

Arm Muscle Power, Agility, and Chest Pass Ability in Basketball: Is there a Connection?



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ABSTRACT: Basketball is one of the most popular sports in the world. A basketball player needs to have cardiovascular power to run up and down the court from time to time during four-quarters of a game, but players must also be able to perform explosive bursts of speed, explosive jumps, and explosive moves for agility, over time. Arm muscle power is one of the things needed by basketball players to be able to pass well, because basketball players rely on attributes related to strength to perform basic techniques. The purpose of this study was to determine the relationship between arm muscle power and agility to basketball chest pass ability. The method used in this study was correlational, the sample in this study was 33 male students Haluoleo University Physical Education study program. Instruments used to measure arm muscle power with two-hand medicine ball put, instruments to measure agility with shuttle run tests, and chest pass ability test instruments using chest pass ability tests. The data analysis technique used in this study used product moment correlation analysis and multiple regression analysis using SPSS 26. The results of this study are known to have a positive relationship between arm muscle power and chest pass ability in students of 0.414 with a significance value of 0.016. As for the agility variable, it has no relationship with chest pass ability of 0.054 with a significance value of 0.766. The relationship of Arm Muscle Power and Agility to Chest Pass Ability has a correlation value of 0.417 with a significance value of 0.057. This means that there is a relationship between Arm Muscle Power and Agility to Chest Pass Ability, but it is not significant. The two independent variables together affect the dependent variable by 17.4%. The conclusion of this study is that it can be concluded that there is a positive and significant relationship between arm muscle power and students' chest pass ability. The success of doing a chest pass is to use the strength of the arm muscles so that the ball moves. This means that the better the strength of the player's arm muscles, the faster the ball will move. The strength needed to perform this chest pass movement is obtained from the strength of the muscles in the arm. If done well and systematically, it will affect the ability of chest passes in basketball. While there is no relationship between agility and chest pass ability, speed remains an important component of basketball. Based on this, a good exercise program is needed to increase arm muscle power so that chest pass ability can increase, besides that it is also necessary to include an agility training program to support all aspects of the basketball game.

KEYWORDS: Arm Muscle Power, Agility, Chest Pass, Basketball

INTRODUCTION

Basketball is one of the most popular sports in the world [1]. Basketball is one of the fastest team sports with maneuverability, this describes athletic ability i.e., speed and strength [2]. In the game of basketball, it is not only relying on technique, tactics, psychology, and anthropometry, but it is also necessary to rely on physical conditions such as jumping strength, cyclic and acyclic speed, and agility [3]. In addition, the physiological requirements of basketball include aerobic and anaerobic performance as well as physical characteristics including muscle strength, strength, endurance, flexibility, speed, agility and sport-specific abilities [4]. Basketball, a game played with a continuous flow of activity, has always been considered a game of precision, timing, accuracy and agility [2]. To be able to play at the highest level, an athlete needs to improve agility, aerobics, and anaerobic external muscles [5]. A basketball player needs to have the cardiovascular power to run up and down the court from time to time during four-quarters of a game, but the player must also be able to perform explosive speed bursts, explosive jumps, and explosive moves for agility, over time [2].

The game of basketball is a team game in which five players combine basic techniques to move the ball effectively [6]. In the game of basketball, when one touches the ball he has three important Action options namely, dribble, pass the ball to a

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teammate, and make a shot to the hoop [7]. A style of play with passing dominance and acceptance of passes over dribbling is recommended to break the rhythm of the game, generate imbalances in defense, and increase shot attempts [7]. Passing moves that are often used in a match are useful for managing attacks [6].

Arm muscle power is one of the things needed by basketball players to be able to pass well, because basketball players rely on attributes related to strength to perform their basic techniques [8]. One technique in the game of basketball is a chest-high throw or chest pass. In addition, the thing that is no less important and needs to be owned by a basketball player is agility. Agility is a direct quality of work and contributes to success in sports [9]. In team sports such as, football, handball, and basketball, agility allows an athlete to outperform his opponent in situations where he or she is in a position to determine movement patterns [10]. Based on the explanation above, the purpose of this study was to determine the relationship between arm muscle strength and agility with chest pass ability in basketball games.

METHODS

This research is correlational which means a study that involves data collection actions to determine whether there is a relationship and the level of relationship between two or more variables. The sample in this study was 33 male students Haluoleo University Physical Education study program. Instruments used to measure arm muscle power with two-hand medicine ball put, instruments to measure agility with shuttle run tests, and chest pass ability test instruments using chest pass ability tests. The data analysis technique used in this study used product moment correlation analysis and multiple regression analysis using SPSS 26.

RESULTS

Aware of the results of the research carried out can be explained in the table as follows.

Table 1. Descriptive Statistic

Variabel (n=33)	Minimum	Maximum	Mean	Std. Deviation
Arm Muscle Power	2.88	3.80	3.2427	.25494
Agility	14.96	16.23	15.5145	.41035
Chest Pass Ability	5.00	15.00	8.5455	2.47602

Based on the descriptive statistical data above, it can be seen that the average value of student arm muscle power is 3.2427, agility is 15.5145, and chest pass ability is 8.5455. In the arm muscle power variable is known to have a minimum value of 2.88 and a maximum value of 3.80, while in the agility variable it has a minimum value of 14.96 and a maximum value of 16.23, in the chest pass ability variable it has a minimum value of 5.00 and a maximum value of 15.00.

Table 2. The Relationship of Arm Muscle Power and Agility to Chest Pass Ability

	N=33	Agility	Arm Muscle Power	Chest Pass Ability
Agility	Person Correlation		0.012	0.054
	Sig. (2-tailed)		0.948	0.766
Arm Muscle Power	Person Correlation	0.012		0.414*
	Sig. (2-tailed)	0.948		0.016
Chest Pass Ability	Person Correlation	0.054	0.414*	

Based on the data above, namely, the relationship between arm muscle power and agility to chest pass ability is known to have a positive relationship between arm muscle power and chest pass ability in students of 0.414 with a significance value of 0.016. As for the agility variable, it has no relationship with chest pass ability of 0.054 with a significance value of 0.766.

Table 3. The Relationship of Arm Muscle Power and Agility to Chest Pass Ability

R	R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. Change
0.417	0.174	2.32395	.174	3.162	2	30	0.057

Based on the data above, the relationship between Arm Muscle Power and Agility to Chest Pass Ability has a correlation value of 0.417 with a significance value of 0.057. This means that there is a relationship between Arm Muscle Power and Agility to Chest

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Pass Ability, but it is not significant. The two independent variables together affect the dependent variable by 17.4%.

DISCUSSION

Based on the results above, it is known that the relationship between arm muscle power and agility on chest pass ability is known to have a relationship between arm muscle power and chest pass ability in students of 0.414 with a significance value of 0.016. As for the agility variable, it has no relationship with chest pass ability of 0.054 with a significance value of 0.766. It can be concluded that there is a significant relationship between arm muscle power and chest pass ability in male college students. This is in line with previous research that explains that there is a significant relationship between physical fitness variables and basketball passing accuracy, namely, hand strength, foot strength, agility, balance, and speed [11]. According to Endris & Kumar, 2018 explains that speed, explosive power, grip strength have an important role in the game of basketball.

The game of basketball consists of five players, and passing is one of the techniques that players need to master [11]. When a person performs a chest pass the movement of the ball is influenced by force, the stronger the force or impulse exerted, the stronger the motion of the object given the force [6]. A chest pass is a pass toward the chest or between the waist and shoulders of a teammate who receives it. This pass is useful for short-range passes, so it requires speed and accuracy in passing the ball [12]. According to Putra, 2020 success in doing chest passes is using arm muscle strength so that the ball moves. This means that the better the strength of the player's arm muscles, the faster the ball will move [6].

According to Nurliani & Hasyim, 2023 arm muscle strength in question is the ability of strong and fast arm muscles to reach the maximum in a short time when performing chest pass movements. To produce a hard pass, the thrust must be strong and fast, so a large enough explosive power is required to hit the target. The strength needed to perform this chest pass movement is obtained from the strength of the muscles in the arm. If done well and systematically, it will affect the ability of chest passes in basketball [12]. Another study explains that, shoulder strength has a significant relationship to basketball game performance [13]. Arm muscle strength is the ability of one's arm muscles to make maximum movement, Increasing arm muscle strength is highly recommended in basketball games, if one has good muscle strength then it will be more efficient in playing basketball [6].

Meanwhile, based on the results of this study, the agility variable has no relationship with chest pass ability of 0.054 with a significance value of 0.766. In the game of basketball speed and agility are important components for achieving success, high-intensity movements such as, jumping (for rebounds, blocks and shots), turns, dribbles, sprints, and low-intensity activities such as walking, stopping, and jogging are required during basketball games [14] A study explains that, there is a relationship between postural stability, muscular endurance, and agility in the game of basketball. It is also explained that agility can make athletes more controllable [15]. Therefore, it is important to implement an exercise program that improves postural stability and increases core muscular endurance to improve the success of the game of basketball. Design an exercise program that enhances endurance and then balance as an integrated part of optimal athlete performance [15].

CONCLUSIONS

Based on the discussion above, it can be concluded that there is a positive and significant relationship between arm muscle power and student chest pass ability. The success of doing a chest pass is to use the strength of the arm muscles so that the ball moves. This means that the better the strength of the player's arm muscles, the faster the ball will move. The strength needed to perform this chest pass movement is obtained from the strength of the muscles in the arm. If done well and systematically, it will affect the ability of chest passes in basketball. While there is no relationship between agility and chest pass ability, speed remains an important component of basketball. Based on this, a good exercise program is needed to increase arm muscle power so that chest pass ability can increase, besides that it is also necessary to include an agility training program to support all aspects of the basketball game.

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