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The relationship between arm strength and eye coordination with three point shoot abilities in basketball game in Fik Unima students

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Abstract
This study aims to obtain clear analysis and interpretation results about: (1) The relationship between arm muscle strength and the three point shoot ability of fourth semester students of FIK Unima (2) The relationship between eye-hand coordination and the three point shoot ability of fourth semester students of FIK Unima (3) The relationship between arm muscle strength and eye-hand coordination together with the three point shoot ability of fourth semester students of FIK Unima. To prove the research hypothesis on each of the independent variables with the dependent variable using simple correlation analysis. As for the joint relationship between the independent variables and the dependent variable using multiple correlation analysis. Based on the calculation of the correlation coefficient for testing the hypothesis between arm muscle strength (X1) and the ability to three point shoot (Y), the correlation coefficient is 0.977, with a determination coefficient of Rsquare = 0.951, for testing the hypothesis between hand eye coordination (X2) and the ability of three point shoots. (Y) Obtained a correlation coefficient of 0.977 with a coefficient of determination Rsquare = 0.954, the results of the calculation show rcount = 0.981 with a determination coefficient of Rsquare = 0.961 (squared and multiple correlation coefficients between X1 and X2 together with (Y). Based on the calculation of the coefficient of determination that the variable contribution of arm muscle strength and hand eye coordination together with the ability of three point shoots in basketball games in the fourth semester of Coaching Education Department students is Kd = r2 x 100% = (0.961) 2 x 100% = 96.1 % The results of the analysis show that: (1) There is a relationship between the strength of the ot ot the arm with the ability to three point shoot in a basketball game for students of FIK Unima. 2. There is a relationship between hand eye coordination and the ability of three point shoots in basketball games for FIK Unima students. 3. There is a relationship between arm muscle strength and hand eye coordination with the ability of three point shoots in basketball games for FIK Unima students.

Keywords: Arm muscle strength, hand-eye coordination, three point shoot

Introduction

Education feels incomplete if there is no physical education. Physical education is often sidelined by other academic education, even though the physical health aspect is an important aspect to support academic education in schools. As it is well known that in a healthy body there is a strong soul, the implication is that if the body and mind are healthy, students can easily absorb the lessons conveyed by the teacher. Therefore physical education is also very much needed (Sari, 2021) [1].

Physical Education has various scopes. This scope includes athletics and games. The athletics such as running, throwing, jumping, jumping, and the branches of the game itself include football, basketball, handball and others. The game itself consists of individual play and team play. Physical education learning that prioritizes team play includes soccer. Basketball games are very suitable for students at school, because the movements made in this game can stimulate children's growth.

During its development, sports have become a necessity for the community to maintain and improve physical fitness and physical condition in order to stay enthusiastic in carrying out daily activities and have the ability to excel. Achievement sports are sports of coaching and developing one's potential in a systematic manner, through competition with the aim of achieving high achievement. Performance sports that are currently developing are very diverse, ranging from individual sports to group sports or team sports. Sport is an activity or effort carried out with the aim of encouraging, awakening, and fostering physical and spiritual fitness in order to improve human quality through an educational process.

One of the growing achievement sports is basketball. Basketball is very interesting to watch because it can be played in closed and open sports spaces (indoor or outdoor), and only requires a relatively small field. Basketball is much favored by the community, especially among students and university students. Through these basketball sports activities, teenagers get a lot of benefits, especially in physical, mental and social growth, besides that basketball is easy to learn because of the large shape of the ball, so it doesn't make it difficult for players to bounce or throw the ball (Archika, 2020) [2].

Basketball is a team game played by two teams with five players in one team. In basketball, it contains elements of complex and varied movements. The movements needed in playing basketball are elements of mutually supporting movements, which mutually support one another. In addition, movement with the ball in a basketball game requires a basketball player to master the basic techniques of the basketball game.

The basic techniques in basketball that basketball players must have are passing (throwing), dribbling (dribbling), and shooting (shooting). A basketball player must master the basic basketball techniques so that a basketball player can play well and in the game do not get into trouble. One of the basic techniques of basketball is shooting that basketball

players must master. In basketball, there are also types of shooting, including the three point shoot.

In a basketball game the largest number of numbers is 3, the essence of the game of basketball is to score as many numbers as possible, so in attacking a good three point shoot ability is also needed in order to score a lot in the game. To master the three point shoot technique good players basketball must also be supported by the ability of physical condition. The elements of the physical condition that influence such as strength, speed and coordination. Indirectly, the physical condition of a basketball player has a major influence on the technical skills of the three point shoot of basketball.

Student of the Faculty of Sports Science (FIK) is one of the basketball training centers at Manado State University (Unima). This is evidenced by the existence of lecturing activities on basketball sports material for fourth semester students. Lecture on basketball material is often done with practice on the field.

Based on observations and discussions that the author did with FIK Unima students, the results of the three point shoots of basketball players from FIK Unima students were still low. Here the researchers conducted the initial test by looking at the three point shoot ability when the fourth semester students of FIK Unima exercised basketball, the results of the test showed the lack of success in doing the three point shoot. The ball sometimes doesn't reach the ring and sometimes the ball bounces off the basketball hoop, when there is an opportunity to take a three point shoot the player doesn't even do it.

Many factors cause a basketball player to be able to do a three point shoot well to be able to score as many points in a basketball game as FIK Unima students want. The factors that affect the results of the three point shoot in basketball games are arm muscle strength, eye-hand coordination, contact with the ball with the hand and the mastery of the technique during the three point shoot.

Based on the phenomenon that occurs in the field, on this occasion the writer is interested and wants to do a research on the results of the three point shoot at the basketball game of FIK Unima students. The low three-point shoots in the game have an effect on the three-point shoot results in a basketball match. It is suspected that there are many factors that cause the low three-point shoots in basketball, including the strength of the arm muscles and their eye-hand coordination. Therefore, it needs to be proven scientifically, through a study entitled "The Relationship between Arm Strength and Eye Coordination with Three Point Shoot Abilities in Basketball Game in Fik Unima Students"

Research methods

The research method used in this research is an associative quantitative method, with a quantitative approach, a survey method, and a correlational technique model. According to (Sugiyono, 2009) [4] the survey method is used to obtain data from a certain place that is natural, not artificial, but researchers treat data collection by distributing questionnaires, tests, or structured and planned interviews. To obtain data in this study, researchers conducted tests or measurements on the variables studied.

The correlation technique in question is to see the pattern of the relationship between one variable and another. (Rianto, 1996) [6] Explains that correlational research is research that looks at the relationship between variables. This study examines the relationship between variables by measuring the relationship between variables. In this study using three variables, consisting of two independent variables (independent variables), namely arm muscle strength (X1), eye-hand coordination (X2), and one dependent variable (dependent variable), namely the result of a three point basketball shoot (Y).

Results and discussion

a. The relationship between arm muscle strength and the three point shoot ability of fourth semester students of FIK Unima

In descriptive testing of the hypothesis that the arm muscle strength descriptively shows the values and scores of arm muscle strength in 30 people in basketball games for the fourth semester of coaching education students with an average (X1) = 44.70 and a standard deviation (SDx1) = 2.307.

Hand-eye coordination in the basketball game for the fourth semester Coaching Education Department student from the results of the descriptive analysis shows the magnitude of the scores and hand-eye coordination scores on 30 people in the basketball game for the fourth semester Coaching Education Department students with an average (X2) = 15.23 and standard deviation (SDx2) = 2.012

The ability of the three point shoot in a basketball game in the fourth semester of Coaching Education Department students descriptively shows the values of the students with mean (Y) = and 11.00 standard deviation (SDy) =. 1,702

Based on the results of the calculation of the Anova SPSS Coefficients test, it turns out that the results of the linear regression equation between arm muscle strength (X1) and the student's three point shoot ability (Y) are $\hat{Y}$ = 21.158 + 0.719 X1, this can give meaning if there is an increase in the variable arm muscle strength then The ability of three point shoots in basketball games in the fourth semester of Coaching Education Department students will also increase by 0.719 units. The regression coefficient value of 0.719 states that each additional one unit unit of arm muscle strength is predicted to increase the student's three point shoot ability by 0.719 units. On the other hand, if it decreases by one unit, the students' three point shoot ability is also predicted to decrease by 0.719 units. This means that the relationship between the variable level of arm muscle strength (X1) and the student's three point shoot ability (Y) is significant and positive, so that any changes in the increase in the variable arm muscle strength (X1) will also be followed by an increase in the ability variable. Three point shoot (Y) in a basketball game for the fourth semester Student of the Coaching Education Department.

This is in accordance with the results and the calculation of the meaning of the linear regression coefficient, where the tcount between X1 and Y (three point shoot ability) in basketball games for the fourth semester Student of the Coaching Education Department was obtained thit = 23,214> ttab = 2,042; then Ho, is rejected and accepts Ha which states that the regression coefficient is meaningful.

Based on the calculation of the correlation coefficient for testing the hypothesis between arm muscle strength (X1) and the ability to three point shoot (Y), the correlation coefficient is obtained at 0.975 (analysis of the SPSS program see attachment), with the determination coefficient Rsquare = 0.951 (the coefficient of determination is squared and the correlation coefficient between X1 with Y).

Based on the calculation of the coefficient of determination, the contribution of arm muscle strength to the ability of three point shoots in basketball games for the fourth semester of Coaching Education Department students is Kd r2 x 100% (0.975) 2 x 100 = 95.1%. Furthermore, the remaining 4.9% is determined by other variables that cannot be explained one by one or not discussed in this study because it has not been the target of the researcher. Thus and the results of this investigation it turns out that the variable arm muscle strength has contributed 95.1% to the ability of the three point shoot in basketball for the fourth semester of Coaching Education Department students.

This has been strengthened by the results of the F test calculation, the Fcount value is greater than 538.875 and Ftable is 4.042 or in the words ain Fhit = 538.875> Ftab = 4.042; then Ho is rejected and accepts Ha which states that the variable arm muscle strength can affect the ability of three point shoots in basketball games in the fourth semester of Coaching Education Department students.

b. The relationship between eye-hand coordination with the ability of the fourth semester students shoot three point FIK Unima

Based on the results of the calculation of the Anova SPSS Coefficients test, it turns out that the results of the linear regression equation between hand eye coordination (X2) and the student's three point shoot ability (Y) are = 1.590 + 0.826 X2, this can provide meaning if there is an increase in the hand eye coordination variable, the ability Three point shoots in a basketball game for the fourth semester Coaching Education Department students will also increase by 0.826 units.

On the other hand, if the eye-hand coordination decreases by one unit, the students' ability to three point shoot is also predicted to decrease by 0.826 units. This means that the relationship between the hand eye coordination variable (X2) and the student's three point shoot ability (Y) is significant and positive, so that any changes in the increase in the hand eye coordination variable (X2) will also be followed by an increase in the ability variable three. Point shoot (Y) in a basketball game for the fourth semester Student of the Coaching Education Department.

This is in accordance with the results and the calculation of the meaning of the linear regression coefficient, where the value of t count between X2 (hand eye coordination) and Y (three point shoot ability) in a basketball game for the fourth semester Student of the Department of Coaching Education was obtained thit 24,201> ttab = 2,042; then Ho is rejected and accepts Ha which states that the regression coefficient is meaningful.

Based on the calculation of the correlation coefficient for testing the hypothesis between hand-eye coordination (X2) and the student's three point shoot ability (Y), the correlation coefficient is 0.977 (analysis of the SPSS program see attachment) with the determination coefficient Rsquare = 0.954 (the coefficient of determination is squared and the correlation coefficient between X2 with (Y).

Based on the calculation of the coefficient of determination, the contribution of hand eye coordination to the ability of three point shoots in basketball games for the fourth semester of Coaching Education Department students is Kd = r2 x 100% (0.977) 2 x 100% = 95.4%. Furthermore, the remaining 4.6% is determined by other variables that cannot be explained one by one or not discussed in this study because it has not been the target of the researcher. Thus and the results of this study it turns out that the hand eye coordination variable has contributed or an influence of 95.4% on the ability of three point shoots in basketball games for the fourth semester of Coaching Education students.

This has been strengthened by the results of the F test calculation, the Fcount value is greater than 585.709 and Ftable is 4.00 or in other words Fhit = 585.709> Ftab = 4.042; then Ho was rejected and accepted Ha, who stated that the hand eye coordination variable could affect the ability of the three point shoot in basketball games for the fourth semester Student of the Coaching Education Department.

c. The relationship between arm muscle strength and eye-hand coordination together with the three point shoot ability of fourth semester students of FIK Unima

The multiple linear regression equation in question is $\grave{Y} = a + b1X1 \pm b2X2$, and with the calculation of multiple regression analysis on the score data of the student's three point shoot ability variable on arm muscle strength and hand eye coordination, the regression direction of the price of b1 is 0.325 and b2 is 0.461 with a constant. Price a is 10,534. Thus the form of multiple correlation between the variable arm muscle strength and hand eye coordination with the three point shoot ability variable is formulated by the regression equation $\grave{Y} = a + b1X1 \pm b2X2 = 10.534 + 0.325 X1 + 0.461 X2$ (analysis results are attached).

Based on the results of the calculation of the Anova SPSS Coefficients test, it turns out that the results of the multiple linear regression equation between arm muscle strength (X1) and hand eye coordination (X2) together with the student's three point shoot ability (Y), namely Y = a + b1X1 + b2X2 = 10,534 + 0.325X1 + 0.461X2, this can give meaning that if there is an increase in arm muscle strength and hand eye coordination together, there will be an increase in the ability of three point shoots in basketball games in the fourth semester Coaching Education Department students increased by 0.325 and 0.461 unit.

The regression coefficient (b1) of 0.325 states that each additional one unit level of arm muscle strength is predicted to increase the student's three point shoot ability by 0.325 units. Likewise, the regression coefficient value (b2) of 0.461 states that each addition of one unit to hand eye coordination is predicted to increase the results of student three point shoots by 0.461 units. This means that the relationship between the variable arm muscle strength (X1) and the hand eye coordination variable (X2) together with the student's three point shoot ability (Y) is significant and positive, so that any changes in the increase in the variable arm muscle strength. (X1) and the hand eye coordination variable (X2) will also be followed by an increase in the student's three point shoot ability variable (Y).

This is in accordance with the results and calculations of the meaning of multiple linear regression coefficients, where the value of tcount between X1 (arm muscle strength) and X2 (hand eye coordination) and Y (three point shoot ability) in basketball games for the fourth semester Coaching Education Student together it is obtained thit = 4,972> ttab = 2,042; then Ho is rejected and accepts Ha which states that the multiple regression coefficient is meaningful.

From the test results, the multiple correlation coefficient is = 0.981 with the coefficient of determination Rsquare = 0.961

Based on the calculation of the coefficient of determination that the contribution of arm muscle strength and hand eye coordination together with the three point shoot ability in basketball games for the fourth semester Student of the Coaching Education Department is for Kd = r2 x 100% = (0.981) 2 x 100% = 96.1%. Furthermore, the remaining 3.9% is determined by other variables or external factors that are not the target of the study and are not explained one by one in this study. Thus, from the results of this study, it turns out that the variable arm muscle strength and hand eye coordination variables together contribute 96.1% to the three point shoot ability in basketball games for the fourth semester of Coaching Education Students.

This has been strengthened by the results of the F test calculation, the Fcount value is greater than 336,438 and Ftable is 4.042 or in other words Fhit 336,438> Ftab 4.042; then Ho is rejected and accepts Ha which states that the variables of arm muscle strength and hand eye coordination together can affect the ability of three point shoots in basketball games in the fourth semester of Coaching Education Department students.

Conclusion

Results of research and discussion, the following conclusions can be drawn.

a. There is a relationship between arm muscle strength and the ability of three point shoots in basketball games for the fourth semester Student of the Coaching Education Department.
b. There is a relationship between hand eye coordination and the ability of three point shoots in basketball games for the fourth semester Student of the Coaching Education Department.
c. There is a relationship between arm muscle strength and hand eye coordination together with the ability of three point shoots in basketball games for the fourth semester Student of the Coaching Education Department.

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