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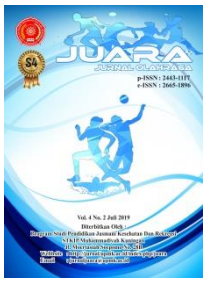

THE RELATIONSHIP OF INTELLECTUAL INTELLIGENCE, HAND EYE COORDINATION AND CONFIDENCE IN OVERHEAD PASSING SKILLS

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Abstract

Volleyball games are included in team games, therefore a mastery of technique, mental/psychological factors, and individual intelligence is needed to produce good cooperation between team members, so as to produce their best performance. This research is based on a problem that researchers found in the field, namely the lack of mastery of basic overhead passing techniques. It can be seen that the resulting ball is not on target and is easily read by the opponent. Thus, this study aims to determine the relationship between intellectual intelligence, eye-hand coordination, and confidence in overhead *passing* skills. This type of research uses a quantitative approach with a correlational method. The population of this study is female athletes of volleyball clubs in North Sumedang sub-district. Sampling technique using *purposive sampling* so that samples that meet the criteria are 20 samples. Based on data processing using statistical tests assisted by *IBM SPSS* type *20* for windows *software*, it shows that: (1) There is no relationship between intellectual intelligence and overhead passing skills, (2) There is a relationship between eye-hand coordination and overhead passing skills, (3) There is a relationship between confidence in skills overhead passing, and (4) There is a simultaneous or shared relationship between intellectual intelligence, eye-hand coordination, and confidence in overhead passing skills with a correlation coefficient (R) of 0.625 and a coefficient of determination (R2) of 39%.

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INTRODUCTION

Big ball sports that are widely known and liked by the general public, one of which is the game of volleyball. Because not only the game is simple, but the equipment needed to play this game is also fairly simple. In addition to training physical health, volleyball is also used as a means of sports and entertainment (Tomasoa, 2024).

The game of volleyball has a goal where each team tries to create points by making a perfect attack so that the ball falls on the opponent's court and kills the game (Nurfalah et al., 2019). The development of volleyball in Indonesia is fairly rapid, as evidenced by the establishment of volleyball clubs in urban to rural areas, as well as competitions that are participated in at the regional, national and international levels (Hidayat &; Iskandar, 2019).

Volleyball is included in team games, therefore a mastery of technique, mental/ psychological factors, and individual intelligence is needed to produce good cooperation between team members, so as to produce their best performance. In line with opinion Nurfalah et al. (2019) In addition to good cooperation and quick response and decision making between team members, high game technique, perfect physical condition and mental competition are also needed in volleyball games in order to be able to carry out defense and an attack that is effective and efficient, so as to be able to achieve its best performance. Some elements of physical conditions affect such as strength, flexibility, speed, balance and coordination.

Mastery of basic volleyball techniques is at least mastered by every player in the game of volleyball. These basic techniques include service, smash, passing, and blocking (Heriyadi & Hadiana, 2018). Of the four techniques, the most fundamental technique to master is the basic passing technique, because this technique has the aim of regulating the course of the game and is used when defending from the opponent's attack. The basic passing technique is divided into two, namely bottom passing and overhead passing.

Overhead passing is the initial stage for making an attack. Mature passes through top passes made by the passer or setter determine the success of the attack made by the spiker to get points (Satria, 2019). Therefore, what factors support and influence the good and bad of overhead passing are necessary. Some of the determining factors in performing the required passing technique include requiring good coordination, fast movements, good timing, and several other elements of physical condition that can support and determine a successful overhead passing (Manurizal & Janiarli, 2020). In line with opinion Tomasoa (2024) mentioning that perfect mastery of basic techniques is the basis for developing the achievements of the game itself. Mastery of basic ball techniques Volleyball is one of the elements that help determine the victory or defeat of a team in a match, in addition to elements of physical condition, tactics and mentality .

Based on the results of direct observations and observations in the training process in several clubs in North Sumedang and South Sumedang sub-districts, as well as matches participated in by some of these clubs, overhead passing female athletes which is one of the most important basic techniques in volleyball is poorly mastered. Especially in athletes who are positioned as feeders or setters, where a setter is a regulator of attack patterns. It can be seen that when they pass over, the resulting ball is not on target, often the ball is too high, short, back or front. So, other players find it difficult to attack the opponent. In addition, players often make mistakes in making decisions when structuring attacks. The ball is not passed to players who have no blockers or who have weak blockers. So that variations tend to be

monotonous and can be read by opponents, attacks are not optimal. Mastery of basic techniques, good physical condition, intelligence in setting strategies and attack patterns, become one of the determining factors in the success of the team. A team can succeed, when players have intelligence (intellectual and emotional), good physical condition, confidence, and good mastery of technique.

Previous research conducted by Sulistiadinata & Purbangkara (2020) showed that arm muscle strength, eye-hand coordination, and self-confidence have a significant relationship with volleyball smash skills. Research conducted by Achmad (2016) shows that limb power, eye-hand coordination, and self-confidence have a significant relationship with the results of volleyball open spike skills. Research conducted by Syarifuddin (2016) shows the results of research that there is a significant influence between body structure, emotional intelligence, and eye-hand coordination on lower passing ability in volleyball games.

Based on several studies and research results above, it can be concluded that eye-hand coordination, intelligence factors, and self-confidence have a relationship with the basic technique of volleyball. Meanwhile, the research carried out is filling the gaps in previous research, namely intellectual intelligence (IQ) factors. Thus, researchers will conduct research on the relationship between intellectual intelligence, eye-hand coordination, and self-confidence.

METHOD

This study used a quantitative approach with a correlational method. The sampling technique uses purposive sampling, so that the samples used are 20 female volleyball club athletes in North Sumedang district. Researchers used data collection techniques by distributing questionnaires, IQ tests, and skill tests. The instrument used in this study, for variable X_1 (intellectual intelligence) with IQ test using PMPO (Project Multi-Phases) method which has been legally patented and has Intellectual Property Rights (IPR) No: 045367 by the Ministry of Law and Human Rights of the Republic of Indonesia since 2009 in collaboration with experts in their fields, namely Grahita Inc Sumedang Branch. For variable X_2 (eye-hand coordination) using the hand eye coordination test from TKSI. For variable X_3 (confidence) using a questionnaire consisting of 37 statements that have been tested for validity and reliability with statements that have been adjusted to confidence indicators and filling out questionnaires using the Likert scale, then distributed to samples via google form. For variable Y (overhead passing skills) using the Braddy Volleybal Test.

Data obtained from test results and questionnaires were processed using the help of IBM SPSS type 20 software for windows. The data analysis used is the classical assumption test (normality test, multicollinearity test, and heteroscedasticity test), hypothesis test using simple regression (t test) and multiple regression test (F test), correlation coefficient test (R), and determination coefficient test (R2).

FINDINGS AND DISCUSSION

Findings

In this study there are four raw data that must be analyzed, namely intellectual intelligence data, eye-hand coordination, self-confidence, and overhead passing skilss. Analysis of initial data before hypothesis testing is carried out classical assumption test. The following results of the classical assumption test can be seen in table 1.

Table 1. Classic Assumption Test

	Normality Test (shapiro wilk)	Multicollinearity Test		Heteroscedasticity Test
	Sig.	**Tolerance**	**VIF**	**Sig.**
Intellectual Intelligence	Sig. 0.069	0.936	1.068	0.472
Eye-Hand Coordination	Sig.0.413	0.940	1.063	0.613
Self Confidence	Sig. 0.217	0.977	1.024	0.243
Overhead Passing Skills	Sig. 0.671			

Based on table 1, it can be seen that the results of the normality test (shapiro wlik) with a significance level of 5% or α = 0.05, show that for all data a significance value of more than α (sig. > 0.05) can be seen, which means that the data is normally distributed. This means that there are no symptoms of heteroscedasticity. The results of the multicollinearity test show that the tolerance value > 0.10 and the VIF value < 10, which means that there is no multicollinearity in the regression model. While the heteroscedasticity test shows that the significance value is more than α (sig. > 0.05), the regression model. While the heteroscedasticity test shows that the significance value is more than α (sig. > 0.05), which means that there are no symptoms of heteroscedasticity.

Table 2. Simple Regression Test (t-test)

	Sig. (2-tailed)	Pearson Correlation
Intellectual Intelligence	.714	-.087
Eye-Hand Coordination	.039	.464
Self Confidence	.049	.445
Overhead Passing Skills		1

Based on table 2, it can be seen that the hypothesis test to determine the relationship of each independent variable to the dependent variable uses a simple regression test (t test) at a significance level of 5% or α = 0.05. Based on the table shows that: (1) The significance value (sig.2-tailed) of intellectual intelligence is 0.714 which means that the significance value is greater than α (sig. 0.714 > 0.05), then H is accepted and H1 is rejected. With a correlation value of -0.087 which means it has a weak correlation. So it can be concluded that there is no significant relationship between intellectual intelligence and upper passing skills in volleyball games. (2) The significance value (sig.2-tailed) of eye-hand coordination is 0.039 which eye-hand coordination is 0.039 which means that the significance value is less than α (sig. 0.039 < 0.05), then H0 is rejected and H1 is accepted. With a correlation value of 0.464 which means it has a fairly strong correlation. So it can be concluded that there is a significant relationship between eye-hand coordination and upper passing skills in volleyball games. (3) The significance value (sig.2-tailed) of confidence is 0.049 which means that the significance value is less than α (sig. 0.049 < 0.05), then H0 is rejected and H1 is accepted. With a correlation value of 0.445 which means it has a fairly strong correlation. So it can be concluded that there is a significant relationship

between self-confidence and top passing skills in the game of volleyball.

Table 3. Multiple Regression Test (F-Test)

	Mean Square	F	Sig.
Regression	341.516	3.414	.043
Resiudal	100.041		
Total			

Based on table 3, it can be seen that the next hypothesis test to determine the simultaneous or overall relationship between intellectual intelligence, eye-hand coordination, and confidence in overhead passing skilss using multiple regression tests (Test F) at a significance level of 5% or α = 0.05. Based on the table, it shows that the significance value (sig.2-tailed) is 0.043 which means that the significance value is less than α (sig. 0.043 < 0.05), then H0 is rejected and H1 is accepted. So it can be concluded that there is a significant relationship between intellectual intelligence, eye-hand coordination, and confidence simultaneously in volleyball overhead (passing skills.

Table 4. Correlation Coefficient Test (R) and Coefficient of Determination (R^2)

Model	R	R Square	Adjusted R Square
1	.625	.390	.276

Based on the table 4, it can be seen that the correlation coefficient test aims to determine the value of the strength of the relationship between the independent variable and the dependent variable. While the coefficient of determination aims to determine how much the percentage of influence of the independent variable on the dependent variable. Based on the table, it shows that the correlation coefficient (R) is 0.625 which is in the coefficient interval 0.60 – 0.799 with a strong relationship level. That is, between intellectual intelligence, eye-hand coordination, and self-confidence there is a strong relationship because the correlation coefficient is closer to number 1 compared to the number 0. Meanwhile, the coefficient of determination (R2) is 0.390 x 100% = 39%. Thus, it can be concluded that the variables of intellectual intelligence, eye-hand coordination, and self-confidence simultaneously (together) affect the variables of overhead passing skilss in volleyball games by 39%. While the rest (100% - 39% = 61%) are influenced by other variables that are not studied.

Discussion

The Relationship of Intellectual Intelligence to Overhead Passing Skills

Based on the results of statistical testing, it shows that intellectual intelligence is not directly related to overhead passing skills. That is, intellectual intelligence is not the only determining factor in a person's success, especially volleyball athletes in improving their technical skills and performance must be supported by several other factors. As revealed Marwati (2016) To be able to compete well in volleyball, it requires understanding in theory, practice, and mentality. Emotional management is also something that athletes need to pay attention to (Titisari & Haryanta, 2018).

Intellectual intelligence is needed for playing tactics in facing opponents. The average all open skill sports require intelligence to think, improvise on the field, and be able to handle pressure. As revealed by (Haibach-Beach et al., 2023) that cognitive skills are skills that allow a person to make decisions and solve problems.

The intellectual importance of the players in the game is at different levels of competition and refers to the position of each player on the field. The results showed that perceptual-cognitive aspects turned out to affect the accuracy of decision making in games (Casanova et al., 2009). The level of expertise in the game of volleyball in no way modifies the significant effect on the level of IQ (intellectual intelligence). Therefore, high and low IQ does not affect the skill level of the player or the skills mastered by the player.

Intellectual intelligence (IQ) determines how an individual: (a) changes and encodes stimuli from the environment, (b) focuses on one stimuli and ignores another, (c) uses stimuli to form internal representations of the external world, (d) streamlines events in a given space and time, (e) organizes, initiates, and controls movement. Therefore, poor performance in a game can be caused by the lack of intelligence of the players, but intelligence in this case is not academic intelligence (Basevitch & Counter, 2019).

Based on some of the opinions of the experts above and in accordance with the results of the study, it can be concluded that intellectual intelligence is not positively and significantly related to overhead passing skilss. That is, intellectual intelligence is not the only factor that can affect the overhead passing skilss, but must be supported by other factors so that the overhead passing skilss of the athlete can be performed well.

The Relationship of Eye-Hand Coordination to Overhead passing Skills

Based on the results of statistical testing, it shows that eye-hand coordination is significantly related to overhead passing skilss. That is, the success of overhead passing one of them is determined by the coordination factor as an important part of the physical condition that must be possessed in the game of volleyball. This is in accordance with the explanation of Harsono (2016) That said, eye-hand coordination is important in supporting the skills of techniques in the game of volleyball, one of which is overhead passing. Skill movements in sports require coordination of several parts of the body. This is because the skill movement is not possible only by one part of the limb (Wardani et al., 2020).

The overhead passing movement is a fairly complex movement, because the overhead passing skill is a combination of several movements that must be done in an integrated and harmonious manner. In line with the opinion of Beutelstahl (Convention, 2018) That non-rhythmic movement is one of the common mistakes in overhead passing. If the passing movement is less rhythmic, then the possibility of failure becomes greater. The passing movement is a movement using the accuracy of the gaze (eyes) and the accuracy of hand movements. In making a passing movement, a player is required to be able to coordinate movements, see friends and foes, see the position of the ball and pass the ball appropriately. Without having good eye-hand coordination, the results of passing will be difficult to achieve the expected results.

Coordination is the ability to perform a movement smoothly, precisely and efficiently (Mahyuddin &; Sudirman, 2021). In line with Bompa's opinion (Mahyuddin & Sudirman, 2021) Eye-hand coordination will result in timing and accuracy. Timing is oriented towards timing while accuracy is oriented towards target accuracy. Through good timing, the impact

between the hand and the object will be as desired, resulting in effective movements. Accuracy will determine whether or not the object is right to the intended target. Therefore, coordination is very important in overhead passing, so that it can be right on the desired target. This means that having high eye-hand coordination has a positive relationship with the ability to pass accuracy over volleyball.

In line with Bachtiar's opinion (Sovensi, 2018) if the coordination ability of a volleyball player is good, then the resulting movements will be effective and efficient, on the other hand if the coordination ability is not good then the results are not as expected. Overhead passing skills are movements that blend muscle functions precisely and balanced into a pattern of motion. Every volleyball player must master the basic passing techniques well to support the performance of his skills when playing volleyball. Eye-hand coordination is important in supporting technical skills in the game of volleyball (Sulistiadinata & Purbangkara, 2020).

Based on some opinions from the experts above and in accordance with the results of the study, it can be concluded that one element of physical condition, namely eye-hand coordination, has a relationship and contributes to the mastery of overhead passing skilss.

The Relationship of Confidence to Overhead passing Skills

Based on the results of statistical analysis, it shows that self-confidence is significantly related to overhead passing skills. Self-confidence is confidence in the ability to achieve success. Athletes who have confidence are able to complete tasks well. Next Nasution (2015) Self-confidence is an athlete's realistic beliefs or expectations about achieving success. Self-confidence is a self-confidence obtained from someone who is felt and implemented, self-confidence greatly affects the achievement of learning outcomes of a sport.

In line with Mylsidayu's opinion (Prawitama & Aulia, 2020) which mentions that aspects of self-confidence in sports include: 1) confident in carrying out physical skills, 2) confident in using psychological skills, 3) confident in decision making, 4) confident in physical fitness possessed and able to improve their abilities. Based on these aspects, athletes who have confidence in their abilities both in the aspects of confident in physical skills, psychic skills, confident in the decisions taken and physical fitness are able to improve skills.

The Simultaneous Relationship between Intellectual Intelligence, Eye-Hand Coordination, and Confidence in Overhead passing Skills

Based on the results of statistical testing, it shows that overhead passing skills are influenced by several factors including intellectual intelligence, eye-hand coordination, and confidence. Human beings consist of the unity of body and soul or also known as "psychosomatic unity". This means that one part with the other part affects each other. Likewise, in sports achievements, especially in competitions, athletes who perform physical movements may not avoid the mental-emotional influences that arise in the sport (Harsono, 2016). The same thing was conveyed by Sugarman (in Komarudin, 2016) that the connection between body and soul is very close. Whatever is in the soul, the body will react.

To find out the mental understanding, in the dictionary of psychology proposed by Kartono (Nanda, 2021) It is explained that mental alludes to problems of mind, reason or memory, the adjustment of the organism to the environment, and specifically refers to adjustments that include the functions of symbols realized by the individual. While according to Sin (2017) The mental is the whole organized structure and processes of the psyche, both conscious and unconscious. Based on this opinion, the readiness of psychological structures and processes such as cognitive or intellectual aspects related to reason will greatly determine the mental attitude of the athlete

concerned. Athletes whose resourcefulness is low in facing matches, will be very easily out of wits to be able to defeat opponents even though in various ways deployed by athletes according to their abilities. However, mental factors are one of several factors that affect an athlete's technical skills and performance.

Volleyball is included in team games, therefore a mastery of basic techniques, mental/psychological factors, and individual intelligence is needed to produce good cooperation between team members, so as to produce their best performance. Some of the determining factors in performing the required passing technique include requiring good coordination, fast movements, good timing, and several other elements of physical condition that can support and determine a successful overhead passing (Manurizal & Janiarli, 2020). In addition, athletes are required not only to be good in their physical abilities, but also to have good abilities in technical, tactical / strategic, and mental aspects (Tomasoa, 2024).

Overhead passing skills are movements that blend muscle functions precisely and balanced into a pattern of motion. Every volleyball player must master the basic passing techniques well to support the performance of his skills when playing volleyball. Eye-hand coordination is important in supporting technical skills in the game of volleyball (Sulistiadinata & Purbangkara, 2020). In line with opinion Abidin (2014) A person will not be able to perform the technique optimally and display his best game, if not accompanied by a good sense of confidence. According to Sweet and Sweet (2019) mentioned that, confidence contributes 46% to the basic technique of volleyball.

CONCLUSION

The conclusion of this study is based on the results and discussion, that basic technical skills in volleyball are influenced by several factors, including mastery of technique, physical condition, and mental/psychological aspects. Therefore, if the volleyball club coach during the training process pays attention to the three factors that have been studied and other factors as a reference in designing a training program that is in accordance with training principles, pays attention to the abilities of each individual, and is carried out regularly and seriously, it will have a positive impact on the development of athletes' skills.

For further researchers, the results of the study can be a reference and starting point to further examine the influence of psychological aspects other than intellectual intelligence that also contribute to overhead passing skilss, such as emotional intelligence, spatial intelligence, and spiritual intelligence. In addition, for intellectual intelligence research instruments, it is expected to use instruments other than the PMPO (Projective Multi-Phases Orientation) method, which can measure the level of intellectual intelligence that does not only focus on academic intelligence.

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