Effect of Self-talk on Pentanque Shooting Accuracy

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Abstract The background of this research is the petanque precision shooting athletes who are inconsistent in obtaining scores. Accuracy is an important part of petanque, especially in the precision shooting numbers, so that it is necessary to have a mental training process that can contribute to the athlete's ability to improve their accuracy. The purpose of this research is to see the effect of a mental training in the form of self-talk on improving shooting accuracy in petanque. Looking at the objectives of this study, the pre-experimental method with the one group pre-test and post-test design has been used. The instrumental test in this study is a shooting test of 20 athletes from FIPJP (Fédération Internationale de Petanque et Jeu Provençal). The results of this research indicate that the test results are $t = 2.690$, with $db = 19$ and the number Sig. (2-tailed) or $p\text{-value} = 0.014 < 0.05$. From this result, it can be concluded that self-talk practice can significantly improve the accuracy of the shooting petanque. The implication of self-talk is self-control. Athletes appear to be better able to control arm movements, control emotions, and regulate breathing when shooting. This can be seen from the increase in the scores of the athletes.

Keywords Self-talk, Shooting Accuracy, Petanque

1. Introduction

Petanque is one of the developing sports in Indonesia with a number of achievements, ranging from sports

events at the regional to the international levels [1]. This sport is easily to play for all ages [2]. There are many competition types, such as shooting men/women, single men/women, double men/women, triple men/women, double mix and triple mix [3]. The provision distances in the precision shooting number start from a distance of 6 meters, 7 meters, 8 meters and 9 meters with the achievement points that are ranging from 0, 1, 3, and 5 for each successful shooting [4]. For getting maximum points in the petanque precision shooting numbers, every athlete who is already calm and focused must have the ability to shoot accurately [5], [6]. In order to increase shooting accuracy, an athlete must be more focused. It is necessary for coaches to implement mental exercise on the athletes, one of which can be done through mental self-talk training [7], [8], [9].

Self-talk is a mental exercise that can have an impact on athletes to control their thoughts to achieve their goals [10], even this self-talk is one of the actions that can change or control behavior [11], negative thinking becomes positive [12]. In addition, self-talk can also have an impact on increasing the concentration of athletes in shooting throws [9]. Looking at the explanation above, the ability to change negative thinking and behavior in an athlete is one of the psychological aspects an athlete must have by applying a form of mental exercise in the form of self-talk. From several previous research results, it is proven that self-talk training improves athlete performance, but so far there has not been an application of mental training in the form of self-talk in petanque, especially precision shooting numbers. So the purpose of

this study is to see the effect of self-talk on the shooting accuracy in petanque sports.

2. Materials and Methods

2.1. Self-talk

The athletes' self-talk is usually about things that have happened, as a reflection or evaluation of events and actions they have done before or that they have just done, things that have happened or been done by opponents, to provide direction and encouragement, or expressing influence and cognition, for example, 'good', 'let's go now', 'can't concentrate', 'I'm fed up', or things that will happen, in an anticipatory way, 'I will win this trophy', 'this will hurt'. It's a normal thing to happen, and it can either be stealthy or shouted out, inherently or strategically. In simple words, self-talk refers to all the things that individuals say to themselves, to stimulate and strengthen, direct and evaluate events and actions.

The importance of self-talk in improving performance is also evidenced by the results of research conducted by Zourbanos et al, which states that "the results confirmed that self-talk can be an effective performance-enhancing strategy for young children"[13]. Other studies suggesting that self-talk can help improve athletic performance are illustrating "athletes and coaches believe that self-talk is an intervention that enhances sporting performance and various psychological states, such as confidence"[14].

Two important components of self-talk sports are instructions to make better moves and to motivate oneself to look better. A study reveals "evidence that self-talk can improve motor performance using a variety of tasks and settings"[15].

2.2. Shooting Petanque Accuracy

Throwing or swinging is a technical skill that Pétanque athletes desperately need. The throwing skill that a Pétanque athlete must have is the underarm throw.

In Pétanque and horseshoes, an object is projected with an underarm throw to a spatial target placed at ground level. The motion is produced at the shoulder joint and the distance of throw is critical for success. The speed, angle and height of release all contribute to the distance of the throw. When the height and angle of release are fixed, distance increase as the angle of release increase to approximately 45° and the decrease at larger angles [16]

The effectiveness of shooting can largely be seen from its accuracy. "Release velocity and accuracy are vital components of throwing performance"[17]. It takes continuous practice to increase the effectiveness of shooting in order to achieve high scores. In many of these tasks accuracy is important, and accuracy is achieved by controlling the direction or speed of the movement, or

both [16].

Shooting petanque belongs to the characteristics of accuracy that has an end point, because the iron ball that is thrown must directly hit the target ball or fall on the circle and bounce off the target ball which is arranged and made the target with a horizontal position and a certain distance from the place of throwing. Like the putting technique in golf, pétanque requires athletes to be careful in throwing or swinging, because this will have an impact on the consistency of the swing and the choice of ball trajectory. "How accurately the task is performed will subsequently impact game-play, and could ultimately influence the result of the match. In golf, the line and distance from the hole are key indicators of accuracy"[18].

2.3. Methodology

Purpose of the Study

The purpose of this study is to determine the effect of a mental self-talk training on the results of the shooting accuracy in the petanque.

Research Design

The research method used in this study is a pre-experimental research method with a one group pre-test post-test design, because no control over extraneous variables [19] as shown on Figure 1.

The One-Group Pretest-Posttest Design

O	X	O
Pretest	Treatment	Posttest

Figure 1. The One Group Pretest – Posttest Design [20]

Research Population and Sample

The population of petanque shooting athletes in the Bandung Raya area is 20 people, so all of them are used as samples in this study [20][21].

The Study Intervention

Pretest Measurements

Pretest measurements were performed on 3 August 2020. Total number of shots are 20 shots, 4 shots at each target set up. One at each shooting position 6 m; 7 m; 8 m; 9m, with maximum score 100 point.

Interventional Procedure

Self-talk treatment was given for 8 weeks, with a total of 24 sessions carried out for 3 days each week as shown on table 1 [22]. The duration of the training program calculation has taken into account of the athletes' condition that has no understanding of the content and purpose of the self-talk training.

Table 1. Self-Talk Intervention

DAYS TO	INTERVENTION							
	TECHNIQUE						MENTAL	
	DISTANCE (meters)				OBSTACLE STATION	NUMBER OF SHOOTING EACH		
	6	7	8	9				
1	PRE-TEST						Introduction to Self-Talk Training	
2	Evaluation & Improvement Techniques (Watching Self Videos)						Making Proper Self-Talk Transcripts	
3	Evaluation & Improvement Techniques (Watching Self Videos)						Making Proper Self-Talk Transcripts	
4	v				1, 2, 3, 4 & 5	10	Practicing Self-Talk Transcript	
5	v			v	1, 3 & 5	10	Adapting Transcripts to Conditions in the Field	
6		v			1, 2, 3, 4 & 5	10	Expressing Motivational Self-Talk	
7		v	v		1, 3 & 5	10	Expressing Motivational Self-Talk	
8	v		v		1 & 5	20	Expressing Motivational Self-Talk	
9		v		v	1 & 5	20	Disclosing Instructional Self-Talk	
10	v			v	1 & 5	20	Disclosing Instructional Self-Talk	
11	v		v		2 & 4	20	Disclosing Instructional Self-Talk	
12		v		v	2 & 4	20	Evaluation of Using Self-talk Script + Watching Self Video	
13	v		v		1, 3 & 5	15	Disclosing Instructional Self-Talk	
14		v		v	1, 3 & 5	15	Expressing Motivational Self-Talk	
15				v	1, 2, 3, 4 & 5	10	Disclosing Instructional Self-Talk	
16		v			1, 2, 3, 4 & 5	10	Expressing Motivational Self-Talk	
17			v		1, 2, 3, 4 & 5	10	Disclosing Instructional Self-Talk	
18	v				1, 2, 3, 4 & 5	10	Expressing Motivational Self-Talk	
19	v	v	v	v	1 & 5	10	Combining Instructional and Motivational Self-Talk	
20	v	v	v	v	2, 3 & 4	5	Combining Instructional and Motivational Self-Talk	
21	v	v	v	v	1 & 5	10	Combining Instructional and Motivational Self-Talk	
22	v	v	v	v	2, 3 & 4	5	Combining Instructional and Motivational Self-Talk	
23	v	v	v	v	1, 2, 3, 4 & 5	5	Combining Instructional and Motivational Self-Talk	
24	v	v	v	v	1, 2, 3, 4 & 5	5	Combining Instructional and Motivational Self-Talk	
25	v	v	v	v	1, 2, 3, 4 & 5	5	Combining Instructional and Motivational Self-Talk	
26	POST-TEST							

Besides being given a self-talk training intervention, the sample was also given technical training that had been adapted for mental training purposes. The technical training carried out adjusts to the shooting target that the sample will face during the match (Figure 2).

Figure 2. Target Set Up [23]

Figure 3. Shooting Accuracy Test [25]

Posttest Measurements

Posttest measurements were performed after completing interventional procedure on 22 September 2020. The data for this research is using a shooting accuracy test from FIPJP (Fédération Internationale de Pentanque et Jeu Provençal) (Figure 3) [24]. Total number of shots are 20 shots, 4 shots at each target set up. One at each shooting position 6 m; 7 m; 8 m; 9m, with maximum score 100 point. The point rules can be seen in the table 2.

Table 2. Rules of Point [23]

Point	Rules
5	Valid shot on target; the obstacle(s) didn't move; the target end up out of the circle; the shooting boule stay in the circle.
3	Valid shot on target; the obstacle(s) didn't move; the target end up out of the circle; in set up 5, the jack is hit but still inside circle area.
1	Valid shot on target hit correctly but target stay in circle and/or obstacle moves after correct shot on target

Data Processing and Statistical Analysis

The data analysis that has been used for this research was the paired samples t-test using Statistical Package of Social Sciences (SPSS) (V. 22, IBM Corporation) was used in data analysis as shown on results.

3. Results and Discussion

3.1. Results

Table 3. Data Description

Descriptive Statistics					
	N	Min	Max	Mean	Std. Deviation
Pre-test	20	10	25	17.15	4.83
Post-test	20	15	33	22.25	5.58
Valid N (listwise)	20				

Based on table 3, from 20 athletes it can be seen that the results of the shooting petanque in the pre-test have a mean value of 17.15 with a standard deviation of 4.83, a minimum value of 10 and a maximum value of 25. The post-test results of the shooting petanque have a mean value of 22.25 with a standard deviation of 5.58, and have a minimum value of 15 and a maximum value of 33.

Table 4. Normality Test Results

One-Sample Kolmogorov-Smirnov Test			
		Pre-test	Post-test
N		20	20
Normal Parameters ^{a,b}	Mean	17.15	22.25
	Std. Deviation	4.826	5.581
Most Extreme Differences	Absolute	.170	.189
	Positive	.155	.189
	Negative	-.170	-.118
Kolmogorov-Smirnov Z		.760	.844
Asymp. Sig. (2-tailed)		.611	.475
a. Test distribution is Normal.			

Based on table 4, One-Sample Kolmogorov-Smirnov Test, the output results are obtained in the Asymp section. Sig. (2-tailed) in the pre-test group of 0.611 and in the post-test group of 0.475 or it can be written as the probability value (p-value) = 0.611 > 0.05 and 0.475 > 0.05. This means that the results of the shooting petanque at each test period have been normally distributed.

Table 5. Homogeneity Test Results

Levene's Test of Equality of Error Variances ^a			
Dependent Variable: Shooting			
F	df1	df2	Sig.
.363	1	38	.550

Table 6. Hypothesis Testing

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	Post-test – Pre-test	5.100	8.478	1.896	1.132	9.068	2.690	19	.014

Based on table 5, the results of the analysis in the Levene's Test of Equality of Error Variances table have the value of $F = 0.363$; $db1 = 1$; $db2 = 38$, and $p\text{-value} = 0.550 > 0.05$. This means that the data in the pre-test and post-test groups have the same or homogeneous variance.

Based on table 6, the results of the analysis of the hypothesis test using the Paired Samples Test, the average difference value is 5.1, which means that it gives a significant positive price after being given the self-talk exercise, the score for the accuracy of the shooting petanque is higher than before. This table also shows the statistical values are the score for $t = 2690$, with $db = 19$ and the Sig. (2-tailed) or $p\text{-value} = 0.014 < 0.05$. It can be concluded that self-talk practice has a significant effect on increasing the accuracy of the shooting petanque.

3.2. Discussion

The research shown that self-talk practice can improve the shooting accuracy with the acquisition of $t = 2690$, with $db = 19$ and the Sig. (2-tailed) or $p\text{-value} = 0.014 < 0.05$. These results are in line with the research stating that self-talk helps the athlete's performance since it has a significant effect on increasing motivation and self-confidence and helps prepares the athletes for competition [26]. Many other studies have indicated that self-talk exercise is one of the methods for increasing the athlete's self-confidence and efforts to improve performance [7], [10]; a strategy that is considered to be the most appropriate technique in improving the performance of the athletes [8], [27]; to control emotions and concentration [28]; and also helps the athletes reduce distractions to be more focused [27].

Other studies have concluded that a self-talk exercise can be applied to athletes of the individual/single type competition to improve the cognitive behaviour which will have an impact later on improving the techniques in the sports with the characteristics in the form of accuracy [9]; it characterised by the athlete's ability to control the motoric body to do the desired movement [29]. A self-talk practice can also increase the athlete's motivation when shooting [30], so that the athletes are more focused and have a better accuracy when shooting.

The accuracy in petanque is an important aspect in winning [31], [7], because the point calculation is done based on the shooting results. Therefore, it requires athletes to have a high level of accuracy in shooting, and

in order to improve this, one of the given mental exercises is self-talk [32]. For the sports which require high level of accuracy, its athletes must have a good level of concentration when competing, especially for the athlete's precision shooting [33], [34].

A well-controlled self-talk training session was given to all the athletes, especially those who have not yet experienced a mental training program, so that negative self-talk would not occur. The field observations show that habitual complaining when shooting results were inaccurate lead to a hindrance in the athletes' performance. If done continuously it could cause anxiety and decrease the athlete's performance [35]. One should guide athletes to become aware of their own self-talk, which is an important step in self-talk interventions [28]. Athletes should be encouraged to practice positive self-talk, so that it can a) increase self-compensation and effort, b) increase attention and alertness, c) manage anxiety and affect recovery from injury, and d) have a profound effect on psychological preparation in the face of the upcoming match [36].

Although this study did not focus on one type of self-talk, the researchers found a common thread; this could be used as a reference for trainers to finally start providing self-talk training methods to precision shooting petanque athletes. Athletes tend to have a higher shooting accuracy when they perform instructional self-talk; this is in line with the research stating that instructional self-talk in passing and shooting leads to high accuracy in performance and is more suitable for simple tasks rather than complex tasks [37]. When viewed from the basic techniques performed, throwing movements in petanque tend to be included in simple motion tasks, so the application of instructional self-talk will be very useful.

Finally, from this study it can be concluded that exercising self-talk can improve the shooting accuracy of petanque athletes. However, although this study shows its results to be in accordance with the research objectives, ascertaining the exact effect of self-talk on the accuracy of shooting petanque requires more self-talk specific research to be conducted.

4. Conclusions

Based on the results of the research and discussion, it can be concluded that mental self-talk training increases

the accuracy of shooting petanque; this is evidenced by the initial and final data obtained in the study which show an increase in shooting accuracy results. Therefore, we advise trainers of petanque to provide self-talk exercises to their athletes in an effort to improve shooting accuracy.

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