COMPETITOR:
JURNAL PENDIDIKAN KEPELATIHAN OLAHRAGA
e-ISSN: 2657-0734 & p-ISSN: 2085-5389 ‖ Volume 17, Number 2, 2025 ‖ P.1402-1413

The Effect Of Press-Up and Pull-Up Training On Arm Muscle Power In Female Shot Put Athletes Of Dumpang Athletic Club (KDA), Year 2025

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ABSTRACT

This study found problems in the sample to be studied, where the problem was in the athlete's acceleration, which was lacking when doing the push and the overall push time of the athletes was still in the lacking category if included in the test norm. For that, the researcher created a press-up and pull-up training program to solve the problems studied. This study aims to determine the effect of press-up and pull-up exercises on arm muscle power in female shot put athletes of the Dumpang Athletics Club (KDA) in 2025. The study used a quantitative approach with an experimental method, specifically a two-group pre-test post-test design. This study involved 6 athletes selected through a purposive sampling technique. Data collection was carried out through a Medicine ball test during the pre-test and post-test. Data analysis used a paired sample t-test with the help of SPSS version 22. The results of the analysis showed that press-up and pull-up exercises had a statistically significant effect on increasing arm muscle power. This is shown by the comparison of the average value of the medicine ball test before and after treatment, namely the average pre-test of 2.05 with a standard deviation of 0.74, and the average post-test of 2.74 with a standard deviation of 0.72. After being tested statistically, it was found to provide a significant increase. Thus, it can be concluded that press-up and pull-up exercises have a significant effect on increasing arm muscle power in female shot put athletes of the Dumpang Athletics Club (KDA) in 2025.

ARTICLE HISTORY
Received: 2025/06/20
Accepted: 2025/06/26
Published: 2025/06/28

KEYWORDS
Press-Up
Pull-Up
Arm Muscle Power
Shot Put
Athletic.

AUTHORS' CONTRIBUTION
A. Conception and design of the study;
B. Acquisition of data;
C. Analysis and interpretation of data;
D. Manuscript preparation;
E. Obtaining funding

Cites this Article : Hutauruk, Andriano Viki; Nurkadri, N.; Silwan, Argubi; Damanik, Yudika Syah Putri; Nainggolan, Bernat Asido; Berutu, Hariyati; Sinambela, Shindy Karunia. (2025). The Effect Of Press-Up and Pull-Up Training On Arm Muscle Power In Female Shot Put Athletes Of Dumpang Athletic Club (KDA) Year 2025. **Competitor: Jurnal Pendidikan Kepelatihan Olahraga**. 17 (2), p.1402-1413

INTRODUCTION

Athletics is known as one of the oldest sports in history and is often considered the mother of all sports, so it is not surprising to be called " the mother of sport" (Sukirno, 2011:22). Athletics plays a big role in the formation of physical fitness and is often used as a basis for fostering athletes' achievements and the progress of a nation's sports (Sukirno, 2017:18). Shot put is one of the numbers in the athletics branch of sport that emphasizes

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explosive movement coordination in doing the push. This movement requires a combination of strength and speed, which overall forms the element of power. To achieve maximum push distance, great and stable arm strength is needed. Following official provisions, the shot put must be pushed using one hand from the shoulder position. Thus, shot put can be interpreted as the activity of pushing a round metal object (shot) with a certain weight using one hand from the shoulder, to achieve the furthest and most directed push. This movement contains an element of speed. Based on the assumption that in terms of rejection it was not good and it was seen when participating in the SAC (Student Athletic Chamtion) competition which was held on October 7, 2024 which was held at the Medan State University stadium from 6 athletes who participated in the championship of one of the outstanding athletes and the rest, it is just that it cannot be expected from the athlete and does not know the lack of athletes when and what the problems they are doing. During the exercise, the researcher saw that their rejection was still not optimal, there was something that caused the exercise to be carried out more focused on technique and power exercises were carried out less and less in carrying out the exercise to support the observation results, so the researcher conducted a preliminary test using a Two-hand Midicine Ball test results of the Thow-hand Medicine Ball testby using the category of enough 3 athletes, the category of less 1, the medium category of 2 people and the results of the Medicine Ball test the researcher found or saw a lack in the power of the arm muscles, then the athlete rejected the female bullet less during training in the field for the refusal, it can be done in increasing the strength of the arm muscles when on the field for the refusal.

KDA (Dumpang Athletic Club) is one of the athletic clubs located in the city of Medan, which is located on STM street number 12A, Sirejo II, Kec. Bullet rejection is one of the numbers that is routinely trained and fostered at the Dumpang Athletic club. This information was obtained based on the results of observations and interviews conducted from November 25 to 27, 2024, at 15.00 at SMA Negeri 13 Medan. Press-up exercises are one of the important elements in the physical condition component that is often used in physical skill testing. This exercise is an indicator to assess a person's level of physical fitness. Press-ups are a form of strength training that relies on your body weight as a burden to train and strengthen your upper body muscles, while helping to increase muscle mass. One of the main muscles that is active during press-up movements is the Triceps brachii, which develops with the intensity of the exercise. Power is a series of activities of several elements of muscle tissue movement that create explosive energy when the two forces function simultaneously. Power or explosive energy has various benefits in sports activities, for example, in running, throwing, hitting, and kicking. The implementation of movements in these movements can be achieved optimally if the individual is able to use power optimally in the fastest time frame possible.

In the research that will be conducted on the Effect of press-up and pull-up exercises on increasing arm muscle power in female athletes of the athletic dump club, there is a study that is relevant to the research.

1. Based on the research of Yelva Febriani et al., this study aims to determine the effect of push-up and pull-up exercises on increasing arm muscle power in bullet resistance

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athletes. This type of study is quantitative, using a quasi-experimental research design. The sampling technique is carried out through the purposive sampling method. The research approach used was quasi-experimental with the design of one pretest-posttest group. This study was carried out as many as 12 treatment sessions, interspersed with one break time per exercise, for 10 participants. The increase in arm muscle power was measured using a medicine ball test. The results of the study from the implementation of push-up and pull-up exercises showed that the average arm muscle strength before the intervention was 15.30, and after the treatment increased to 19.90. The significance value of $P < \alpha = (0.000)$ indicates a significant influence on the increase in arm muscle strength in athletes in bullet repellent.

2. According to Saparuddin, the title of this study intends to identify the impact of physical activity of push-ups and pull-ups on the muscular power of the arms of PERPANI archery sports participants in Banjar Regency. The research approach applied in this study is experimental. The study design uses a two-group design with an initial test and a final test (Two-Group Pretest-Posttest). All subjects in this study were 8 members of PERPANI archery in the Banjar Regency area. Meanwhile, the subjects used as an example of the study were all participants in the population, who were involved as a sample of 8 people through the sample selection method using the total sampling method. The findings of the study indicate that the implementation of the exercise program for two groups, namely the push-up group and the pull-up group, for 16 sessions or 8 weeks, showed positive development. This fact is supported by the average value of each test in push and pull activities using a dynamometer in the push-up group as follows: the initial thrust value of 15.00, the final thrust value using a dynamometer of 18.00, the initial result of the dynamometer pull of 16.00, and the final result of the pull with a dynamometer of 18.25. The findings from the descriptive data analysis illustrate the increase in the number of measurements after the intervention in the form of push-up exercises was given. The average results of the thrust and pull test using a dynamometer in the pull-up group were: the initial thrust result of 14.75, the final thrust value of the dynamometer was 17.25, the initial value of pulling using a dynamometer was 16.25, and the final pull result was 20.50. Findings based on descriptive analysis indicate an improvement in the number of physical evaluation results after receiving pull-up exercise treatment.

Based on the indentists of the problem posed due to the limitations of the ability of the research, this study needs to be seen as the limitation of the problem is "The effect of Press-up and Pull-up exercises on arm muscle power in athletes who resist the bullet of the Women's Dumpang Athletic Club in 2025". The term "athletics" in the Indonesian context has a similar pronunciation to the term in other countries, but the meaning can be different. According to Bahagia (2012), athletics is a type of sport that involves competition in the form of basic human movements, such as running, jumping, and throwing, where participants compete against each other based on the number of steps, jumps, or throws they make. Meanwhile, Cania and Alnedral (2019) explained that

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athletics is a sport that requires high physical abilities, including strength, endurance, speed, coordination, agility, and various other skills, so that they can be done optimally. Bullet rejection is one of the numbers in the athletic throwing branch that has a characteristic name, namely that the bullet is not thrown as usual, but is pushed or pushed from the shoulder using one hand. According to Hendri Mulyadi, "The implementation of repelling bullets is not done by throwing, but by pushing or refusing to use one hand. To carry out the repulsion of the bullet requires the strength of the arm muscles. Arm muscle strength is the ability of a group of muscles in the arm to lift or withstand a specific load. Optimal arm muscle strength will support the results of long bullet repellents. On the other hand, if the strength of the arm muscles is not optimal, it will affect the result of the bullet repulsion." (Hendri Mulyadi, 2018:19). Shot put is a branch of competition that falls under the category of encouragement in the athletic discipline. As the term implies, the bullet should not be thrown, but pushed. This statement is strengthened by Kosasih (1994:36), who states that article 181 of the IAAF regulates the correct throwing technique in the throwing branch, which is a push or rejection of a bullet using one hand that comes from the base of the shoulder.

The bullet weight for the senior men's category is 7,257 kg with a diameter between 125 to 127 mm, while for the senior women, the bullet weight is 4 kg with a diameter of 103 to 105 mm. For the junior men's category, the weight of the bullet used ranged from 5 kg to 5.45 kg with a diameter of 115 to 117 mm, while the junior women used a bullet weighing 3 kg with a diameter of 97 to 99 mm. The bullet repellent circle has an area of 2,135 square meters, with the width of the retaining beam ranging from 11.2 to 30 cm, the length of 1.21 to 1.23 meters on the inside, and the thickness of the one from 9.8 to 10.2 cm. The rules state that the thrower or bullet pusher is not allowed to exit the circle before the bullet hits the ground, and must exit through the back of the circle in a standing position. If the number of participants exceeds eight people, each participant is given three opportunities to reject, then the eight participants with the best results will continue to the next round to get three additional rejection opportunities (Bahagia Yoyo Bahagia, 2000:110).

To obtain optimal results, it must be balanced with the implementation of the correct bullet rejection technique. The process is as follows:

1. The right foot is placed in front, just behind the boundary line of the circle, as the main support when making a push. The left foot is positioned on the left side, shoulder-width apart, parallel to the direction of the push. This position helps to maintain balance and prepare for a strong repulsion.
2. The bullet is held steadily with the right hand. Place the bullet over the shoulder, just between the neck and ears, with the armpit position open and the right arm forming a shoulder parallel angle. This attitude is important to provide maximum control and strength when making a push.
3. The left arm is opened forward to maintain balance, while the chest is slightly bent forward to make the body position more stable. The left foot is loosened and rests on the tip of the toe, allowing the body to be ready for a full-force thrust when repelling the bullet.

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Press-ups are one of the most effective upper-body exercises to strengthen the muscles of the upper body, especially the chest, shoulders, and triceps muscles. Push-up exercises are close-chain kinetic exercises that improve joint proprioception, joint stability, and muscle coactivation around the shoulder joint. Push-ups activate a large number of muscles simultaneously, increasing the need for the heart muscle and respiratory rate. In addition, press-ups increase the metabolic rate, so they can help with weight loss. Push-up exercises can be used as an inexpensive and quick method to assess an individual's functional capacity. A study conducted by Justin Yang et al concluded that participants who could do more than 40 press-ups had a lower risk of developing cardiovascular disease than participants who could do less than 10 press-ups. This study was conducted in active adult men. One of the reasons for its common use is that learning the movements is relatively easy, no equipment is required for the movements, and the exercises can be modified for greater or lesser difficulty depending on the patient's level of physical fitness. This adaptability is represented by variations that can be used to modify basic exercises to change the difficulty level of conventional training that requires the hands to be placed in a natural position under the shoulders, straight back, head facing up, and lower legs. Straight using the toes as the pivot point.

Pull-up is a form of exercise that aims to strengthen muscles, where one part of the body plays a significant role in its implementation. This activity demands arm muscle strength and can help increase the power of other muscles. How to perform *pull-ups* is as follows: (1) Hang your body on a bar or iron rod, then pull your body up until your chin is parallel or slightly above the bar, (2) The hand grip is facing forward when holding the bar, and (3) The position of the legs can be straightened or bent, but usually the legs are bent when performing this movement.

There are a wide variety of benefits of pull-ups which can be obtained if done regularly, starting from improving body fitness, training upper body muscle strength, maintaining an ideal weight, to maintaining mental health. Here is the explanation of each one. Moreover, pull-up Done regularly can also train and improve the strength of the hand. This can certainly make it easier for someone who often does weightlifting, rock climbing, tennis, and other activities that involve the grip of the hand in their movements.

METHODS

This research is planned to be carried out at SMA N.13 Medan. jln. Karya Bersama, Titi Kuning, Kec Medan Johor. The research time is planned from January to April 2025, the treatment is carried out 18 times, with a frequency of 3 times a week, namely Monday, Tuesday and Friday. The research is planned to be carried out at 15:00-18.00 WIB.

According to Sugiyono (2012), Population is a generalized area that consists of objects/subjects that have certain qualities and characteristics that are determined by the researcher to be studied and then drawn conclusions. The population in this study is 11 people and consists of all active members in the athletic club. According to Sugiyono (2017:81), a sample is a part of the population that is used as a source of data in a study.

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Meanwhile, the population itself is an overall characteristic inherent in the target group of the study. Furthermore, the sampling technique, according to Sugiyono (2016:81), is a procedure or way to determine the sample to be used. In the research process. In this study, sampling was carried out using non-probability methods, especially purposive sampling. This method selects the sample based on certain considerations that have been pre-determined for the respondents. The criteria in the sample selection are beginner athletes with an age range of 16 to 17 years. From this population, the researcher assigned 6 female athletes who met the criteria and were willing to participate as a sample in this study.

Based on Purba et al. (2021:2), the research approach is derived from the term "method", which is interpreted as a systematic step to solve something, and also contains the meaning of study or insight. The method framework is a procedure to carry out an activity with careful and logical thinking to achieve a goal, so the definition of a research approach is knowledge that explains the ideal and appropriate way to carry out the research process. The scientific approach in research is applied afterwards, when a researcher has mastered the knowledge of the research process itself. The research method refers to the procedures for conducting research that should comply with scientific principles.

The experimental method is an approach that provides opportunities for students, both individually and in groups, to carry out exercises in the form of certain processes or experiments. By using this method, it is hoped that students can be actively involved in designing experiments, conducting experiments, identifying facts, collecting data, controlling variables, and solving problems that arise during the process. In this study, the independent variables used were Press-up and Pull-up exercises, while the dependent variables were arm muscle strength.

A research variable is an attribute, value or property of an object of activity that has certain variations between one and another that have been determined by the researcher to be studied, and related information is sought, and conclusions are drawn.

The Free Variable is a variable that affects the bound variable. Variables are divided into 2 types of variables, which are as follows:

1) Variable Bound ⟶ *Power* Arm Muscles
2) Press-up and Pull-up *Free* ⟶ *Variables*

According to Sujarweni (2020), research design is a plan that regulates how data is collected and processed so that research goals can be achieved optimally. Essentially, research design serves as the main strategy that helps researchers achieve predetermined goals, as well as a guide in carrying out all stages of research. Thus, research design can be interpreted as a framework that directs the research implementation process. This is especially important to support the research objectives, as in this study, which aimed to determine the increase in arm muscle strength in female bullet repellent athletes from the Dunpang Athletic club.

Table 1.
Research Design

Pre-Test O_1	**Treatment X**	**Post-Test O_2**
Initial Test	Press-up *Exercises* and *Pull-up Exercises*	Final Test

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Group	Pre-Test	Treatment	Post-Test
1	O_1	*Press-Up*	O_2
2	P_1	*Pull-Up*	P_2

The variables in this study consisted of 2 independent variables, namely *Press-up* and *Pull-up* exercises, and one dependent variable, namely arm muscle power in bullet resistance athletes. From this research, the bound variable measured was *arm muscle power* in women's bullet rejection athletes of the Medan Athletic Dumpang Club in 2025, while the research instrument was the *medicine ball test*.

It is obtained as a value per individual from the test results, then processed using statistical methods to test whether the hypothesis proposed in this study can be accepted or rejected.

1. Finding the Mean of the *Pre-Test* and *Post-Test*.

$$X= \frac{\sum x1}{n}$$

2. Looking for Pre-Test *and* Post-Test *Standard Deviations*.

$$S^2 1 = \frac{\mathrm{n}\sum \mathrm{x}1^2 - (\sum x1)^2}{\mathrm{n}(\mathrm{n}-1)}$$

3. Normality Test

$$Z1 = \frac{X1-\overline{X}}{S}$$

4. Homogeneity Test

$$F = \frac{varians\ terbesar}{varians\ terkecil}$$

5. Looking for Mean Difference

$$\overline{B} = \frac{\sum B}{n}$$

6. Finding Different Standard Deviations

$$S2B = \frac{n\sum B^2 - (\sum B)^2}{n((n-1)}$$

7. Find t count (t-test)

$$t= \frac{\overline{B}}{SB/\sqrt{n}}$$

RESULTS AND DISCUSSION

Result

Description of Pre-Test Data on Bullet Rejection Results in Women's Athletes of the Dumpang Athletic Club in 2025

This study aims to determine the effect of *Press-up* and *Pull-up* exercises on arm muscle power in women's bullet rejection athletes *of the Dumpang* Athletic Club (KDA) in 2025. The treatment provided is *Press-up* and *Pull-up* exercises, where the exercises are given after conducting *a bullet repellent* pre-test. *The post-test* of Bullet Rejection is carried out after the treatment or training program is completed. The results of tests and

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measurements carried out for 6 weeks were used to reveal the truth of the hypothesis that had been submitted. Test and measurement results show the following graph of pre-test and post-test data.

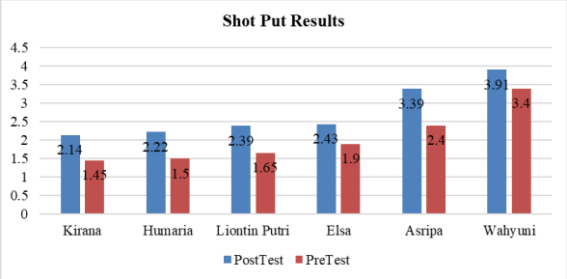

Figure 6.
Data *Pre-Test* and Post-Test Results of Bullet Rejection in Women's Athletes Club Dumpang Athletics in 2025

Statistical analysis of the data obtained is carried out to reveal the truth of the hypothesis that has been proposed. The results of the measurement test that have been processed through statistical formulas show the description *of pre-test* and *post-test* data as follows.

Table 2.
Data Description: *Pre-test* and *Post-Test* Results of Bullet Rejection in Female Athletes *Club* Athletics Dump in 2025

NO	Name	Pre-Test	Post-Test
1	Kirana	1.45	2.14
2	Humaria	1.50	2.22
3	Princess Pendant	1.65	2.39
4	Elsa	1.90	2.43
5	Asrifa	2.40	3.39
6	Wade	3.40	3.91
	Sum	12.3	16.48
	Average	2.05	2.74
	Maximum Value	3.40	3.91
	Minimum Score	1.45	2.14
	Range	1.95	1.77
	Variance	0.55	0.52
	Standard Deviation	0.74	0.72

From the pre-test data, the results of the analysis of the ability description of the Bullet Rejection Results in Women's *Club* Dumpang Athletics in 2025, where the amount was obtained of 12.3 with an average score of 2.05, a maximum score of 3.40, and a minimum score of 1.45. So the range is 1.95. A variance of 0.55 and a standard deviation of 0.74 were obtained. From the post-test data of the results of bullet rejection in female athletes *of the Dumpang* Athletics Club in 2025, the number was 16.48 with an average score of 2.74, a maximum score of 3.91, and a minimum score of 2.14. So that the range is 1.77. A variance of 0.52 and a standard deviation of 0.72 were obtained.

Normality Test

The normality test was carried out to determine whether the variables in the study had a normal data distribution or not. In this study, the normality test was applied to pre-

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test and post-test data from the 100-meter running ability test, which used the Push-up and Pull-up training methods to increase arm muscle power in the 2025 Club Dumpang Athletics (KDA) women's bullet resistance athletes. The normality testing process is carried out using the Lilliefors test method. The following is the proposed research hypothesis.

Ho = Sample from a normally distributed population

Ha = Samples from populations that are not normally distributed

Test criteria:

Ho is rejected and Ha is accepted if Sig.> α (0.05)

Ho is accepted and Ha is rejected if Sig.< α (0.05)

The following are the results of the normality test for pre-test and post-test data on the results of bullet rejection in women's athletes in the 2025 Dumpang Athletics Club:

Table 3.
Data Normality Test

Bound Variables	Average & standard deviation		Lo	Table	α	Information
Bullet Rejection Result	Pre-Test	Xi = 12.3 S = 0.74	0.2054	0.319	0.05	Usual
	Post-Test	Xi = 16 S = 0.74	0.3164	0.319	0.05	Usual

The normality of the data was tested using the Lilliefors test, from the pre-test list column of the results of bullet rejection in the 2025 Athletic Dumpang Club Women's Athletes, Lo = 0.2054 and Ltable 0.319 with n=6 and the real level of α = 0.05. Because of the Lcal < Ltable, it can be concluded that the sample comes from a normal population. From the post-test data column of the results of bullet rejection in Women's Club Dumpang Athletics in 2025, Lo = 0.3164 and Ltable 0.319 with n=6 and the real level of α = 0.05. Because of the Lcal < Ltable, it can be concluded that the sample comes from a normal population.

Homogeneity Test

The Test of Homogeneity of Variance aims to find out whether the variables in the study have uniformity of variance. This test is used to ensure that the sample taken has a consistent or uniform variance. In this study, a homogeneity test was conducted to compare the variance between pre-test and post-test data on bullet repelling ability given push-up and pull-up exercises in the 2025 Club Dumpang Athletics (KDA) women's bullet repelling athletes. The homogeneity testing process uses the Fisher test. Here is the hypothesis used in this homogeneity test.

Ho = $\alpha = \alpha$ (equal/homogeneous variance) $\frac{2}{1}\frac{2}{2}$

Ho = $\alpha \neq \alpha$ (variance is not equal/heterogeneous) $\frac{2}{1}\frac{2}{2}$

Testing Criteria:

If Sig.> α (0.05), Ho is rejected and Ha is accepted

If Sig.< α (0.05), Ho is accepted and Ha is rejected

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Table 4.
Data Homogeneity Test

Homogeneity Test	Calculation	Ftable	α	DK (N-1)	Ket
Bullet Rejection Results Data	1.05	5,5	0.05	5	Homogeneous

The homogeneity test of *pre-test* data and *post-test data* of the results of bullet rejection in female athletes of the Athletic Dumpang Club in 2025 was obtained by Fcal 1.05 that n1 = 6, v1 = 6-1 = 5 while n2 = 6, v2 = 6-1 = 5 so that Fo 5 (5.5) = 5.05 at the real level of α = 0.05, then Fcal < Ftable (1.05 < 5.05). So it can be concluded that the distribution of *pre-test* and *post-test* data on the results of bullet rejection in women's athletes in the 2025 Dumpang Athletic Club is homogeneous.

Hypothesis Testing

To answer the formulation of the problem and achieve the research objectives regarding the effect of push-up and pull-up exercises on the improvement of bullet rejection results in female athletes of the Dumpang Athletic Club in 2025, a hypothesis test was carried out using a paired sample t-test. This test utilises pre-test data before treatment and post-test data after treatment, as described below.

Ho =No effect of *Press-up* and *Pull-up* exercises on arm muscle power in the 2025 Club Athletic Women's Shot Put Athletes.

Ha = The effect of *Press-up* and *Pull-up exercises* on arm muscle power in women's bullet repelling athletes of the Dumpang Athletics Club in 2025.

Testing Criteria:

- If the value of the tcal > ttable and Sig. < α (0.05), then Ho is rejected and Ha is accepted
- If the value of tcal < ttable and Sig. > α (0.05), then Ho is accepted and Ha is rejected

The following are the results of the hypothesis test with *paired sample t-test* data on *pre-test* and *post-test* repulsion ability in the women's bullet rejection athlete of the Dumpang Athletic Club in 2025.

Table 5.
Description of Result Data: *Pre-test* dam, *Post-test* Bullet Rejection Results (t-test)

Independent Variables	n	Test	Average	Different	Different Standard Deviations	Thitung	Table
Press-Up & Pull-Up	6	Pre-Test Post-Test	0.69	4.18	0.17	96.95	1.48

Based on the results of the calculation carried out in the hypothesis test using a paired t-test, a t-test $_{calculation}$ of 96.95 was obtained. Furthermore, the value is compared with the value of the table with dk = n-1 (6-1 = 5) at a significant level of α = 0.05 is 1.48; thus, the tcount > ttable (96.95 > 1.48). This means that Ho was rejected and Ha was accepted, so it can be concluded that there is a significant influence of *Press-Up* and *Pull-*

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up exercises on the increase of bullet rejection results in Women's Club Dumpang Athletics in 2025.

Discussion

The discussion of the results of the analysis of research data aims to make it easier to draw conclusions from the research results. The discussion of the results of the research carried out is that there is a significant influence on *Prees-Up* and *Pull-up exercises* on the increase of bullet rejection results in female athletes of the 2025 Dumpang Athletic Club. In the study, there are 2 forms of exercises that are designed to increase the result of rejection on bullet repellent. From the 2 forms of exercise, the results had a significant effect, which was marked with Ho rejected and Ha accepted from the results of the hypothesis test. Several factors affect the increase in the increase in the Bullet Rejection Results in Women's Club Dumpang Athletics in 2025. Among them are regular training, time discipline, running a training program well, and several other supporting factors can increase the results of bullet rejection in Women's Club Dumpang Athletics in 2025 in this study.

CONCLUSION

Based on the research results, the following conclusion can be drawn: There is a significant effect of Press-Up and Pull-Up Training on Arm Muscle Power in Female Shot Put Athletes of the Dumpang Athletic Club (KDA), Year 2025.

REFERENCES

Amansyah, A. (2019). Dasar Dasar Latihan Dalam Kepelatihan Olahraga. *Jurnal Prestasi*, *3*(5), 42. https://doi.org/10.24114/jp.v3i5.13448

Anggreani, N. I., & Setiawan, I. B. (2024). Pengaruh Latihan Variasi Lompat Gawang Terhadap Power Otot Tungkai Ekstrakurikuler Bola Voli Siswa SMA. *Cerdas Sifa Pendidikan*, *13*(1), 93–103. https://doi.org/10.22437/csp.v13i1.27294

Ariyanto, N. (2022). Pengaruh Latihan Daya Tahan Otot Terhadap KemampuanShooting Pada Siswa Putra Peserta EkstrakurikulerBola Basket Smk Negeri 1 Sanggau. *Diploma Thesis, IKIP PGRI PONTIANAK*, 4, 7–24.

Bangun, S. Y. (2016). Peran Pendidikan Jasmani Dan Olahraga Pada Lembag Pendidikandi Indonesia. Publikasi Pendidikan, 6(3).

Bompa (Janin Fana, 2015: 26) latihan adalah suatu proses yang dinyatakan dengan kata lain periode waktu yang berlangsung selama beberapa tahun sampai pesilat tersebut mencapai standar penampilan yang tinggi.

Cania, A. A., & Alnedral. (2019). Tinjauan Kondisi Fisik Atlet Atletik Jarak MenengahUnit Kegiatan Universitas Negeri Padang. Jurnal Pendidikan Dan Olahraga, 2(1), 192–197.

Andriano Viki Hutauruk[1A-E*], Nurkadri[2B-D], Argubi Silwan[3B-D], Yudika Syah Putri Damanik[4B-D], Bernat Asido Nainggolan[5B-D], Hariyati Berutu[6B-D], Shindy Karunia Sinambela[7B-D]
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Destriana, 2018. Latihan Passing Atas Double Contact Terhadap Ketrampilan Bolavoli. Jurnal Altius 7(1).

Giri Wiarto, 2013. Atletik. Yogyakarta:Penerbit GRAHA ILMU Hendri Mulyadi.2018. Jurnal Pendidikan Rokania, VOLUME III: hal. 19. Jarver, Jess. 1999. Belajar dan Berlatih Atletik. Label: 796.4 JAR. Penerbit: Bandung.

Harsono. (1988). Coaching dan Aspek-aspek Psiologi dan Coaching. CV Tamdak Kusum.

Insan, S. R., Putra, A. J., Putra, C. P., Olahraga, P., & Jambi, U. (2024). *Pengaruh Latihan Barbel Squat dan Maximum Exercise Terhadap Power Otot Tungkai Pada Pemain Bola Voli Klub Irtuha Jangga Baru The Effect of Barbell Squat and Maximum Exercise on Leg Muscle Power in Volleyball Players Irtuha Club Jangga Baru kesehatan dan y*. *06*, 112–124.

Irfan Arifianto, & Raibowo, S. (2020). Model Latihan Koordinasi Dalam Bentuk Video Menggunakan Variasi Tekanan Bola Untuk Atlet Tingkat Yunior dan atlet tolak peluru. *STAND : Journal of Sports Teaching and Development*, *1*(2), 78–88. https://doi.org/10.36456/j-stand.v1i2.2671

Kaisriani, M. (2024). *PERAN STRATEGIC POWER LEADERSHIP " GRASSROOTS " (AKAR RUMPUT*. *7*, 10770–10778.

Khumaidah, & Nurrochmah, S. (2020). *The Effectiveness of Push Up Training for Improving the Power of Arm Muscle Among the Participants of Sports Extracurricular Activities*. *29*(Icssh 2019), 70–73. https://doi.org/10.2991/ahsr.k.201107.018

Khairuddin, K. (2017). Olahraga Dalam Pandangan Islam. Jurnal Olahraga Indragiri, 1(1), 1-14.

Langga, Z. A., & Supriyadi. (2016). Pengaruh Model Latihan Menggunakan Metode Praktik Distribusi terhadap Keterampilan Dribble Anggota Ekstrakurikuler Bolabasket SMPN 18 Malang. *Jurnal Kepelatihan Olahraga*, *1*(1), 90–104.

Mansur, L. K., Irianto, J. P., & Mansur, M. (2018). Pengaruh latihan squat menggunakan free weight dan gym machine terhadap kekuatan, power, dan hypertrophy otot. *Jurnal Keolahragaan*, *6*(2), 150–161. https://doi.org/10.21831/jk.v6i2.16516

Maulana, H. (2023). *Pengaruh latihan skeeping terhadap hasil smash pada atlet bulu tangkis pb lauser aceh tengah*. i–60.

Nugroho, A. (2019). *HASIL CHEST PASS BOLA BASKET SISWA EKSTRAKURIKULER Oleh :*

Praja, T. K. . D. (2015). Pengaruh Pelatihan Dengan Pemberian Beban Push Up Terhadap Hasil Belajar Tolak Peluru Smp Sapta Andika Denpasar. *E-Journal Program Pascasarjana Universitas Pendidikan Ganesha*, *5*(1), 1–9.

SERAH, B. (2020). Pengembangan Pembelajaran Lempar Lembing Menggunakan Media Roket. *Jurnal Tunas Pendidikan*, *3*(1), 111–121. https://doi.org/10.52060/pgsd.v3i1.400

Yanuartin, H. T., & Subagio, I. (2018). Evaluasi sarana dan Prasarana di Gladiator Athletic Gresik. *Sport, Education and Society*, *6*(1), 59–68.