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Shooting Techniques in Basketball Games (Correlation Study on Physical Condition Components)

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ABSTRACT

This research aims to determine the relationship between leg explosive power, wrist flexibility, and eye-hand coordination on shooting ability. This type of research is a type of descriptive research. The research variables consist of independent variables, namely leg explosive power, wrist flexibility, and eye-hand coordination, while the dependent variable is shooting ability. The population in this study were all BKMF Basketball FIKK UNM college students with a research sample of 30 people. The sampling technique is to use "total sampling" meaning the entire population is sampled. The data analysis technique used is correlation and regression analysis using the SPSS Version 22.00 system at a significance level of 95% or (α) = 0.05. Based on the results of data analysis, this study concluded that: (1) There is a relationship between leg explosive power and basketball shooting ability, as evidenced by the calculated r-value (ro) = 0.680 (P=0.000 < α: 0.05) with a coefficient of determination value of 0.462. This means that 46.2% of basketball shooting ability is explained by explosive leg power; (2) There is a relationship between wrist flexibility and basketball shooting ability, as evidenced by the calculated r-value (ro) = 0.734 (P=0.000 < α:0.05) with a coefficient of determination value of 0.539. This means that 53.9% of basketball shooting ability is explained by wrist flexibility; (3) There is a relationship between hand-eye coordination, wrist flexibility, and basketball shooting ability, as evidenced by the calculated r-value (ro) = 0.689 (P=0.000 < α:0.05) with a coefficient of determination value of 0.474. This means that 47.4% of basketball shooting ability is explained by eye-hand coordination; and (4) There is a relationship between leg explosive power, wrist flexibility, and hand-eye coordination on basketball shooting ability, as evidenced by the calculated r-value (ro) = 0.768 (P=0.000< α:0.05) for a coefficient of determination value of 0.590. This means that 59% of basketball shooting ability is explained by explosive leg power, wrist flexibility, and eye-hand coordination.

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A. Conception and design of the study;
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INTRODUCTION

Basketball is considered a unique sport because it was created accidentally by a priest. In 1891, Dr. James Naismith, a Canadian pastor who taught in a faculty for professional

students at the YMCA (a Christian youth organization) in Springfield, Massachusetts, had to create an indoor game to occupy the students' time during the winter holidays in New England. (Lestrai & Apriyanto, 2016). Inspired by the game he played as a child, Naismith created the game now known as basketball on December 15, 1891. The game of basketball is one of the most popular sports in the world (Eka Cahyono & Wismanadi, 2019). Fans of all ages feel that the game of basketball is a fun, competitive, educational, entertaining, and healthy sport (Fatahila, 2018). Individual skills such as shooting, passing, dribbling, and rebounding as well as teamwork to attack or defend are prerequisites for success in playing this sport (Dinata & Lismadiana, 2019).

Especially in the South Sulawesi area, the development of this sport, seen from the perspective of fans, has made a lot of progress. However, if we look at the achievements that have been achieved, we cannot show satisfactory results. This is evident from several national-level championships that have been participated in, where our athletes often fail to achieve achievements, even though the supporting factors to become better have been tried as closely as possible (Arwih, 2019). Such as the availability of good trainers, quality facilities and tools, the formation of a good organization, and an atmosphere of encouragement from the community or government.

However, to be able to have good shooting skills in the game of basketball, the player must be able to combine various components of physical condition and technical skills as well as combine them with hand-eye coordination (Prasetya, 2011). This is because, without physical ability and coordination of the sense of sight, it is difficult to master and develop shooting techniques well (Anggarsari, 2020). Likewise, with adequate physical abilities and coordination abilities, ball shooting can be performed perfectly (Ilmiah & Fikri, 2013).

Shooting technique in the game of basketball is a very important factor because it is the final effort to put the ball into the ring in a match (Mahardi, 2016). Remember that this technique has individual characteristics and this technique can be done by hitting the backboard first or by directing it dry (Apriansyah et al., 2018). The shooting technique in the game is usually carried out if one of the players who is running to cut forward receives a pass from his teammate (Syahban, 2018) so that by jumping, he can reach the ring as close as possible to complete the shot into the ring. as best as possible (Putra & Donie, 2019). Thus, to be able to attack through shooting, a player must be good at seeing space in the opponent's defense area. Looking at the role of shooting, when playing, it can be said how important shooting techniques are (Taufik et al., 2020). Based on observations so far, it can be stated that basketball players on the FIKK UNM campus, especially regarding their physical condition, are also lacking in mastery of shooting techniques. Shooting techniques must be prioritized for coaches and trainers without ignoring other techniques. To be able to shoot well (Sepriyanto, 2018) of course requires the ability of physical components that can support increased shooting ability (Ramos et al., 2019) such as explosive power (power), strength (strength), agility (agility), speed, flexibility, balance and so on. Of the various physical components above, only explosive power is the main concern plus the ability to coordinate between the eyes and hands which is expected to have a relationship with shooting ability in basketball games (Sari, 2018).

The explosive power in question is the explosive power of the legs. This physical component is needed in implementing shooting techniques (Putri et al., 2020). To be able to jump as close to the dry ball as possible, a strong and fast leg push is needed so that the attempt to enter the dry ball can be done perfectly (Prasetia & Wismanadi, 2022). Meanwhile, hand-eye coordination is the ability to coordinate the eyes and hands, namely the collaboration between the eyes and hands to carry out a movement (Yenes et al., 2018). Choosing good movement coordination, especially coordination between eyes and hands, it will help in shooting perfectly (Ishak & Sahabuddin, 2018).

METHODS

This research is classified as descriptive research with correlational techniques, therefore a suitable research design is a correlational research design. The population is the entire group of individuals or groups that can be observed from the group members. The population in this research is FIKK UNM students. A sample is a portion of individuals who represent the population. This study used a male sample. The total population that can represent students is 30 people using random sampling as a sample collection technique. Data collection techniques are a method used to collect data in a study. Data that will be collected in this research includes leg explosive power, wrist flexibility, hand-eye coordination, and shooting ability in basketball. Regarding the tests used to collect the above data, it can be explained one by one: After all the research data has been collected, namely leg explosive power data, ankle coordination data, and shooting ability data in basketball games, then to test the hypothesis proposed in the research This can be compiled, processed and analyzed statistically using the SPSS application.

RESULTS AND DISCUSSION

Result

Descriptive analysis was carried out for data on leg explosive power, wrist flexibility, hand-eye coordination, and shooting ability in FIKK UNM students. A summary of the results of the descriptive analysis is listed in **Table 1.**

Table 1.

Results of descriptive analysis of data for each variable

Variable	N	Mean	Stdv.	Max	Min
(X_1)	30	58.40	5.475	70	51
(X_2)	30	170.23	8.353	180	155
(X_3)	30	16,63	1,377	20	14
(Y)	30	7,80	1,375	10	6

Data normality test

One of the assumptions that must be met so that parametric statistics can be used in research is that the data must follow a normal distribution. To determine the distribution of data on explosive power, wrist flexibility, and hand-eye coordination on shooting ability among FIKK UNM students, a data normality test was carried out using the Kolmogorov Smirnov Test (KS-Z). According to the data normality test results in the attachment, the test results were obtained as listed in **Table 2** below.

Table 2.

Normality test results for each variable

Variable	KS - Z	P	A	Information
(X_1)	0,727	0,666	0,05	Normal
(X_2)	0,770	0,593	0,05	Normal
(X_3)	0,788	0,563	0,05	Normal
(Y)	1,203	0,110	0,05	Normal

Analysis inferential

There is a relationship between leg explosive power and shooting ability.

The data obtained from the research aims to determine the independent variable and the dependent variable and prove the existing hypothesis. Therefore, the results of hypothesis testing based on data processing through correlation and regression analysis from the SPSS

program regarding the relationship between leg explosive power and shooting ability in FIKK UNM students were obtained according to the summary in **Table 3** below:

Table 3.
Results of correlation and regression analysis for the first hypothesis

Variable	r/R	R_S	F	Sig	Information
DLT (X1) KLS (Y)	0,680	0,462	24,078	0,000	Significant

Based on **Table 3** above, the results of data correlation and regression testing between leg explosive power and shooting ability in FIKK UNM students obtained a calculated r-value (ro) = 0.680 (P=0.000 < α: 0.05) for the R squared value (coefficient of determination) 0.462. This means that 46.2% of FIKK UNM students' shooting ability is explained by hand-eye coordination. From the ANOVA test or F test, the calculated F was 24.078 with a significance level of 0.000. Because the probability (0.000) is much smaller than α: 0.05, H0 is rejected and H1 is accepted. This means that there is a significant relationship between leg explosive power and shooting ability in FIKK UNM students.

There is a relationship between wrist flexibility and shooting ability.

The data obtained from the research aims to determine the independent variable and the dependent variable and prove the existing hypothesis. Therefore, the results of hypothesis testing based on data processing through correlation and regression analysis from the SPSS program regarding the relationship between wrist flexibility and shooting ability in FIKK UNM students are obtained according to the summary in **Table 4** below:

Table 4.
Results of correlation and regression analysis for the second hypothesis

Variable	r/R	R_S	F	Sig	Information
KPT (X2) KLS (Y)	0,734	0,539	32,698	0,000	Significant

Based on **Table 4** above, the results of data correlation and regression testing between wrist flexibility and shooting ability in FIKK UNM students obtained a calculated r-value (ro) = 0.734 (P = 0.000 < α: 0.05) for the R squared value (coefficient of determination) 0.539. This means that 53.9% of FIKK UNM students' shooting ability is explained by wrist flexibility. From the ANOVA test or F test, the calculated F was 32.698 with a significance level of 0.000. Because the probability (0.000) is much smaller than α: 0.05, H0 is rejected and H1 is accepted. This means that there is a significant relationship between wrist flexibility and shooting ability in FIKK UNM students.

There is a relationship between hand-eye coordination and shooting ability

The data obtained from the research aims to determine the independent variable and the dependent variable and prove the existing hypothesis. Therefore, the results of hypothesis testing based on data processing through regression analysis from the SPSS program regarding the relationship between hand-eye coordination and shooting ability in FIKK UNM students are obtained according to the summary in **Table 5** below:

Table 5.
Results of correlation and regression analysis for the third hypothesis

Variable	r/R	R_S	F	Sig	Information
KMT (X3), KS (Y)	0,689	0,474	25,268	0,000	Significant

Based on **Table 5** above, the results of data correlation and regression testing between hand-eye coordination and shooting ability in FIKK UNM students obtained a calculated r-value

(ro) = 0.689 (P=0.000 < α:0.05) for the R squared value (coefficient of determination) 0.474. This means that 47.4% of FIKK UNM students' shooting ability is explained by wrist flexibility. From the ANOVA test or F test, the calculated F was 25.268 with a significance level of 0.000. Because the probability (0.000) is much smaller than α: 0.05, H0 is rejected and H1 is accepted. This means that there is a significant relationship between wrist flexibility and shooting ability in FIKK UNM students.

There is a relationship between explosive leg power, wrist flexibility, hand-eye coordination, and shooting ability.

The data obtained from the research aims to determine the independent variable and the dependent variable and prove the existing hypothesis. Therefore, the results of hypothesis testing based on data processing through correlation and regression analysis from the SPSS program regarding the relationship between wrist flexibility and shooting ability in FIKK UNM students are obtained according to the summary in **Table 6** below.

Table 6.

Results of correlation and regression analysis for the fourth hypothesis

Variable	r/R	R_S	F	Sig	Information
DLT(X1) KPT(X2) KMT (X3), KS (Y)	0,768	0,590	12,473	0,000	Significant

Based on **Table 6** above, the results of data correlation and regression testing between leg explosive power, wrist flexibility, and hand-eye coordination on shooting ability in FIKK UNM students obtained a calculated r-value (ro) = 0.768 (P = 0.000 < α: 0.05) for R squared value (coefficient of determination) 0.590. This means that 59% of FIKK UNM students' shooting ability is explained by explosive leg power, wrist flexibility, and hand-eye coordination. From the ANOVA test or F test, the calculated F was 12.473 with a significance level of 0.000. Because the probability (0.000) is much smaller than α: 0.05, H0 is rejected and H1 is accepted. This means that there is a significant relationship between leg explosive power, wrist flexibility, and hand-eye coordination on shooting ability among FIKK UNM students.

Discussion

Based on the results of descriptive analysis of data and research hypothesis testing which has been carried out using a significance level of 95% (0.05), a discussion is obtained so that the suitability of the theories put forward with the research results obtained is as follows:

1. The first hypothesis H0 is rejected and H1 is accepted, namely; There is a significant relationship between leg explosive power and shooting ability in FIKK UNM students. The results obtained are linked to the underlying theories the results of this research support the existing theories. This can be explained by the fact that if a student has good leg explosive power then his shooting ability will be good.
2. The first hypothesis H0 is rejected and H1 is accepted, namely; There is a significant relationship between wrist flexibility and shooting ability in FIKK UNM students. The results obtained are linked to the framework of thinking and the underlying theories. The results of this research support the existing theory. This can be explained by the fact that if students have good wrist flexibility, their shooting abilities will be good.
3. The first hypothesis H0 is rejected and H1 is accepted, namely; There is a significant relationship between hand-eye coordination and shooting ability in FIKK UNM students. The results obtained are linked to the framework of thinking and the underlying theories. The results of this research support the existing theory. This can

be explained by the fact that if students have good wrist flexibility, their shooting abilities will be good.

4. The first hypothesis H0 is rejected and H1 is accepted, namely; There is a significant relationship between leg explosive power, wrist flexibility, and hand-eye coordination on shooting ability in FIKK UNM students. The results obtained are linked to the framework of thinking and the underlying theories. The results of this research support the existing theory. This can be explained by the fact that if a student has explosive leg power, wrist flexibility, and good hand-eye coordination then his shooting ability will be good.

CONCLUSION

Based on the results of the analysis of three research data carried out, the following conclusions were obtained:

1. There is a significant relationship between leg explosive power and shooting ability among FIKK UNM students
2. There is a significant relationship between wrist flexibility and shooting ability among FIKK UNM students
3. There is a significant relationship between hand-eye coordination and shooting ability among FIKK UNM students
4. There is a significant relationship between leg explosive power, wrist flexibility and hand-eye coordination on shooting ability in FIKK UNM students

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