

## Literature Study of Arm Muscle Strength on Shooting Ability in Basketball Games



Sabda Hussain As Shafi<sup>1</sup>, Ali Satia Graha<sup>2</sup>, Rendi Alfani<sup>3</sup>, Muhammad Irfan Amalul Ahli<sup>4</sup>,  
Enggista Hendriko Delano<sup>5</sup>, Inas Gita Amalia<sup>6</sup>, Wahyu Aji Nugroho<sup>7</sup>

<sup>1,2,3,5,6,7</sup> Yogyakarta State University, Jl. Colombo Yogyakarta No.1, Karang Malang, DI Yogyakarta, 55283, Indonesia.

<sup>4</sup>Universitas Bina Darma, Jl. Jenderal Ahmad Yani No.3, 9/10 Ulu, Kecamatan Seberang Ulu I, Kota Palembang, Sumatera Selatan 30111.

**ABSTRACT:** This study was library research. It was conducted by looking at and linking the strength of the arm muscles to the shooting in the basketball game. The ICO method was used to collect the data. The data analysis included the identification of journal article selection and inclusion criteria. From the literature study results, there was a significant relationship between arm muscle strength and the ability to shoot. There is a contribution of arm muscle strength to the shooting ability of basketball players. Less dominant factors in supporting shooting skills in basketball games need to be considered and resolved so that these factors are more helpful in improving shooting skills.

**KEYWORDS:** Arm muscle strength, shooting ability, basketball game.

### INTRODUCTION

Most Indonesians know how vital health care is if people are to continue living physically and mentally healthy lives. The fact that Indonesians compete in sports by hosting regional, national, and international tournaments and on holidays in the fields and locations where sports activities are possible serves as evidence for this. Sport has evolved into a necessity for the community to maintain and enhance physical fitness so that members may perform well in daily activities and retain their enthusiasm for them. This is consistent with the specific goals for sports activities outlined by Iman Sodikun (1992), who stated that "sports in Indonesia are not just for physical fitness or recreation, but the focus must be put in increasing achievement to make the country proud in the international arena."

Sports are socialized in Indonesia for the benefits of education, entertainment, and physical fitness, as well as a way of success. The Republic of Indonesia Law Number 3 of 2005 regarding the National Sports System explains this. It is described in detail in CHAPTER II, Article 4: National sports aim to preserve and enhance physical and mental well-being, achievement, and human quality, instill moral principles and a noble character, foster sportsmanship and discipline, and strengthen the resilience of the country as a whole. They also aim to elevate the country's dignity, prestige, and honor. Achievement is not just based on the ability to master procedures; it is also influenced by preparation through systematic and ongoing maximal training. The lack of several characteristics that assist this goal has contributed to Indonesians' poor sporting performance, particularly in basketball. This has left them with weak physical, technical, and tactical skills, which will affect the players' psyche. According to the author's observations, existing extracurricular activities, particularly basketball, are attractive to students. Basketball is one of the extracurricular activities that students greatly enjoy because it helps the school's reputation. Although this extracurricular activity has been successful so far, there are still a lot of challenges that players face during games, such as frequently losing the ball when attacking the opponent's area, having poor passing, shooting, and dribbling skills, and having poor body posture in comparison to the opponent.

Basketball is currently undergoing tremendous development, as shown by the emergence of national competitive clubs and student-athletes playing basketball at both the high school and collegiate levels. In addition, the diversity of basketball games available today, such as streetball, three-on-three, and crush bone, make the sport respectable and popular among young people. The game's object in basketball, which is played with hands and a large ball, is to score as many points as possible by placing the ball in the opponent's basket. The ball can be tossed to a teammate or bounced on the ground while walking or standing still.

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However, to excel at this game, the players must first become proficient in basic basketball techniques like passing, dribbling, and shooting. (Siti Nurrochmahdkk, 2009).

Five players per team, male and female, compete in basketball. In essence, the goal of the game of basketball is to make as many baskets as possible while preventing your opponent from doing the same. Basketball requires the fundamental skills of passing, shooting, and dribbling because those are crucial components for attaining the best results in basketball. Since the object of the basketball game is to send as many balls into the opponent's hoop as possible while preventing the visitors from scoring, shooting is a fundamental talent that every basketball player must possess. The fundamentals of shooting are crucial since the total goals scored by a team determine its win in a game.

Arm strength is necessary for shooting. In order to improve arm muscle strength and generate a successful shot, adequate muscle quality is also required. Arm muscle strength is one of the components that makes up the explosive power of the arm muscles. Exercises that result in shooting can help build and enhance arm muscle strength. Basketball is a game where shooting is one of the fundamental skills. While using other essential skills, like passing, dribbling, guarding, and rebounding, can lead to fantastic scoring opportunities, shooting is still a requirement. Shooting itself can compensate for the shortcomings of other fundamental methods. To be able to put the ball into the ring with each shot taken, a shot must be accurate. Both physical and mental factors affect one's capacity to throw the ball into the ring. Muscle strength is a mental factor affecting shooting, forcing players to concentrate on possessing the necessary strength. According to Safarul Anam (2015), the ability to shoot in basketball significantly correlates with arm muscle strength and length.

Strength is the capacity of the muscles to withstand loads or resistance while performing activities (Suharno, 1986). One physical characteristic that significantly affects the outcome of free throws is strength, as it allows the shot to travel farther and has a more favorable effect. The accuracy of making free throws in basketball mostly depends on wrist flexibility and arm muscle strength; two things rarely practiced on the court.

Shooting is the most well-known and favored fundamental basketball talent, according to Kosasih (2008). According to Wissel (2000), all players must master shooting skills. This aligns with the basketball goal, which calls for each team to shoot as many balls into the opponent's hoop or basket while preventing the other team from doing the same. According to M. Sajoto (1988), strength is a physical quality that involves a person's capacity to use his muscles and take the load at a specific time of work. The success of a free throw depends on the power of the arm muscles, which aid in pushing the ball into the basketball hoop. The force required to push the ball into the basketball hoop depends on the shot's distance. The arms, wrists, and fingers greatly enhance successful shooting at close range (Wissel Hal, 2000).

Some fundamental moves in basketball include dribbling, passing, pivoting, and shooting. In the game of basketball, shooting technique is essential. The steps involved in shooting a basketball are as follows: 1) The position of the contact of the palms of the hands on the ball forms the letter "w"; 2) Position your feet shoulder-width apart; 3) Body slightly leaning forward; 4) The position of the hands form a 90-degree angle accompanied by an upright body position; 5) Both hands straight up then accompanied by a whip. The outcomes of a game will depend on a team's ability to shoot. Strength is the capacity of the muscles to withstand loads or resistance while performing activities (Suharno HP, 1986). Strength is a physical characteristic that significantly affects free throw outcomes since it increases shooting range and positively impacts shot quality (Brittenham Greg, 1996).

According to M. Sajoto (1988), strength is a component of physical condition that involves the problem of a person's ability to use his muscles to receive loads at certain times of work. The arm is the upper limb consisting of the humeral head (joint head), humeral column (indentation of the bone), major and minor tubercles, olecranon fossa (back indentation), coronoid fossa (front indentation), capitulum, lateral epicondyle (Syaifuddin, 1997). As arm muscle strength contributes to good shooting skill, the authors were interested in researching the Literature Study of the Relationship between Arm Muscle Strength and Arm Length to Shooting Ability in Basketball Games.

### METHOD

This study was library research. This type of research attempts to gather information from the literature, and the methodology employed is a synchronous research paradigm. In order to conduct the study, basketball shooting performances in games were compared to arm muscle strength. Since this research is based on library materials, documentation—that is, tracking down textual sources that contain numerous themes and issues discussed—was employed to obtain the data. The information gathered and examined using a descriptive methodology describes the subject under study.

The research started by collecting and studying research data from previous researchers. Furthermore, data was added to support this research through journals, books and the internet. After being collected and studied, data processing was performed.

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Then, the analysis was done descriptively. This research is expected to determine the relationship between arm muscle strength and shooting results in basketball games. The journal articles were gathered using the ICO method described as follows:

1. I stands for intervention, Prognostic Factor, or Exposure. The intervention or prognostic factor in this literature review was shooting performance.
2. C stands for comparison, which also includes intervention (if necessary). It means comparisons between the intervention and exposure to the studied topic. In our case, arm muscle strength was compared.
3. O stands for an outcome to be measured or attained. The outcome investigated in our research was the strength of the arm muscles on the results of shooting a basketball game. To facilitate the search for journals, keywords are needed, namely arm muscle strength on the results of shooting basketball games.

### Data/Journal articles collection techniques

In collecting data/journal articles, the authors set the inclusion and exclusion criteria. Inclusion criteria are criteria/requirements that must be in the journal articles to be reviewed, while exclusion criteria are those that cannot be in the articles to be reviewed. The following are the journal inclusion criteria in this research:

1. Articles with relevant titles and contents to our study's objective
2. The research design should be quasi-experiment, research, and development.
3. Respondents should be students joining basketball extracurriculars.
4. The articles were published in 2020 or prior.
5. The Independent variable is arm muscle strength, and the dependent variable is shooting results.

Meanwhile, the exclusion criteria include the following:

1. Cross-sectional and case study research design
2. Society as respondents
3. Articles published before 2020.
4. Articles with irrelevant titles and content to our study's objective

### Analysis/Review technique

The selection of the journals to be included in this study and the criteria for inclusion were the first steps in the data analysis process. The information about the effects of arm muscle strength on the outcomes of shooting basketball games was found in an electronic database, Google Scholar, between 2020 and above. Hundreds of articles were retrieved from the database's keywords. The authors independently selected the 134 articles used as references based on their titles, contents, and purposes. After carefully reading the text, many were later excluded because they did not address the original query, leaving only eight articles that did. To learn more about the connection between arm muscle strength and the outcomes of shooting a basketball game, the researcher carefully reviewed each of the chosen publications, paying close attention to the abstract, objectives, and data analysis.

**Table 1. literature review**

No	Author, Year, Title	Sumber Jurnal dan DOI
1	Jeanne R. Malonda (2020), The Relationship between Arm Muscle Strength and Hand-Eye Coordination with Shooting Accuracy in Basketball Games in Male Students of SMA Negeri 1 Dimembe	Jurnal Sporta: Vol. 1, No. 1, June 2020 <a href="https://smallpdf.com/id/result">https://smallpdf.com/id/result</a>
2	Callixtus Fedy Purnawan, Margono, and Moch. Senoadji K. (2022), Correlation between Arm Muscle Strength and Wrist Flexibility with Basketball Free Shot Results	Journal of Physical Education, Sport, Health and Recreation 1 <a href="http://journal.unnes.ac.id/sju/index.php/ujss">http://journal.unnes.ac.id/sju/index.php/ujss</a>
3	Sukirno, and M. Rizky Kurniawan (2017), The Relationship between Arm Length and Arm Muscle Strength with Free Throw Shooting Results in Men's Athletes of Bangau Palembang Basketball Club	Jurnal Multilateral, Volume 16, No. 1 June 2017 <a href="https://ppjp.ulm.ac.id/journal/index.php">https://ppjp.ulm.ac.id/journal/index.php</a>

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4	Dahlia Asti Permatasari and Dwi Cahyo Kartiko, Contribution of Arm Muscle Strength, Leg Muscle Strength, and Balance to the Accuracy of Men's Basketball Shooting in the Student Activity Unit of Surabaya State University	Jurnal Kesehatan Olahraga, Vol. 08 No. 02, Edisi Juli 2020 <a href="https://jurnalmahasiswa.unesa.ac.id/index.php">https://jurnalmahasiswa.unesa.ac.id/index.php</a>
5	Tery Wanena (2018), The Contribution of Leg Muscle Power, Arm Muscle Strength, and Hand-Eye Coordination with the Ability to Jump Shot Basketball in sport science Students in Cendrawasih University in 2017	JPOS (Journal Power Of Sports), 1 (2) 2018 <a href="http://ejournal.unipma.ac.id/index.php/JPOS">http://ejournal.unipma.ac.id/index.php/JPOS</a>
6	Aulia Lita Pradina and Heri Wahyudi (2020), Contribution of Arm Muscle Strength, Leg Muscle Strength, and Balance to the Shooting Accuracy of Men's Basketball Student Activity Unit, Surabaya State University	Jurnal Kesehatan Olahraga, Vol. 08 No. 02, Edisi Juli 2020 <a href="https://core.ac.uk/download/pdf/230790221.pdf">https://core.ac.uk/download/pdf/230790221.pdf</a>
7	Muhammad Zahrony and Himawan Wismanadi (2017), The Contribution of Arm Muscle Strength to 3-Point Shot Accuracy in the Men's Basketball Team of Santa Agnes Catholic High School Surabaya	Jurnal Kesehatan Olahraga Vol. 05 No. 02 Tahun 2017 <a href="https://core.ac.uk/download/pdf/230790221.pdf">https://core.ac.uk/download/pdf/230790221.pdf</a>
8	Recky Dwi Putra, Titis Nurina, and Bachtiar (2020), Relationship of Arm Muscle Strength and Leg Strength to Jump Shoot	JPOS (Journal Power Of Sports), 3 (1) 2020 <a href="http://ejournal.unipma.ac.id/index.php/JPOS">http://ejournal.unipma.ac.id/index.php/JPOS</a>

## RESULT AND DISCUSSION

- Jeanne R. Malonda (2020) wrote The Relationship between Arm Muscle Strength and Hand-Eye Coordination with Shooting Accuracy in Basketball Games in Male Students of SMA Negeri 1 Dimembe, published in Jurnal Sporta: Vol. 1, No. 1, June 2020 Faculty of Sports Science, Manado State University, Indonesia retrieved from <https://smallpdf.com/id/result#r=27dc75957089dc37d39960b943d6aa8d&t=merge>. Research goals are as follows: 1. How significant is the correlation between shooting accuracy and arm strength in basketball games played by male students at SMA N 1 Dimembe? 2). How significant is the correlation between basketball shooting accuracy and hand-eye coordination among male SMA N 1 Dimembe students? A descriptive methodology was employed. Up to 67 male students made up the population, and 30 randomly chosen individuals made up the sample. Tests of arm muscle strength, hand-eye coordination, and shooting tests were employed to collect data. This study adopted a "product moment and multiple correlation" research design. Statistical methods were used in hypothesis testing with the r-test. The calculation results for t observations showed that tcount (9.241) was greater than the t table both at  $\alpha$  5% ttable (1.671) and 1% ttable (2.390). Because the tcount was bigger, it can be concluded that the multiple correlation coefficient was very significant. This study concluded 1) a relationship between arm muscle strength and shooting accuracy in basketball games for male students at SMA N 1 Dimembe, 2) a relationship between hand-eye coordination and shooting accuracy in basketball games for male students at SMA N 1 Dimembe, 3) a relationship between arm muscle strength and hand-eye coordination together with Shooting Accuracy in Basketball Games in Male Students of SMA N 1 Dimembe. For the variable arm muscle strength (X1), based on the analysis results of the SPSS series 20 program, with the One-Sample Kolmogorov Smirnov Test for normality on the arm muscle strength score data, the value Asymp, Sig (2-tailed) = 0.773 was obtained. This indicated that the Asymp. Sig (2-tailed) was greater than the ( $\alpha$ ) value (0.05). Thus, Ho was accepted, stating that the data came from a normally distributed population (the distribution of data on arm muscle strength scores was normal). For the hand-eye coordination variable (X2), based on the analysis results of the SPSS series 20 program, using the One-Sample Kolmogrov-Smirnov Test for normality on the hand-eye coordination score data, the Asymp value was obtained. Sig(2-tailed) = 0.184. This indicated that the Asymp. Sig (2-tailed) was greater than the ( $\alpha$ ) value (0.05). Thus, Ho was accepted, meaning that the data came from a normally distributed population (the eye-hand coordination score data distribution was normal). For the variable Shooting Accuracy of students (Y), based on the analysis results of the SPSS series 20 program, with the normality test of the One-Sample Kolmogrov-Smirnov Test on the shooting accuracy score data, the Asymp value was obtained. Sig(2-tailed) = 0.547. This indicated that the Asymp.

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Sig (2-tailed) was greater than the ( $\alpha$ ) value (0.05). Thus,  $H_0$  was accepted, which means that the population was normally distributed (the distribution of the student's shooting Accuracy score data was normal). In descriptive hypothesis testing, arm muscle strength in basketball games for male students at SMA N 1 Dimembe shows values and scores with an average ( $X_1$ ) = 28.73 and a standard deviation ( $SD_{X1}$ ) = 5.58. Based on the ANOVA SPSS Coefficients test results, the linear regression equation between arm muscle strength ( $X_1$ ) and student shooting ability ( $Y$ ) was  $\hat{Y} = -0.437 + 0.333 X_1$ . This means that if there is an increase in the arm muscle strength variable, the shooting accuracy in basketball games for male students at SMA N 1 Dimembe will also increase by 0.333 units. This indicates the significant and positive relationship between the variable level of arm muscle strength ( $X_1$ ) and student shooting accuracy ( $Y$ ). Therefore, any changes in the increase in the arm muscle strength variable ( $X_1$ ) will also be followed by an increase in the shooting accuracy variable ( $Y$ ) in a basketball game for male students at SMA N 1 Dimembe.

2. The second article was by Callixtus Fedy Purnawan, Margono, and Moch. Senoadji K entitled Correlation between Arm Muscle Strength and Wrist Flexibility with Basketball Free Shot Results published by Journal of Physical Education, Sport, Health and Recreation retrieved from <http://journal.unnes.ac.id/sju/index.php/ujs> Universitas Negeri Semarang. This study aimed to determine the relationship between arm muscle strength and wrist flexibility with the results of basketball free throws. The data collection method used in this study was a survey. The population in this study were male members of the Tri Tunggal Christian High School basketball club in the 2011/2012 academic year, which consisted of 23 students. The sample in this study was 23 male members of the Tri Tunggal Christian High School basketball club in the 2011/2012 academic year. The total sampling technique was employed; thus, the entire population was used as a sample, in this case, 23 participants. This research used a correlation design and collected data through a survey. The independent variable was arm muscle strength and wrist flexibility, while the dependent variable was the free throw result. The pull and push dynamometer was used to measure the strength of the arm muscles, while to measure wrist flexibility, the goniometer and the free throw test were employed ten times. Data were analyzed using multiple regression. The results of the regression analysis showed that arm muscle strength and wrist flexibility, either partially or simultaneously, did not make a significant contribution to the results of free throws in the male participants of the Tri Tunggal Christian High School basketball club in the 2011/2012 academic year. This is shown from the partial test results with a significance value of each independent variable of 0.854 and 0.353, which exceeds the 5% error level. The results of the partial test showed that the arm muscle strength of the male participants of the Tri Tunggal Christian High School basketball club in the 2011/2012 academic year did not affect the accuracy of the free throw results. Based on the results of the research and discussion, it can be concluded that there is no relationship between arm muscle strength and the results of one-handed free throws. There is no relationship between wrist flexibility and the results of one-handed free throws. There is no relationship between arm muscle strength and wrist flexibility with the results of one-handed free throws in male Tri Tunggal Christian High School basketball club participants in the 2011/2012 academic year.
3. The third article was by Karya Sukirno and M. Rizky Kurniawan (2017), entitled The Relationship between Arm Length and Arm Muscle Strength with Free Throw Shooting Results in Men's Athletes of Bangau Palembang Basketball Club, published by Jurnal Multilateral, Volume 16, No. 1 Juni 2017 retrieved from <https://ppjp.ulm.ac.id/journal/index.php/multilateralpjk/article/view/3663>. The correlational method was used in this study to describe the relationship between the independent variables, namely arm length and arm muscle strength, and the dependent variable, namely shooting free throws in games. In connection with the theme/title of our study, we only examined the variables of arm muscle strength and free throw shooting variables. To measure arm muscle strength, Sukirno and M. Rizky Kurniawan (2017) used the expanding dynamometer method to compare the relationship between arm muscle strength and the results of shooting free throws. Based on the research, the average athlete could do an expanding dynamometer of 49.067 kg. The highest data was 71 kg, and the lowest was 29 kg. These results indicate that arm muscle strength is a very influential component in the results of shooting free throws. The highest frequency of arm muscle strength in athletes was 9, with a distance range of 50.3-57.3 kg, and the smallest frequency was 1, with a distance range of 43.2-50.2 kg. Subjects were asked to do a free throw shooting test to compare the relationship between arm length and arm muscle strength with free throw shooting. Based on research, the average athlete could score 5.917. The highest data was 9, and the lowest was 2. These results show that arm length and muscle strength are crucial in shooting free throws. The highest frequency of free throw shooting results owned by athletes was 9 with a distance range of 8-9.1, and the smallest frequency was 4 with a distance range of 4.4 - 5.5. Sukirno and M. Rizky Kurniawan's research indicates that arm muscle strength positively impacts the outcomes of free throw shooting. This is demonstrated by the arm muscular strength's 95.33% effective contribution, which falls under the category of very strong relationship levels (Sugiyono, 2012: 184). Based on these



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findings, it is vital to pay attention to the components of arm muscle strength to be able to generate optimal free throw shooting and shoot free throws with good outcomes.

4. The fourth article was written by Dahlia Asti Permatasari and Dwi Cahyo Kartiko, entitled Contribution of Arm Muscle Strength, Leg Muscle Strength, and Balance to the Accuracy of Men's Basketball Shooting in the Student Activity Unit of Surabaya State University, published by Jurnal Kesehatan Olahraga, Vol. 08 No. 02, Edisi Juli 2020 retrieved from [https://jurnalmahasiswa.unesa.ac.id/index.php/jurnal-pendidikan\\_jasmani/article/view/19694/18008](https://jurnalmahasiswa.unesa.ac.id/index.php/jurnal-pendidikan_jasmani/article/view/19694/18008). This study aimed to determine the contribution of arm muscle strength, leg muscle strength, and balance to basketball shooting accuracy involving 14 male basketball athletes at Surabaya State University. The descriptive correlation analysis was used by collecting data on arm muscle strength, leg muscle strength, balance, and 7-meter shooting accuracy. The results of the normality test showed a normal distribution for all variables. The results of this study indicated no contribution between the variables of arm muscle strength (X1), leg muscle strength (X2), and balance (X3) together on the accuracy of shooting a basketball (Y) with a value of  $F_{count} (2.339) < F_{table} (3,34)$ . Individually, the study's results showed that the greatest contribution was obtained from arm muscle strength, with a percentage of 38.44%. In comparison, other variables (leg muscle strength and balance) did not contribute to the accuracy of basketball shooting, with a contribution obtained from leg muscle strength of 1.34% and a balance of 8.35%. This finding is in accordance with the results of other research, which explain that arm muscle strength significantly contributes to the accuracy of shooting the basketball. This is because the work of the muscles in carrying out certain movements is dominated by some of the arm muscles, such as the pectoralis major, which is very good for use in pushing and throwing. Playing basketball relies on the arm muscles because almost 50% of the arm muscles are used in shooting techniques. Arm muscles are used to throw and direct the ball right toward the goal to create points, with a role of 38.4%. Arm muscle strength (X1) has a significant role in the accuracy of shooting the basketball (Y).
5. The fifth article was by Tery Wanena (2018), entitled The Contribution of Leg Muscle Power, Arm Muscle Strength, and Hand-Eye Coordination with the Ability to Jump Shot Basketball in sport science Students at Cendrawasih University in 2017. This article was published by JPOS (Journal Power Of Sports), 1 (2) 2018, which can be retrieved from <http://ejournal.unipma.ac.id/index.php/JPOS>. This study aimed to determine the contribution of several variables to the jump shot ability of students of sports science at Cendrawasih University in 2017. These variables include a) the contribution between leg muscle power and their jump shot ability, b) the contribution between arm muscle strength and their jump shot ability, c) the contribution between hand-eye coordination with their jump shot ability, and d) the contribution between leg muscle power, arm muscle strength, and hand-eye coordination with their jump shot ability. This research used the descriptive correlational method. This method describes the data obtained from measurement results and literature studies. The subjects in this study were 30 students. The analysis used in this study was correlational. Based on calculations using the SPSS computer program, it was found that the correlation coefficient for the relationship between arm muscle strength and jump shot ability was 0.754. The significance of the correlation coefficient can be tested using the r test at  $\alpha = 5\%$  with  $n = 30$  and  $r_{table} = 0.361$ . Because  $r_{count} (0.754) > r_{table} (0.361)$ , it can be concluded that there was a relationship between arm muscle strength and student basketball jump shoots. There was a significant contribution between arm muscle strength and jump shoot results of 30.5%.
6. Aulia Lita Pradina and Heri Wahyudi's (2020) article was entitled Contribution of Arm Muscle Strength, Leg Muscle Strength, and Balance to the Shooting Accuracy of Men's Basketball Student Activity Unit, Surabaya State University, published by Jurnal Kesehatan Olahraga, Vol. 08 No. 02, Edisi Juli 2020 retrieved from <https://core.ac.uk/download/pdf/230790221.pdf>. This study aimed to determine the contribution of arm muscle strength, leg muscle strength, and balance to the accuracy of shooting a basketball. This study used a descriptive research type of correlational analysis. The descriptive approach has the meaning of explaining the data obtained from measurement results and literature studies. The results of the individual correlation analysis found a significant role between arm muscle strength (X1) on shooting accuracy (Y). This is per the research results, which explain that arm muscle strength has a major contribution to the accuracy of shooting basketball. This is because the work of the muscles in carrying out certain movements is dominated by some of the arm muscles, such as the pectoralis major, which is very well used in pushing and throwing. The technique of playing basketball does rely on arm muscles because almost 50% of arm muscles are used in shooting techniques because they are essential for throwing and directing the ball right at the basket to create points, with a role of 38.4%. Arm muscle strength (X1) has a significant role in the accuracy of shooting the basketball (Y) for men's student activity units at Surabaya State University by 38.4%.
7. Muhammad Zahrony and Himawan Wismanadi wrote the next article (2017), entitled The Contribution of Arm Muscle Strength to 3-Point Shot Accuracy in the Men's Basketball Team of Santa Agnes Catholic High School Surabaya published by Jurnal Kesehatan Olahraga Vol. 05 No. 02 Tahun 2017 retrieved from <https://core.ac.uk/download/pdf/230790221.pdf>. This

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study aimed to determine the contribution of arm muscle strength to the accuracy of a 3-point shot on the men's basketball team at Santa Agnes Catholic High School Surabaya, with a sample size of 12 students. This study used a descriptive quantitative statistical method of correlation. Two variables were observed: the independent variable, arm muscle strength, and the dependent variable, the accuracy of shooting three-point shots. The method used in this research was a quantitative research method. Because the quantitative research method can be interpreted as a research method based on the philosophy of positivism, the sampling technique is generally carried out randomly, and the data is collected using research instruments and analyzed quantitatively/statistically to test the hypotheses that have been set. This study used a correlational design to determine the correlation between the independent variable, arm muscle strength, and the dependent variable, the accuracy of 3-point basketball shots. These calculations showed a significant contribution between arm muscle strength and 3-point shooting accuracy because  $\alpha = 0.05$ ; the critical t for 10 degrees of freedom was 2.228. The formula for the coefficient of determination was tested to give an overview of the contribution of another variable in the linear relationship between variables, with a coefficient of determination value with a percentage. From the calculation of the coefficient of determination, a value of 37.5% was obtained, so the contribution of arm muscle strength with a 3-point shot on the Surabaya Catholic High School men's basketball team was 37.5%. In accordance with the formulation of the problem, research objectives, and research results on the contribution of arm muscle strength to 3-point shooting accuracy in the men's basketball team at Santa Agnes Catholic High School Surabaya, it can be seen that the results of the product-moment correlation test stated that there was a fairly strong contribution between arm muscle strength and 3-point shot accuracy for the men's basketball team at Santa Agnes Catholic High School Surabaya.

8. The last article reviewed in this study was by Recky Dwi Putra, Titis Nurina, and Bachtiar, entitled Relationship of Arm Muscle Strength and Leg Strength to Jump Shoot, published by JPOS (Journal Power Of Sports), 3 (1) 2020, which can be retrieved from <http://e-journal.unipma.ac.id/index.php/JPOS>. This study aims to prove the relationship between arm and leg muscle strength in the jump shoot at SMA Negeri 4 Sukabumi City. This study used a survey method with test and measurement techniques. The population in this study was 18 students of SMA Negeri 4 Kota Sukabumi. However, using a purposive sampling technique, only ten people were selected for this study. The instruments used in this study included arm muscle strength tests, leg muscle strength tests, and jump shoot tests. A double correlation statistical data collection technique was carried out to find the relationship and contribution of two independent variables (X) or more simultaneously (together) with the dependent variable (Y) using the multiple correlation formula, and significance was tested with Fcount. The study showed that there was a significant relationship between  $r_{x1y}$  (0.546) >  $r_{table}$  (0.631), indicating a relationship between arm muscle strength and jump shoot. The highest score on this test was 33, and the lowest was 28. Leg muscle strength contributed 29.81%, and the remaining 70.19%. Thus, the jump shoot requires good arm muscle strength to produce accurate and directed shooting. In addition, the better the leg muscle strength, the better the jump shot because basic basketball techniques mostly involve jumping. Hence, it can be concluded that there is a significant relationship between arm muscle strength (X1) and jump shooting (Y).

### CONCLUSION

Based on the data analysis, description, testing of research results, and discussion, it can be concluded that:

1. A significant relationship exists between arm muscle strength and the ability to shoot.
2. There is a contribution of arm muscle strength with a shooting ability.
3. Factors that are less dominant in supporting shooting skills in basketball games need to be considered so that these factors are more helpful in improving shooting abilities.

### RECOMMENDATIONS

Based on the research conclusions above, several suggestions can be made:

1. Teachers should consider their students' arm strength because it impacts their shooting ability in a basketball game.
2. Students could include additional activities that aid in honing their basketball shooting techniques.
3. This study has numerous shortcomings; thus, further researchers should advance and improve it.

### REFERENCES

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