

The Effect of Imegery Training on Increasing Shooting Accuracy in the 10 m Air Rifle Women's Class Before Porprov XI in 2022

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Abstract

The research problem is the low ability to shoot air rifles in Class 10 m Air Rifle Women athletes before PORPROV XI 2022, due to the still weak accuracy of the players. This is evident from the various tournaments that have taken part, very rarely athletes are able to shoot on target. Mental imagery is one of the mental exercises that really has an influence on improving performance, especially in shooting. The purpose of this study was to determine the effect of imagery training on increasing the accuracy of the 10 m Air Rifle Women Class before PORPROV XI 2022. The research design used was experimental one pre-test-post-test group, and the type of research is using experimental research. The research sample consisted of 9 athletes shooting the PERBAKIN NTB air rifle. The research instrument used was shooting 60 shots for 75 minutes. Based on data processing and analysis, the increase in the results of the initial training test was 73.33%. So the researchers concluded that: "There is an effect of imagery training on increasing the accuracy of the 10 m Class Air Rifle Women's shot before PORPROV XI 2022" meaning that there is a significant (real) effect of mental imagery training on the shooting skills of athletes shooting air rifles.

Keyword : Training, Mental Imagery, Accuracy, Shooting Air Rifle

Abstrak

Permasalahan penelitian rendahnya kemampuan menembak *air rifle* pada atlet Kelas 10 m *Air Rifle Women* sebelum PORPROV XI Tahun 2022, disebabkan karena masih lemahnya akurasi yang dimiliki oleh pemain, hal ini terbukti dari berbagai turnamen yang diikuti sangat jarang atlet mampu melakukan tembakan sesuai sasaran. Mental *imagery* adalah salah satu latihan mental yang sangat memiliki pengaruh untuk meningkatkan prestasi khususnya dalam menembak. Tujuan penelitian ini untuk mengetahui Pengaruh latihan imegery peningkatan akurasi tembakan Kelas 10 m *Air Rifle Women* sebelum PORPROV XI Tahun 2022. Rancangan penelitian ini yang digunakan adalah eksperimen *one grup pre-test-post-test*, jenis penelitian adalah pmenggunakan penelitian eksperimen. Sampel penelitian berjumlah 9 orang atlet menembak *air rifle* PERBAKIN NTB. Instrumen penelitian yang digunakan adalah melakukan tembakan sebanyak 60 butir selama 75 menit, Berdasarkan pengolahan dan analisis data peningkatan dari hasil test awal latihan sebanyak 73,33%. Maka peneliti mengambil kesimpulan yaitu : “ ada Pengaruh latihan *imegery* peningkatan akurasi tembakan Kelas 10 m *Air Rifle Women* sebelum PORPROV XI Tahun 2022” artinya terdapat pengaruh yang signifikan (nyata) mental *imagery training* terhadap keterampilan menembak atlet menembak *air rifle*.

Kata Kunci : Latihan, *Mental Imagery*, akurasi, Menembak Air Rifle.

INTRODUCTION

Sport is any physical activity carried out deliberately and systematically to encourage, develop and develop physical, spiritual and social potential. A physical activity carried out with the aim of maintaining health and increasing the level of physical fitness. In its development, this activity can be carried out as an entertaining, enjoyable activity or also carried out with the aim of achieving achievement. In its development, sport has become a necessity and athletes have become a profession that, apart from bringing achievements, can also improve the standard of living of those involved.

Shooting sports is one type of sport that can shape a person's personality. In this sport, a person is trained and required to be able to

concentrate highly, be able to control themselves, have the courage to make the right decisions and be ready to face risks if the decision is wrong. (Cornelius Glenn CA, 2013:08). The development of shooting sports can be seen from the number of new athletes in shooting sports and from the number of participants taking part in competitions held by shooting clubs, regional administrators and also the general management of the Indonesian Hunting and Shooting Sports Association.

Shooting is a branch of accuracy sport that everyone can do which involves skill and precision using various types of weapons. According to (Kamseno et al., 2016) shooting is the activity of aiming a weapon and then releasing ammunition towards a target. There are

many numbers contested in shooting sports, one of which is the 10 meter air rifle number. Air rifle shooting is a precision sport that requires complex performance (Lu et al., 2022). The weapons used in air rifle shooting numbers are weapons with a pneumatic principle that fire bullets using air power or a certain type of gas. In air rifle competitions, the distance used is 10 meters (Spancken et al., 2021) and the sport of 10 meter air rifle shooting requires high concentration (Kamseno et al., 2016). Apart from that, success in shooting an air rifle is also largely determined by the athlete's mental state (Wibowo & Rahayu, 2016). Many athletes are unable to shoot well in the air rifle event, one of which is the Paris Shooting Club athlete. The Paris Shooting Club is one of the shooting clubs in the province of West Sumatra and has been coaching shooting sports since 2007. Since its founding, Paris Shooting Club athletes have achieved many achievements in various shooting events, but the 10 meter air rifle number is the number that least often contributes to medals Success in shooting an air rifle is also largely determined by the athlete's mental state (Wibowo & Rahayu, 2016). Many athletes are unable to shoot well in the air rifle event, one of which is the Paris Shooting Club athlete. The Paris Shooting Club is one of the shooting clubs in the province of West Sumatra and has been coaching shooting sports since 2007. Since its founding, Paris Shooting Club athletes have achieved many achievements in various shooting events, but the 10 meter air rifle number is the number that least often contributes to medals Success in shooting an air rifle is also largely determined by the athlete's mental state (Wibowo & Rahayu, 2016). Many athletes are unable to shoot well in the air rifle event, one of which is the Paris Shooting Club athlete. The Paris Shooting Club is one of the shooting clubs in the province of West Sumatra and has been coaching shooting sports since 2007. Since its founding, Paris Shooting Club athletes have achieved many achievements in various shooting events, but the 10 meter air rifle number is the number that least often contributes to medals

Mental imagery is an activity to imagine an object so that it can help someone to focus more. Wibowo S, Rahayu N. 2016. The influence of

training with mental imagery on the shooting results of shooting athletes. Mental Imagery is a mental exercise that has a big influence on improving performance, especially in shooting. Mental Imagery is a mental exercise that has a big influence on improving performance, especially in shooting. Imagery is a technique or mental skills training method that athletes must master. Imagery training has been proven to provide benefits for athletes in recreating movement experiences in their brains, so that athletes are able to display movement patterns well. Setiatmoko 2013, "imagery training (mental imagery) is a form of mental training in the form of self-imagining and movement in the mind"

Shooting accuracy in Perbakin is how close the shot is to the target or desired target. Suharno (2003: 35), accuracy is skills to move an object to the right direction, so that the goal is achieved well. For example, in a futsal game, a player who has good accuracy will be able to move the ball right to the target. H competitive sport involving fitness test hiran (accuracy and speed) by using various types of weapons such as fire arms or air rifle. Hunting is also a shooting sport. Shooting sports are categorized based on the type of weapon, target and distance at which the target is shot.

Research by Nursyamsi Agustin, et al. 2023. Differences in the Results of 10 Meter Air Rifle Shots Using Mental Imagery and Without Mental Imagery. 2023. Data analysis was carried out using a two-sample t test and before the data was analyzed a normality test was first carried out using the Shapiro-Wilk test. The research results show the P value = 0.000. Because the P value = $0.000 < \alpha = 0.05$, it can be said that the two data in this study are significantly different, where the shooting results with mental imagery with an average of 8.36 are better than those without imagery with an average of 7.37.

Research from Satrio Anggoro Putra Wibowo, et al, 2016. The Effect of Mental Imagery Training on the Shooting Results of West Java Rifle Shooting Athletes. Mental Imagery is a mental exercise that has a big influence on improving performance, especially in shooting. Researchers want to prove that practicing using mental imagery can result in a

significant increase in shooting results. The results of this research were analyzed with the help of SPSS ver.21 showing posttest data $t = -2.896$ and $\text{sig.} = 0.018 < 0.05$ then H_0 is rejected, meaning that there is a significant (real) influence of mental image training on the shooting skills of athletes shooting air rifles. In general, the research results of mental imagery training will influence the performance and self-confidence of shooting athletes

The research problem is the low ability to shoot air rifles in athletes 10 m Air Rifle Women class before PORPROV XI in 2022, due to the players' still weak accuracy, this has been proven by the various tournaments that athletes have participated in, it is very rare for athletes to be able to shoot on target. Therefore, anticipatory steps are needed so that the performance in the 10 meter air rifle shooting number of PERBAKIN NTB athletes can increase. The success of a shooting athlete in achieving his achievements cannot be separated from the athlete's mental condition, because mental health is the most important part in shooting sports in particular. In accordance with what was stated by (Komarudin, 2015 p. 3) that "...apart from technical, physical and tactical training, what is really paid attention to in sports is mental training...". Athletes need to have a tough mentality, so they can train and compete with high enthusiasm, total dedication, never giving up, and not easily distracted by non-technical or personal problems. Coaches have an important role in paying attention to an athlete's training, especially mental training, because an athlete's mental problems are not purely psychological problems, but technical or physiological factors can be the cause of mental disorders.

Therefore, before applying mental training on mental psychological factors, the coach must first know the cause of the mental problems that are a problem for the athlete concerned. In general, many coaches ignore and pay less attention to the very important mental aspects, because they always emphasize training in physical mastery, technique, and tactics. As stated by Harsono (1988) "coaches often ignore mental training or pay little attention to it when training, therefore in preparing their athletes they always only emphasize mastery of technique, tactics and the

formation of perfect skills. Based on the background above, the title of this research can be The effect of imaging training on increasing the accuracy of Class 10 m shots Air Rifle Women before PORPROV XI 2022.

METHOD

This research method uses quantitative research with an experimental approach, one group pretest posttest design. The aim of the research was to determine the effect of imagery training on increasing shooting accuracy in the 10 m Air Rifle Women's class before PORPROV XI. The method in this research is also a series of experimental activities with the aim of investigating a matter or problem so that results can be obtained from the treatment process carried out on the research sample.

This research also aims to find the effect of mental imagery training (independent variable) on shooting results in shooting sports (dependent variable). For each variable in this research, there are several indicators that are aspects of the assessment. The indicators for the imagery variable consist of the influence obtained after giving it to shooting technical skills, while the dependent variable consists of the difference in shooting scores.

The instrument used in the research was shooting skills using a shooting scoring test using international standard regulations. By taking 60 shots, as is done during a real match, namely taking 10 shots in each series to find out the score the athlete can achieve, using the given 75 minutes. Which are obtained from international regulations commonly used in ISSF (International Shooting Sport Federation) championships.

The data analysis method uses the T test, which is a statistical test used to test differences between two groups. This research uses paired samples. So use the T test for paired or related samples. Test Analysis Requirements Before the data is analyzed to test the hypothesis, the data must meet the requirements for normality and homogeneity. In the statistical testing process, the author uses the Statistical Product and Service Solution (SPSS 20) program Sulistyono, (2010). To provide meaning to the data in this research, the following analysis was carried out:

1. Test Test Description of data about research subjects (N), mean (mean) initial test-final test and delta (difference between final test scores and initial test).
2. Normality Test The technique used to test normality is using one sample Kolmogorov Smirnov with the help of SPSS.
3. Homogeneity Test After the data is declared normal, the next step is to carry out a variance homogeneity test. This is done to test the similarity of several samples.

Pair 1	before	533.222	9	10.341	3.4471
		2		39	3
Pair 1	after	554.777	9	10.986	3.6620
		8		10	3

Based on the results *output* using SPSS 16 that is the average value of the results before being given the exercise *Imagery* is 7.3636 and after being given treatment with training *Imagery* 9.2727 meaning that the average value of Towards

Paired Samples Test

	Paired Differences				t	df	Sig. (2-tailed)	
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower				Upper
Pair 1 before after	-21.55556	.88192	.29397	-22.23346	-20.87765	-73,325	8	.000

RESULTS AND DISCUSSION

The data in the table above are the PreTest results and Post Test results obtained from the effectiveness test which was previously carried out by the PreTest or initial test and Post Test which was carried out on students, before mental imagery training on shooting athletes shooting PERBAKIN RINJANI NTB in 2023. To calculate the effectiveness test, use (t test) with analysis of the difference between two means for independent samples, as in the opinion of Kadir (2010: 198) regarding independent samples as samples whose existence influences each other (correlates). The calculation uses SPSS 16 with paired sample t-test analysis

Increasing the Accuracy of Class 10 M Air Rifle Women's Shots Before Porprov XI in 2022 there is an increase.

Table.2.Paired Samples Test

In the significance difference test with SPSS 16, the t-count = -73,325, df = 8 and p-value = 0.00 < 0.05 which means there is a significant difference. The Effect of Imegery Training on Increasing Shooting Accuracy in the 10 M Air Rifle Women's Class Before Porprov XI in 2022, before and after the training treatment *Imagery*. Based on this information, it can be said that training *Imagery* that is developed there is an increase, effectively it can improve Shot Accuracy.

Table.3.Normality of One-Sample Kolmogorov-Smirnov Test

One-Sample Kolmogorov-Smirnov Test

		Unstandardized Residuals
N		9
Normal	Mean	0E-7
Paramete	Std. Deviation	.61999948
rs, b		

Table 1.Paired Samples Statistics
 Paired Samples Statistics

	Mean	N	Std. Deviation	Std. Error Mean

Most Absolute		,170
Extreme Positive		,094
Differences	Negative	-.170
Kolmogorov-Smirnov Z		,509
Asymp. Sig. (2-tailed)		,958

- a. Test distribution is Normal.
- b. Calculated from data.

Based on the results of the normality test using *One-Sample Kolmogorov-Smirnov Test* (Normality), it is known that the significance value is $0.958 > 0.05$, so it can be concluded that the residual value is normally distributed

Table.3.Homogeneity Test of Homogeneity of Variances
Test of Homogeneity of Variances

Posttest			
Levene Statistic	df1	df2	Sig.
1,250	2	5	,363

Based on the results of the homogeneity test using regression, it is known that the significance value is $0.363 > 0.05$, so it can be concluded that the distribution is homogeneous.

CONCLUSION

Relevant research is previous research that is almost the same as previous research which is almost the same as the research to be carried out. Relevant research is used to support and strengthen existing theories, besides that it can be used as a guide/support for the smooth running of the research to be carried out. Research that is relevant to this research is research conducted by Suji Pratiwi {2012}, entitled "The Effect of Imagination Practice on Ball Shooting Accuracy." imagining practice with $Z = -2.175$, $p=0.030$ { $p<0.05$ >}. Achmed Zoki, et al. 2018 The conclusion obtained from this research is that Mental Imagery has a significant effect on basic forehand groundstroke skills.

Agus Sufriyanto, 2018. Research results prove that there is an influence of mental imagery training on increasing self-confidence in football athletes. after being given mental imagery training. The results of the hypothesis test showed significant results with a value of $t = 5.452$ ($t \text{ count} > t \text{ table}$) and a value of $p = 0.030$ ($p > 0.05$). The results of the research prove that there is an influence of mental imagery training on increasing self-confidence in football athletes. after being given mental imagery training. The results of the hypothesis test showed significant results with a t value = 5.452 ($t \text{ count} > t \text{ table}$) and a p value = 0.030 ($p > 0.05$).

Spacken. 2021. *Air-rifle and small-bore shooting are fascinating Olympic sports due to their unique performance requirements for accuracy and precision. The fourteen articles included achieved an average of $60 \pm 14\%$ (range 30–80%) in quality assessment. Altogether, articles covered 268 subjects (32% female), of which 19% were elite- and 28% were national-level athletes. Sixteen performance determinants were investigated, which were divided into anthropometric, technical-coordinative, physiological and psychological categories. Both in air-rifle and small-bore shooting, rifle stability and body sway were found to differ between elite- and national-level athletes. In both disciplines, body sway seemed to have no influence on shot scores in elite- and national-level athletes.*

Schiff, N.T. (2019). Implementation of Mental Imagery in Increasing Kinesthetic Intelligence in Pencak Silat Standard Single Stances. This research aims to increase kinesthetic intelligence in students who take part in pencak silat extracurriculars by using the imagery method in standard single stances. Salmana, T.D., & Hameed, G.N.A. (2022). Effect of a Training Curriculum for the Development of Some Functional Variables and the Level of Achievement in the Effectiveness of Air Rifle Shooting. according to Mattle, S., Birrer, D., & Elfering, A. (2020). Feasibility of Hypnosis on Performance in Air Rifle Shooting Competition. This study investigated the effect of a single hypnosis intervention on shooting performance in a 10-meter air rifle competition.

According to Salmana, TD, & Hameed, GNA (2022). Effect of a Training Curriculum for the Development of Some Functional Variables and the Level of Achievement in the Effectiveness of Air Rifle Shooting. There are no significant differences between the pre and post-tests in the tests (heart rate (HR) before exercise, heart rate (HR) after exercise, systolic blood pressure rate before exercise, systolic blood pressure rate after exercise, anaerobic step test (ability) Lactic Anoxa, Harvard Step Test Keywords-effect training curriculum, functional variables, air rifle shooting,

Sade S, Bar-Eli M, Bresler S, TG (1990). Anxiety, self-control and shooting performance. *Percept Mot Skills*, 55 rifle shooters were administered state-trait anxiety and self-control questionnaires. Shooting performance was recorded on 7 competitive occasions. According to Ridho Alfianto, RA, Sulaiman, I., & Marani, IN (2020). The results of data analysis show that (1) there is a significant relationship between arm muscle endurance (X1) and the results of shooting a 10 meter air rifle (Y) as indicated by the correlation coefficient $r_{X1Y} = 0.875$ and the coefficient of determination = 0.766, which means the total contribution is 76% . (2) there is a significant relationship between eye and hand coordination (X2) and the results of shooting a 10 meter air rifle (Y) as indicated by the correlation coefficient $r_{X2Y} = 0.537$ and the coefficient of determination = 0.7259, which means the total contribution is 72.59%. (3) there is a significant relationship between arm muscle endurance (X1) and hand-eye coordination (X2) with the results of shooting a 10 meter air rifle (Y) with a correlation coefficient $r_{X1X2Y} = 0.893$ and a coefficient of determination = 0,

Haneswara, D., & Pratama, H.G. (2020). The Effect of Mental Imagery Training on Lower Passing Volleyball for extracurricular participants at SMKN 1 for the 2018/2019 academic year. *SPRINTER: Journal of Sports Science*, 1(2), 102–106. This research aims to determine the effect of mental imagery training on the bottom pass of volleyball by extracurricular participants at SMK N 1 Subuh. Mental imagery is a form of memory reactivation that arises without any direct stimulus at the time mental imagery occurs (Goldstein, 2011).

According to Mylsidayu (2014), mental imagery is the ability to imagine and create images of events/shapes of objects in the mind. Meanwhile, according to Feldman (2012), mental imagery is the formation of images in an individual's mind, which includes various things that can be perceived by the human senses. Based on these three definitions, it can be concluded that mental imagery is the ability to imagine in the mind, including various information that can be received by the senses and humans already know about this information beforehand.

In shooting sports, mental factors are very important because shooting is a sport that requires high concentration, so if a shooting athlete has poor mental health, then when the athlete competes in a match and experiences mental disorders either from the environment or from the athlete himself, then to Competing in an athlete's competition will be difficult to get maximum results. With mental imagery training given to shooting athletes, it will help athletes in a match to get maximum results, because mental imagery training can help athletes feel more confident, have high motivation, and increase their concentration level to focus on shooting.

Based on the results of research conducted by the author regarding the Effect of Mental Imagery Training on the Shooting Results of PERBAKIN RINJANI Shooting Athletes, it can be concluded that there is a significant influence on the mental imagery training given to the shooting results of PERBAKIN RINJANI shooting athletes with a t value of 73.345, Shooting athletes will have a better mentality. It is good if mental imagery training is given because shooting athletes will have high self-confidence and motivation which can help create conditions for athletes to concentrate in order to get good focus. Shooting athletes who are given mental imagery will get maximum impact if the treatment given is carried out with a sense of confidence to carry out real actions

Corrado, D. Di, Guarnera, M., Guerrero, C.S., Maldonato, N.M., Nuovo, S. Di, Castellano, S., & Coco, M. (2020). Mental Imagery Skills in Competitive Young Athletes and Non-athletes. 11(April), 1–7. <https://doi.org/10.3389/fpsyg.2020.00633>, Ment

al imagery is the reproduction of perceptual experience (Kosslyn et al., 2001; Pearson, 2007) across multisensory ways and the processing of images in the absence of external stimuli. Mental imagery is a significant element in human functioning. According to Lu, J., An, Y., & Qiu, J. (2022). Relationship between sleep quality, mood state, and performance of elite air-rifle shooters. *BMC Sports Science, Medicine and Rehabilitation*, 14(1), 1–8. <https://doi.org/10.1186/s13102-022-00424-2> To evaluate the impact of pre-competition sleep quality on the mood and performance of elite air-rifle shooters. According to Kamseno, S., Sujiono, B., & Apriyanto, T. (2016). Efforts to Improve the Ability to Shoot a 10 Meter Air Rifle by Practicing Balance for Advanced Shooting Training (LLM) Students. *Scientific Journal of Sport Coaching and Education*, 2(2), 75–85.

According to Kamseno, S., Sujiono, B., & Apriyanto, T. (2016). This research aims to improve the shooting ability of the 10 meter Air Rifle students at Advanced Shooting Training (LLM) at the PERBAKIN Jakarta shooting school through practicing balance. The method used was action research with 2 cycles carried out. The first cycle was held in 5 meetings and the second cycle was held in 4 meetings. Method used. According to Babang, VMMF, Margiani, K., & Abdullah, Z. (2019) The aim of this research is to improve the pencak silat cutting technique skills of Malang Regency Shield athletes using the drill method.

Based on the research results that have been obtained through data analysis, it can be concluded that: "There is an influence of Mental imagery training to increase the shooting accuracy of the women's 10 M air rifle class before Proprov XI in 2023."

SUGGESTION

Based on the conclusions above, the author provides several suggestions in order to solve the problems encountered in the shooting results of athletes shooting air rifles, namely:

1. For Padang Pariaman Regency shooting coaches and athletes to be able to use mental imagery training to improve the shooting results of athletes shooting air rifles.

2. For researchers, it is recommended to study other forms of training and compare them with mental imagery training which is related to shooting results in shooting sports..

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