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The Effects of Progressive Muscle Relaxation on Concentration in Archery Atheletes at the UNIMED Club

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***Abstract*— Archery athletes train physically and technically to be able to make a full series of bow-pulls, but athletes who can make good movements during training may not be able to do it perfectly during matches. The athlete's concentration can be disturbed by various things when competing and affect the athlete's performance and achievement. The ability to concentrate is something that can be trained through mental training. This study aims to examine whether there is an effect of progressive muscle relaxation, as one method of mental training, on the concentration of archery athletes. This study uses an experimental method with a pretest-posttest control group design. The subjects of this study were 12 UNIMED Archery Club athletes who were divided into experimental and control groups. The instrument used to measure an athlete's concentration is the Grid Concentration Exercise. Data obtained by doing pretest and posttest in both groups. The Progressive Muscle Relation Treatment was given only to the experimental group. Wilcoxon Test analysis results showed there were differences in concentration scores between after and before treatment in the experimental group, meaning that the hypothesis "there is an effect of progressive muscle relaxation on concentration in Archery athletes" was accepted. The experimental group had an average gain score higher than the control group, it showed that progressive muscle relaxation had an effect on increasing the concentration of Archery athletes.**

Keywords: progressive muscle relaxation, concentration, archery, athlete

I. INTRODUCTION

Archery sport has long been known in Indonesia, this sport requires a subtle touch of the soul, patience, tenacity, concentration and high mental endurance and have a high level of anxiety. So that elements such as body posture, basic techniques, movement mechanisms, mentality and physical conditions as a unit that must be possessed by an archer[1]. As an art, archery sports are very complex not as we see it is interesting, and releasing arrows. Archery is a branch of static sports that requires good physical conditions including strength and endurance, especially in the muscles of the upper body[2]. When doing archery techniques, especially when pulling a bowstring the muscle will experience isotonic contraction, especially at the initial pull (primary draw). In international archery numbers, the bow is made of synthetic material. Part of the field is also divided into two namely, outdoor and indoor. In international archery numbers, the type of bow is also distinguished, the compound fan number and the recurve number. Archery athletes need high concentration to carry out a series of activities. Concentration is an important part of life activities. A person can do activities well if the person has a high concentration ability because the various activities that must be carried out are very complex such as work, study, and sports. In sports activities, the ability to concentrate helps athletes in displaying a variety of skills, especially in the face of the match[3]. Concentration is a condition where a person's consciousness is fixed on a certain object at a certain time. A person's ability to concentrate determines how long he can concentrate, the better the ability to concentrate, the longer he can concentrate. The role of concentration in sports is very important, with the reduction or disruption of athlete concentration during training, especially during matches, various problems will arise.

According to Weinberg and Gould[4], there are two kinds of concentration needed in relying on sports traders. In some sports, it requires concentration on several things at one time. This concentration is needed in the sparring of sports and team sports, for example, soccer and karate, in addition to concentrating on carrying out the techniques possessed,

athletes must concentrate-on opponents or friends in the team. In other sports, it requires concentrated concentration, one thing at a time. This concentration is needed in sports. Athletes are given time to perform individual movements and are judged by the judges, for example, gymnastics and beautiful jumping, athletes concentrate fully on displaying a certain set of movements within the allotted time. Athletes with full physical, technical and concentration abilities will be able to make a full range of movements. Archery athletes train physically and technically to be able to make a maximum range of movements, but athletes who can do well when practicing may not be able to do it perfectly during matches. The athlete's concentration can be disturbed by various things when competing. Archery athletes whose concentration is disturbed generally experience problems such as making wrong moves, skipping movements that are supposed to be done. Reasons for loss of concentration include internal and external factors such as anxiety, thinking about the outcome of a race, thinking of opponents and so on. Concentration has an important role related to the achievement of athletes' achievements. According to Sudarwati, to reach the peak of achievement there are 3 influencing factors, namely: (1) physical coaching factor, (2) technical coaching factor, (3) mental (psychological) coaching factor. Based on this explanation, in fostering athletes, mental coaching is also a component that can not be separated from other components. The experts designate 5 (five) psychological components as mental factors of athletes, namely consistency, self-confidence, concentration, anxiety, and positive attitude[5]. At present, the training provided is more focused on physical and technical guidance. Mental guidance needs to be given to improve the ability of athletes related to psychological components in sports, one of which is concentration.

II. METHOD

Effect of progressive muscle relaxation on the concentration of archery athletes can be seen by comparing the ability of athlete's concentration after and before given treatment in the form of progressive muscle relaxation. The control group that is not given any treatment is needed to ensure the presence or absence of influence is caused by the treatment given. Based on these needs, the research design uses an experimental method with a pretest-post test control group design. In this method, the subject is divided into experimental and control groups. At the beginning of the study, a pretest was performed on the dependent variable namely the concentration of athletes in the two study groups to determine the initial state of the subject. The progressive muscle relaxation treatment was only given to the experimental group, while the control group was not given any treatment. Post-test of the dependent variable ie athlete concentration was carried out in both groups after the treatment was given to the experimental group. Next, the research design scheme used.

TABLE I. EXPERIMENTAL DESIGN SCHEMES

KE O1 X O2 KK O1 O2

Note:

KE = Experiment Control
KK = Control Group
O1 = *Pretest*
O2 = *Posttest*
X = Treatment (*Progresive Muscle Relaxation)*

The population in this study were 10 athletes at the UNIMED Club. The sample of this study is UNIMED archery athletes which are classified as very poor to good concentration based on the concentration category in the Grid Concentration Exercise as a concentration measurement tool in this study. These characteristics are set to avoid the ceiling effect. The excellent category is the highest category in the Grid Concentration Exercise so that if an athlete with a very good category experiences any increase it will remain in the excellent category. In this research, a purposive sampling technique is used, which is sampling based on specific objectives to determine the sample. Athletes who fit the characteristics of the study sample were 12 people.

The sample was divided into two groups: 6 people as the experimental group and 6 people as a control group. Both groups have the same concentration ability because the division of groups is done by ordinal pairing technique. The instrument used to measure athlete concentration is the Grid Concentration Exercise adopted from Harris and Harris. Grid Concentration Exercise is a measurement of athlete concentration in the form of tables containing numbers 00 to 99 randomly. Subjects were asked to connect with a line of numbers starting from the smallest to the next larger number within two minutes. The concentration ability score is obtained by calculating the highest number of acquisitions minus the error made. The values obtained are categorized into several categories of concentration levels. The concentration level category of the Grid Concentration Exercise consists of: very good, good, enough, less, and very less.

The instrument validation process is carried out by showing a Grid Concentration Exercise gauge to an expert, a sports psychologist and having made a concentration meter. An expert was asked to assess whether this tool is capable and appropriately used to measure the athlete's concentration level. Based on the expert's opinion it can be concluded that basically the measuring instrument can be used to measure the athlete's concentration, with a note that instructions must be clear.

Calculation of reliability of Grid Concentration Exercise uses product-moment correlation with the help of SPSS for Windows. Based on the statistical description obtained, the reliability coefficient (r arithmetic) of the instrument is 0.978. The value of the r table is 0.632, then the r count has a value

greater than the r table. Based on these calculations, the Grid Concentration Exercise instrument is reliable for use as a measurement tool in this study. Data obtained from the results of the pretest and post-test research subjects who are paired samples. The data obtained in this study are in the form of ordinal data and amounted to less than 30, then the appropriate data analysis method to be used is non-parametric statistics. Relaxing

testing is done by comparing the results of pretest and post-test research subjects. To compare paired samples with ordinal data as in this study, the appropriate statistical method used in testing hypotheses is the Wilcoxon Signed Ranking Test. Data analysis was performed using SPSS computational techniques[6], [7].

III. RESULTS AND DISCUSSION

Based on the results of the pretest and post-test conducted in the experimental and control groups, the following data were obtained:

Table II. Pretest and Post Test Results of Two Groups

No	Experimental Group				Control Group			
	S	Pre test	Post test	Gain Score	S	Pre test	Post test	Gain Score
1	A	15	23	8	G	13	14	1
2	B	19	22	3	H	20	21	1
3	C	20	27	7	I	20	19	-1
4	D	20	23	3	J	20	22	2
5	E	8	14	6	K	8	9	1
6	F	14	21	6	L	13	13	0
Mean		16	21,67	5,5		16	16,33	0,67

*S = Subject

The hypothesis of this study is that there is an effect of progressive muscle relaxation on the concentration of archery athletes. Based on the results of data analysis using the Wilcoxon Test shows:

- There was no difference in the concentration scores on the pretest between the experimental group and the control group (Sig. = 0.414, p> 0.05).
- There is a difference in the concentration score between after and before treatment in the experimental group (Sig. = 0.027, p <0.05).

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- There was no difference in the concentration scores between the pretest and post-test in the control group (Sig. = 0.157, p> 0.05).
- There is a difference in the concentration test scores on the post-test between the experimental group and the control group (Sig. = 0.027, p <0.05).

Based on the description above, the hypothesis that there is an effect of progressive muscle relaxation on the concentration of archery athletes is accepted.

Further analysis by looking at the comparison of the average gain score, the experimental group had a value of 4.83 higher than the control group. If seen from the average scores in the two groups, a significant increase in post-test scores was seen in the experimental group, namely the average pretest = 16 being posttest = 21.67. In the control group, no significant differences were seen. The control group had an average pretest = 16 and an average posttest = 16.33. This shows that in this study progressive muscle relaxation can increase athlete concentration.

Effect of progressive muscle relaxation on the concentration that occurs in this study can be caused by several things, among others, namely the enthusiastic activeness of the participants, material, and treatment methods that are intertwined with one another:

- Enthusiastic participants have seen from the beginning of the training. Participants show it by showing up on the agreed time. Participants are active in training and progressive muscle relaxation with what they will face is preparation before selection. Such situations often make athletes feel depressed so that they can become internal factors that disperse concentration, thus impacting their performance. The treatment is given after the athlete has finished physical and technical training so as not to interfere with their physical training schedule. The treatment is given for ± 10 minutes for each meeting.
- The provision of material opens with the objectives of the training being delivered, their hopes for the future and the signing of the training contract. The session aims to make the subject aware that the training material is useful for improving abilities related to sports performance, especially to improve concentration and prepare psychologically before and during the competition.

Based on the progressive muscle relaxation module in this study, athletes are first asked to focus on relaxing and calming the body and mind so that athletes can be in an alpha state. In the alpha state of mind is in a relaxed but alert and creative state, the concentration will be focused on one thing at a time[8]. In these conditions, the athlete has made himself in a calm and relaxed condition. In a calm and relaxed state, a person is able to accept the mental picture that is given and suggested more clearly. Suggestions related to the concentration given make athletes ignore internal and external factors that can inhibit athlete concentration so that athletes can concentrate only on certain tasks at certain times. The ability of the athlete's concentration and focus on displaying his best performance can be improved when doing progressive muscle relaxation properly and regularly. As Bryan has stated (in Stevenson, 2009) that relax is a state of mind and in that state, there are always three things present: super concentration of mind, body relaxation and increased susceptibility to suggestion.

IV. CONCLUSION

Based on the results of the analysis of the data that has been done, the conclusion is obtained about progressive muscle relaxation towards archery athlete concentration. This influence is an increase in athletes.

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