury caused very little, because there is no direct physical contact with the opponent. The field of play can be built quickly and does not depend on the comparison of the floor, whether on the green grass, sanded or behind the house. The game of volleyball is not a simple game is enough to get excitement in that sport.

Originally only as a “fad” sport, but now the game of volleyball has developed into one of the most popular types of sports in the world. How not, currently volleyball has been recorded as the second most popular sport in the world, with players reaching more than 140 million people. Until now, the sport's parent organization, the *International Volley Ball Federation (IVBF)*, consists of more than 180 countries.

Two years later, in 1895, William G. Morgan, a physical education teacher at the *Young Man Christian Association (YMCA)* in the southern state of Holyoko, *massachusetts*, tried such a game. This game was originally only intended for some recreational sports in a closed field (*indo*) for those who want recreation after working a full day. At that time, the most popular sport was basketball, which was invented in 1891. Morgan saw, many entrepreneurs who play basketball have reached old age, while basketball is a draining sport. In addition, they want sports that are less draining. That's

what prompted Morgan's introduction to the sport of volleyball. In the game of volleyball basic techniques are very important to understand so that the implementation becomes maximum. One of the basic techniques of volleyball is the basic technique of passing.

In the sport of volleyball there are several techniques that need to be applied and understood. Dieter Beutelstahl (2011: 8) says that engineering is a procedure that has been developed based on practice, and aims to find the solution of a particular movement problem in the most economical and useful way. The technique itself has the meaning that is a process of giving birth to physical activeness and proving a practice as well as possible to complete a definite task in sports (especially the game of volleyball). Technique is said to be good when in terms of anatomical or physiological mechanics and mentally fulfilled properly the requirements.

According to Dieter Beutelstahl (2011: 8) the technique is 1. *Service*, 2. *Dig* (Ball reception), 3. *Attack* (Smash), 4. *Volley* (Bouncing ball/pass), 5. *Block*. One of the techniques in the sport of volleyball that is very instrumental is passing up. To be a good volleyball player requires complex leadership, one of which is top *passing*. *Passing* top is one of the most commonly used basic techniques in playing volleyball. *The* upper pass is used to receive serve higher than the shoulder, passing and passing. To do a good upper passing requires the use of techniques and taking steps and positions that are good and fast.

In order to be able to master the basic technique skills of *passing* over a good player must have an element of good physical condition component as well. Exercise is a way of increasing physical factors. According to Hendri Irawadi (2014: 1) physical condition is a combination of the word condition and physical. In the Great Dictionary of Indonesian (KBBI) the word condition is interpreted as a state, while physical means physical or body. If interpreted letterlate physical condition will mean the state of the body. But the term physical condition is usually associated with health or fitness. M. Sajoto (1995: 8) Physical condition is a whole unit of components that cannot be separated from, both improvement and maintenance. Components of physical condition include Strength, Endurance, Muscle power, Speed, Flexibleness, Agility, Coordination, Balance, Accuracy, Reaction (M. Sajoto 1995: 9).

This factor is directly related to the needs of the basic technique specifically, the *mastery* of passing over is determined by the factor of physical condition. If a person is said to have good body fitness if they have these components reaching the sizes that have been set. Some components of fitness are often encountered and needed in the game of volleyball, including: *agility* (*agility*), balance (*balance*), strength (*strength*), coordination (coordination), endurance-muscle-cardiovasvascular (*endurance*), flexibility (*flexibility*), and speed-motion-reaction (*speed*). Muhammad Muhyi Farug (2009:22).

Based on observations that researchers made on the volleyball team in MAN 1 Indragiri Hilir students, there are still many players who have not been able to master *passing* skills over volleyball well. When passing or receiving the ball from the opponent often the player *passing* on it is not directed and makes not make an attack because the ball is difficult to reach is this opponent easily attacked and earned points. This is seen when the team is doing drills and matches. This is suspected to be the cause factor is the physical condition of the athlete.

2 Materials and Methods

This type of research is a correlation study by looking at the relationship of eye coordination and shoulder arm muscle power with volleyball upper passing skills in Man 1 Indragiri Hilir students, while the free variable is hand eye coordination and shoulder arm muscle power, the bound variable is the upper passing skill, according to this type of research then correlation research is correlation research (correlation research) which is correlation research to find how big the relationship is and if there is one. The population in this study was the volleyball team in Man 1 Indragiri Hilir students as many as 16 people. Considering the small number of samples, which is less than 30 people, in this study researchers used total sampling, namely the entire volleyball team in Man 1 Indragiri Hilir students. The research instrument used in this study is to measure hand eye coordination using gauze ball capture throwing (ismaryati 2008: 54), to measure the strength of the shoulder arm muscles using *two hand medicine ball put* (ismaryati, 2005: 65) and to measure upper passing skills by using the upper passing wall for 60 s. (Nurhsan 2001:168–170).

3 Result

The data obtained as a result of the study is qualitative data through a series of tests and measurements of 16 samples that are the men's volleyball team of reteh subdistrict. The variables in this study are the flexibility of the back muscles symbolized by X_1 and the coordination of the eyes of the hands is symbolized by X_2 , and the accuracy of the smash is symbolized by Y as the bound variable.

Eye and Hand Coordination

Eye and hand coordination measurements were carried out with a tennis ball capture throw test on 16 sample people, obtained the highest score of 18, the lowest score of 12, the average (*mean*) 1, the standard deviation 2.09 and the variance of 4.37, For more details see in the frequency distribution shown in Table 1.

Based on the frequency distribution Table 1 from 16 samples, 3 people (18.75%) had eye and hand coordination results with a range of 12–13.20 with a medium category, then

Table 1. Variable Frequency Distribution of Eye and Hand Coordination(X_1)

No	Interval class	Absolute frequency (Fa)	Cumulative frequency (Fk)	Relative frequency (Fr)
1	12–13,20	3	$3/16 \times 100$	18,75%
2	13,21–14,41	2	$5/16 \times 100$	12,5%
3	14,42–15,62	3	$8/16 \times 100$	18,75%
4	15,63–16,83	3	$11/16 \times 100$	18,75%
5	16,84–18,04	5	$16/16 \times 100$	31,25%
Sum		16		100%

Table 2. Variable Frequency Distribution of Arm and Shoulder Muscle Strength (X2)

No	Interval class	Frequency absolute (Fa)	Frequency cumulative (Fk)	Frequency relative (Fr)
1	2,74–3,28	2	$2/16 \times 100$	12,5%
2	3,29–3,83	5	$7/16 \times 100$	31,25%
3	3,84–4,38	6	$13/16 \times 100$	37,5%
4	4,39–4,93	2	$15/16 \times 100$	12,5%
5	4,94–5,48	1	$16/16 \times 100$	6,25%
Jumlah		16		100%

two people (12.5%) had eye and hand coordination results with a range of 13.21–14.41 with a medium category, then 3 people (18.75%) had eye and hand coordination results with a range of 14.42–15.62 with good categories, then 3 people (18.75%) had eye and hand coordination results with a range of 14.42–15.62 with good categories, then 3 people (18.75%) had eye and hand coordination results with a range of 14.42–15.62 with good categories, then 3 people (18.75%) had eye and hand coordination results with a range of values of 13.21–14.41 with a medium category, then 3 people (18.75%) had eye and hand coordination results with a range of 13.21–14.41 with a medium category, then 3 people (18.75%) had eye and hand coordination results with a range of 13.21–14.41 with a medium category, then 3 people (18.75%) had eye and hand coordination results with a range of 13.21–14.41 with a medium category, then 3 people (18.75%) had eye and hand coordination results with a range of 13.21–14.41 with a medium category, then 3 people (18.75%) had eye and hand coordination results with a range of 13.21–14.41 with a medium category, then 3 people (18.75%) had eye and hand coordination results hands with a value of 15.63–16.83 with a good category, and 5 people (31.25%) have the result of coordinating eyes and hands with a value of 16.84–18.04 with a good category.

Arm and Shoulder Muscle Power

The measurement of arm and shoulder muscle power was carried out by throwing a ball catch on 16 sample people, obtained a high score of 5.44, a lowest score of 2.74, an average (*mean*) of 3.91, a standard deviation of 0.62 and a variance of 0.39, For more details see in the frequency distribution shown in Table 2.

Based on the frequency distribution Table 2 from 16 samples, 2 people (12.5%) had arm and shoulder muscle power with a range of 2.74–3.28 with the category, then 5 people (31.25%) had arm and shoulder muscle power with a range of 3.29–3.83 with less category, while 2 people (12.5%) have arm and shoulder muscle power with a range of values of 4.39–4.93 with category and 1 person (6.25%) have arm and shoulder muscle power with a range of values of 4.94–5.48 with less category.

Upper Passing Ability

Measurement of the upper passing ability is done by bouncing the ball to the wall into the target box, against 16 people sampled, obtained the highest score of 50, the lowest score of 28, the average (*mean*) 35.87, the standard deviation 8.52 and the variance of 72.63, For more details can be seen in the frequency distribution shown in Table 3.

Table 3. Variable Frequency Distribution Upper *Passing* Ability (Y)

No	Interval class	Frequency absolute (Fa)	Frequency cumulative (Fk)	Frequency relative (Fr)
1	28–33	5	$5/16 \times 100$	31,25%
2	34–39	4	$9/16 \times 100$	25%
3	40–45	2	$11/16 \times 100$	12,5%
4	46–51	5	$16/16 \times 100$	31,25%
5	52–57	0	$16/16 \times 100$	0%
Jumlah		16		100%

Based on the frequency distribution Table 3 from 16 samples, 5 people (31.25%) have the results of the upper ability to *pass* with a range of 28.-33 with less categories, while 4 people (25%) have the results of upper passing ability with a range of 34–39 categories enough, then 2 people (12.5%) have the results of upper *passing* ability with a range of values of 40–45 with a good category, then 5 people (31.25%) have ability results. Top *passing* with a value range of 46.51 is good category, and 0 people (%) have the result of upper *passing* ability with a range of values of 52–57.

Relationship of Eye and Hand Coordination with Upper *Passing* Ability

Coordination is the cooperation of the central inner media system as a system that has been harmonized by the process of stimulation and obstacles and skeletal muscles at the time of a directional movement. So to know the ability to coordinate the eyes and hands by throwing a tennis ball.

Upper passing is where both fingers of the hand are wide open and both hands form a bowl almost facing each other and position the two fingers of the hand above the face, contractions in the elbows are up and down to produce an upward push so that the ball is perpendicular to the top.

Calculation of the correlation between eye and hand coordination (X_1) with upper *passing* ability (Y) using *the product moment* correlation formula. The test criteria if $r_{hydrate} > r_{tabel}$, then there is no significant relationship and vice versa (Sudjana 2002: 369). From the results of the calculation of the correlation between the coordination of the eyes and hands with the upper *passing* ability obtained $r_{hi\ calculated}$ 0.067 while r_{tabel} at a significant level $\alpha = 0.05$ is 0.514. This means that in this case there is no relationship between the coordination of the eyes and hands with the ability to *pass* over. Thus the desired hope of researchers that the better the coordination of the eyes and hands that the athlete has, nor the results of passing on the top obtained have not been achieved. This means that if someone who has good eye and hand coordination, then it is not necessarily able to produce good upper *passing*.

From the explanation above it is clear that the coordination of the eyes and hands does not affect the ability of passing over in the game of volleyball. This can be seen from the results of the analysis calculations that state that there is no significant relationship between eye and hand coordination to the upper *passing* ability determined from the

results of the analysis, meaning that there is still more influential to get good *smash* results than eye and hand coordination.

Relationship of Arm and Shoulder Muscle Power with Upper Passing Ability

An athlete can be said to have good arm and shoulder muscle power if the athlete is able to do movements easily, smoothly in performing his series of movements, and the rhythm of well-controlled movements. If the *movement of the power* of the muscles of the hands and shoulders well will not easily pass over well and correctly. One of the important factors in practicing exercise skill movements is the *strength of* the arm and shoulder muscles that are indispensable at the time of *passing*, where the *power of* the arm and shoulder muscles provides a boost when the athlete is passing over. Calculation of the correlation between arm and shoulder muscle power (X_2) with *passing* top (Y) uses the *product moment* correlation formula. Test criteria if $r_{\text{numeracy}} > .$

H_0 's r_{tabel} was rejected and H_a was accepted, then there was a significant relationship and vice versa (Sudjana 2002: 369). From the results of the calculation of the correlation between the *strength of* the arm and shoulder muscles with the accuracy of the upper service obtained $r_{\text{hi calculated}} 1,126$ while the r_{tabel} at a significant level of $\alpha = 0.05$ which is 0.514. This means that in this case there is a relationship between *the strength of* the arm and shoulder muscles with the ability to overcome the upper ability.

From the explanation above it is clear that *the power of* the arm and shoulder muscles affects the ability to *pass* over a person. It is the same as eye and hand coordination with arm and shoulder muscle power, both have a significant relationship to gain good upper passing ability. From the allegations of researchers who stated that to get good upper passing required *eye and hand coordination* and good arm and shoulder muscle power as well.

Relationship Between Eye and Hand Coordination and Arm and Arm and Shoulder Muscle Power with Upper Passing Ability Results

To find out the relationship of two or more variables is used double correlation formula. From the results of the calculation obtained the double correlation coefficient (test R) obtained $R_{\text{count}} = 1,480$ while R_{tabel} obtained by 0.514, so $R_{\text{hicalculation}} > R_{\text{tabel}}$, meaning that there is a joint relationship between eye and hand coordination (XI) and arm and shoulder muscle power (X_2) with upper *passing* ability (Y).

Based on the description above it is clear that both factors can affect the results of *passing* ability for a person in the game of volleyball. The hope of researchers who want good *eye and hand coordination* and *the power of* one's arm and shoulder muscles then the better someone to direct the ball precisely to teammates to make it easier for friends to attack opponents such as making a *smash*.

The fact of the results obtained that states there is a relationship of eye and hand coordination and *the power of* the arm and shoulder muscles with the ability to *pass* over. It turns out that the hypothesis made by the researcher missed that there is a relationship between the three variables.

However, from the results obtained by the researchers, it actually has many weaknesses that cause a lack of maximum in this study despite the relationship of the three variables studied by the researcher. The most obvious drawback is that researchers cannot

fully control the athletes at the time of the test. This may be because between researchers and samples studied by teammates, so athletes are less serious in conducting tests.

4 Conclusion

Based on observations that researchers made on the volleyball team in MAN 1 Indragiri Hilir students, there are still many players who have not been able to master *passing* skills over volleyball well. At the time of passing or receiving the ball from the opponent often the player *passing* on it is not directed and make no attack because the ball is difficult to reach is this opponent easily attack and get points. This is seen when the team is doing drills and matches. This is suspected to be the cause factor is the physical condition of the athlete.

The population in this study is the entire volleyball team in MAN 1 Indragiri Hilir students who became the MAN 1 Indragiri Hilir volleyball team which numbered 16. The sample in this study was 16 people using total sampling techniques. The instruments in the study were tennis ball catch throwing, *two hand medicine ball put* test and top *passing*. Data obtained in the analysis using product correlation moment.

Based on the results of research that the author has outlined in the previous chapter, it can be concluded as follows.

1. From the results obtained eye and hand coordination has no relationship with the ability *to pass* over the volleyball team in MAN 1 Indragiri Hilir students.
2. From the results obtained by the *strength of* the arm and shoulder muscles, it is related to the upper *passing* ability on the volleyball team in MAN 1 Indragiri Hilir students.
3. There is a joint relationship between the coordination of the eyes and hands and *the strength* of the arms and shoulder muscles to the upper ability of the volleyball team in MAN 1 Indragiri Hilir students.

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