

Lay Up Shoot Technique in Basketball Games (Correlation study on Physical Condition Components)

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Authors' contribution:

A. Conception and design of the study; **B.** Acquisition of data; **C.** Analysis and interpretation of data;
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ABSTRACT

This research aims to determine the relationship between leg explosive power, wrist flexibility, and hand-eye coordination on lay-up 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 hand-eye coordination, while the dependent variable is lay-up shooting ability. The population in this study were all BKMF FIK UNM college college students with a research sample of 30 people. The sampling technique is to use "total sampling" meaning that the entire population becomes the sample. 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 research concludes that: 1). There is a relationship between leg explosive power and lay-up shooting ability, as proven by the calculated r-value (r_o) = 0.680 ($P=0.000 < \alpha:0.05$) for an R squared value (coefficient of determination) of 0.462. This means that 46.2% of lay-up shooting ability is explained by leg explosive power; 2). There is a relationship between wrist flexibility and lay-up shooting ability, as proven by the calculated r-value (r_o) = 0.734 ($P=0.000 < \alpha:0.05$) for an R squared value (coefficient of determination) of 0.539. This means that 53.9% of lay-up shooting ability in basketball is explained by wrist flexibility; 3). There is a relationship between hand-eye coordination, wrist flexibility, and lay-up shooting ability, as proven by the calculated r-value (r_o) = 0.689 ($P=0.000 < \alpha:0.05$) for an R squared value (coefficient of determination) of 0.474. This means that 47.4% of lay-up shooting ability in basketball is explained by hand-eye coordination; 4). There is a relationship between leg explosive power, wrist flexibility, and hand-eye coordination on lay-up shooting ability, as proven by the calculated r-value (r_o) = 0.768 ($P=0.000 < \alpha:0.05$) for an R squared (coefficient of determination) value of 0.590. This means that 59% of lay-up shooting ability in basketball is explained by leg explosive power, wrist flexibility, and eye-hand coordination.

Keyword: Explosive Power; Flexibility; Coordination; Lay Up; Basketball

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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 at a faculty for professional college students at the YMCA (a Christian youth forum) in Springfield, Massachusetts, had to make a game in an enclosed room to fill the college student's time during the winter vacation in New England (Lestrai & Apriyanto, 2016). Inspired by a game he had 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). Its fans who come from 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, rebounding, and teamwork to attack or defend are prerequisites for success in this sport (Dinata & Lismadiana, 2019).

Especially in the South Sulawesi region, the development of the sport when viewed in terms of enthusiasts has made a lot of progress. However, when viewed in terms of achievements that have been achieved, it has not been able to show satisfactory results. This is evident from several national-level championships that have been participated, where our athletes often fail to achieve achievements, even though the supporting factors to become better have been tried as much as possible (Arwih, 2019). Such as the availability of good trainers, quality facilities and tools, the formation of a good organization, and the atmosphere of encouragement from the community or government.

However, to be able to have good lay-up shooting skills in basketball games, the player must be able to combine various components of physical condition and technical proficiency and combined with his 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 lay-up shoot techniques properly (Anggarsari, 2020). Vice versa, with adequate physical ability and coordination ability, the implementation of the ball lay-up shoot will be displayed perfectly (Scientific & Fikri, 2013).

The lay-up shoot technique in basketball is one of the most important factors because it is the last resort to put the ball into the hoop in a match (Mahardi, 2016). Given that this technique has individual characteristics this technique can be done by hitting the bounce board first or by directly directing dry (Apriansyah et al., 2018). The lay-up shoot technique in the game is usually done if one of the players is running to cut (*Cutting*) in the future and gets a pass from his teammates (Syahban, 2018) So that his jumps can reach the ring in the closest distance to complete the shot into the ring as well as possible (Son & Donie, 2019). Thus, to be able to attack through lay-up shoots, a player must be good at seeing space in the opponent's defense area. Looking at the role of lay-up shoots, when playing, it can be said how important the lay-up shoot technique is (Taufik et al., 2020). Based on observations so far, it can be stated that basketball players on the FIK UNM campus, especially regarding inadequate physique, are also mostly still lacking in mastery of lay-up shoot techniques. For lay-up shoot techniques must be prioritized for coaches and coaches without neglecting other techniques. To be able to lay-up shoot well (Sepriyanto, 2018) Of course, the ability of physical components are needed that can support the improvement of lay-up shoot capabilities (Ramos et al., 2019) such as explosive power, strength, agility, speed, flexibility, balance and so on. Of the various physical components above, only explosive power is the main concern coupled with the ability to coordinate between the eyes and hands which is expected to have a relationship with the ability to lay-up shoot in basketball games (Sari, 2018).

The explosive power in question is the explosive power of the limbs. This physical component is needed in the implementation of lay-up shoot techniques (Putri et al., 2020). To be able to make a jump towards dry as close as possible, strong and fast leg repulsion

is needed so that an effort to insert a dry ball can be done perfectly (Prasetia & Wismanadi, 2022). The coordination of the eyes of the hands in question is the ability to coordinate between the eyes and hands, namely the cooperation between the eyes and hands to move (Yenes et al., 2018). Choosing good motion coordination, especially coordination between eyes and hands will help in lay-up shooting perfectly (Ishak & Sahabuddin, 2018).

METHODS

This research is classified into the type of descriptive research with correlational techniques, therefore the suitable research design is correlational. A population is the overall observable individual or group of group members. The population in this study is FIK UNM college students. A sample is a subset of individuals that is representative of the population. In this study using a sample of sons. The total population that can represent college students is as many as 30 people with a sample collection technique with random sampling. Data collection technique is a way used to collect data in a study. The data to be collected in this study include limb explosive power, wrist flexibility, hand-eye coordination, and lay-up shoot ability in basketball ability. The tests used to collect the data mentioned above can be explained one by one: After all research data is collected, namely limb explosive power data, ankle coordination data, and lay-up shoot ability data in basketball games, then to test the hypothesis proposed in this study can be compiled, processed, and analyzed statistically using the SPSS application.

RESULTS AND DISCUSSION

Descriptive analysis conducted for limb explosive power data, wrist flexibility, hand-eye coordination, and lay-up ability in FIK UNM college 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
(X1)	30	58.40	5.475	70	51
(X2)	30	170.23	8.353	180	155
(X3)	30	16,63	1,377	20	14
(Y)	30	7,80	1,375	10	6

Test data normality

One assumption that must be met for parametric statistics to be used in research is that the data must follow a normal distribution. To determine the distribution of explosive power data, wrist flexion and hand-eye coordination on lay-up ability in FIK UNM college student, a data normality test was carried out using the Kolmogorov Smirnov Test (KS-Z). According to the results of the data normality test in the attachment, the test results are obtained as stated in **Table 2** below.

Table 2.

The normality test results of each variable

Variable	KS - Z	P	A	Information
(X1)	0,727	0,666	0,05	Usual
(X2)	0,770	0,593	0,05	Usual
(X3)	0,788	0,563	0,05	Usual
(Y)	1,203	0,110	0,05	Usual

Inferential analysis

There is a relationship between limb explosive power and lay-up ability.

The results of the data obtained from the study aim to find out between independent variables and dependent variables and prove existing hypotheses. Therefore, the results of hypothesis testing based on data processing through correlation and regression analysis from the SPSS program on the relationship between limb explosive power and lay-up ability in FIK UNM college students were obtained according to the following summary of **Table 3**:

Table 3.

Results of correlation and regression analysis for the first hypothesis

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

By **Table 3** Above, the results of testing correlation and regression data between limb explosive power and lay-up ability in FIK UNM college students obtained a calculated r-value (r_o) = 0.680 ($P = 0.000 < \alpha:0,05$) for the R squared value (coefficient of determination) 0.462. This translates to 46.2% lay-up ability for FIK UNM college students explained by the coordination of the eyes of the hands. From the ANOVA test or F test, the F count is 24.078 with a significance level of 0.000. Therefore the probability (0.000) is much smaller than $\alpha:0.05$ then H_0 is rejected and H_1 is accepted. This means that there is a significant relationship between limb explosive power and lay-up ability in FIK UNM college students.

There is a relationship between wrist flexion and lay-up ability.

The results of the data obtained from the study aim to find out between independent variables and dependent variables and prove existing hypotheses. Therefore, the results of hypothesis testing based on data processing through correlation and regression analysis from the SPSS program on the relationship between wrist flexion and lay-up ability in FIK UNM college student were obtained according to the following summary of **Table 4** :

Table 4.

Results of correlation and regression analysis for the second hypothesis

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

Based on **Table 4** above, the results of correlation testing and regression data between wrist flexion and lay-up ability in FIK UNM college students obtained a calculated r-value (r_o) = 0.734 ($P = 0.000 < \alpha: 0.05$) for a square R-value (determination coefficient) of 0.539. This means that 53.9% of lay-up shoot ability in FIK UNM college students is explained by wrist flexion. From the ANOVA test or F test, the F count is 32.698 with a significance level of 0.000. Since the probability (0.000) is much less than $\alpha:0.05$, H_0 is rejected and H_1 is accepted. This means that there is a significant relationship between wrist flexion and lay-up shoot ability in FIK UNM college students.

There is a relationship between hand-eye coordination and lay-up ability

The results of the data obtained from the study aim to find out between independent variables and dependent variables and prove existing hypotheses. Therefore, the results of hypothesis testing based on data processing through regression analysis from the SPSS program on the relationship between hand-eye coordination, and lay-up ability in FIK UNM college students were obtained according to the following summary of **Table 5** :

Table 5.

Results of correlation and regression analysis for the third hypothesis

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

Based on **Table 5** above, the results of correlation and regression testing data between hand-eye coordination and lay-up ability in FIK UNM college students obtained a calculated r-value (r_o) = 0.689 ($P = 0.000 < \alpha: 0.05$) for a square R-value (determination coefficient) of 0.474. This means that 47.4% of lay-up shoot ability in FIK UNM college students is explained by wrist flexion. From the ANOVA test or F test, the F count is 25.268 with a significance level of 0.000. Since the probability (0.000) is much less than $\alpha:0.05$, H_0 is rejected and H_1 is accepted. This means that there is a significant relationship between wrist flexion and lay-up shoot ability in FIK UNM college students.

There is a relationship between limb explosive power, wrist flexibility, hand-eye coordination and lay-up shoot ability.

The results of the data obtained from the study aim to find out between independent variables and dependent variables and prove existing hypotheses. Therefore, the results of hypothesis testing based on data processing through correlation and regression analysis from the SPSS program on the relationship between wrist flexion and lay-up ability in FIK UNM college students were obtained according to the following summary of **Table 6**:

Table 6.

Results of correlation and regression analysis for the third hypothesis

Variable	r/R	RS	F	Sig	Ket
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 correlation testing and regression data between limb explosive power, wrist flexion and hand-eye coordination on lay-up ability in FIK UNM college students obtained a calculated r-value (r_o) = 0.768 ($P = 0.000 < \alpha: 0.05$) for a square R-value (determination coefficient) of 0.590. This means that 59% of lay-up shoot ability in FIK UNM college students is explained by limb explosive power, wrist flexibility and hand-eye coordination. From the ANOVA test or F test, the F count is 12.473 with a significance level of 0.000. Since the probability (0.000) is much less than $\alpha:0.05$, H_0 is rejected and H_1 is accepted. This means that there is a significant relationship between limb explosive power, wrist flexibility and hand-eye coordination on lay-up shoot ability in FIK UNM college students.

Discussion

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

1. The first hypothesis of H_0 was rejected and H_1 was accepted, namely; there is a significant relationship between limb explosive power to lay-up shoot ability in FIK UNM college students. The results obtained are associated with the underlying theories the results of this study support existing theories. This can be explained that if a college student has good limb explosive power, they will be good in their lay-up shoot ability.
2. The first hypothesis of H_0 was rejected and H_1 was accepted, namely; there is a significant relationship between wrist flexion on lay-up ability in FIK UNM college students. The results obtained are associated with the framework of thinking and the underlying theories the results of this research support existing theories. This can be explained that if a college student has good wrist flexibility, they will be good in their lay-up shoot skills.

3. The first hypothesis of H0 was rejected and H1 was accepted, namely; there is a significant relationship between hand-eye coordination to lay-up shoot ability in FIK UNM college students. The results obtained are associated with the framework of thinking and the underlying theories the results of this research support existing theories. This can be explained that if a college student has good wrist flexibility, they will be good in their lay-up shoot skills.
4. The first hypothesis H0 was rejected and H1 was accepted, namely; there is a significant relationship together with limb explosive power, wrist flexibility and hand-eye coordination on lay-up ability in FIK UNM college students. The results obtained are associated with the framework of thinking and the underlying theories the results of this research support existing theories. This can be explained that if a college student has limb explosiveness, wrist flexibility and good hand-eye coordination, it will be good in their lay-up shoot ability.

CONCLUSION

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

1. There is a significant relationship between limb explosive power and lay-up shoot ability in FIK UNM college student
2. There is a significant relationship between wrist flexion and lay-up shoot ability in FIK UNM college student
3. There is a significant relationship between hand-eye coordination and lay-up shoot ability in FIK UNM college student
4. There is a significant relationship between limb explosive power, wrist flexion and eye coordination on lay-up shoot ability in FIK UNM college student

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