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by Jurnal Sportarea UIR

Submission date: 24-Dec-2023 07:58AM (UTC+0700)

Submission ID: 2262329453

File name: 1_JSA_2024_OK.pdf (470.82K)

Word count: 5339

Character count: 28800

Effectiveness of the integration of SPT-Drill and imagery training methods: A treatment to beat target panic in archery

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Received: 18 July 2023; Accepted 19 November 2023; Published 24 December 2023
Ed 2024; 9(1): 1-10

ABSTRACT

Background problems: Target panic was an experience that almost all archers went through. **Research Objectives:** This study aimed to minimise the symptoms of target panic in archery, including flinching, punching, freezing, and snap-shooting, by implementing the integration of the Specific Physical Training (SPT) Drill method with imagery. **Methods:** In this context, the method used is sports action research with the Kurt Lewin model, which consists of planning, implementation, observation, and reflection. subjects were NPCI Kalsel Para-Archery athletes, totaling 12 athletes consisting of 9 males and 3 females. The data analysis used is descriptive-quantitative. **Findings and Results:** The study revealed an improvement in effectively managing panic-inducing events using the implemented method. In the initial cycle, 41.67% (5 athletes) achieved success in controlling panic, falling below the criteria. However, in the second cycle, there was a notable enhancement, reaching a success rate of 83.33% (10 athletes), meeting criteria. In the second cycle, proficiency levels showed a remarkable increase of 99.98% and a decrease of 28.58%. **Conclusion:** By demonstrating the effectiveness of integrating the SPT drill with imagery in alleviating target panic, this research makes a noteworthy contribution to the literature on sports psychology and archery training. The results highlight the appropriateness of this approach in improving archers' physical conditioning, fostering confidence, and subtly reshaping their perspectives on anxiety related to archery. We can say that the SPT drill with imagery worked because it got better every time from the first cycle to the next. This shows that it could be a good way to help archers who get target panic.

Keywords: Archery; target panic; SPT-drill method; imagery



[https://doi.org/10.25299/sportarea.2024.vol9\(1\).13781](https://doi.org/10.25299/sportarea.2024.vol9(1).13781)

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How to Cite: Priambudi, M. A., Mashud., & Arifin, S. (2024). Effectiveness of the integration of SPT-Drill and imagery training methods: A treatment to beat target panic in archery. *Journal Sport Area*, 9(1), 1-10.
[https://doi.org/10.25299/sportarea.2024.vol9\(1\).13781](https://doi.org/10.25299/sportarea.2024.vol9(1).13781)

Authors' Contribution: a – Study Design; b – Data Collection; c – Statistical Analysis; d – Manuscript Preparation; e – Funds Collection

INTRODUCTION

Archery is a very social sport, regardless of age, gender, or occupation, and can be practised by both able-bodied and disabled athletes. It also has equal rights in the field of play (Vendrame et al., 2022). While normal-bodied athletes draw the bow with both hands during archery, athletes with disabilities use mechanical release aids (Nakagawa et al., 2020), mouth and teeth covers, gloves, and visual adaptations using modified sights to

suit sensor compensation for their technique. Regarding technique in archery, both able-bodied athletes and disabled athletes differ, but conceptually, the processes of stance, stability, balance, and all the others remain the same for all archers (Smith, 2013).

In the world of archery, perfection is key. Every archer, whether beginner or experienced, must prioritise standardised shooting techniques. Along with diligent practice and correct methods, they must also keep every movement smooth and natural. In this process, the body and the bow must act as a harmonious unit (Johnson, 2014). However, in addition to technical aspects, mental factors also play a central role in an archer's success. Self-confidence, concentration, emotional control, and positive thinking are key to dealing with these critical phases in the sport (Kim et al., 2015). One common challenge that arises during the archery process is what is known as "target panic". Target panic is an involuntary self-anticipation that often interferes with an archer's ability to release arrows smoothly and accurately (Diotaiuti et al., 2021; Haywood, 2006).

To overcome this challenge, there is a need for a training approach that is tailored to the individual. This involves physical, technical, and mental elements (Priambudi & Mashud, 2023). Furthermore, understanding the nature of target panic in archery is important, especially in target archery performed at specific distances. It is an inclusive sport, offering opportunities for diverse participants regardless of age, gender, or occupation, and offering an inclusive platform for athletes with different physical abilities (Vendrame et al., 2022). For archers, specialised physical training, such as Special Physical Training (SPT), is an important part of the journey to excellence (Lee, 2013a).

In addition to physical training, mental imagery is also an important element in honing an archer's skills. It allows archers to change their perceptions of archery situations and techniques, viewing them from different angles (Amini et al., 2022). However, it is important to remember that imagery exercises cannot replace physical demonstrations; they must work together in an integrated training programme (Scott et al., 2022). Previous research has shown that when individuals engage in imagery, the brain interprets the image as an actual stimulus identical to the situation (Fortes et al., 2020; Ladda et al., 2021; Pearson et al., 2015). By relying on experiences stored in memory, archers can reconstruct external events in their minds through this process (Itoh et al., 2022; Robin & Dominique, 2022).

This research aims to provide valuable insights into designing an effective training programme to address posture and target panic issues in archery. By combining Specific Physical Training (SPT) with customised imaging exercises, this research seeks to optimise archers' performance and address the challenges they face (Mashud et al., 2023; Priambudi & Mashud, 2023; Suryadi et al., 2023; Tantri et al., 2022). This research is expected to help athletes overcome the problem of target panic and distracting posture. In this study, the researchers used SPT Exercise with Imagery as an intervention to reduce symptoms of target panic (Priambudi & Mashud, 2023). It should be noted that although previous research by Prior et al. (2019) has explored interventions to address target panic, conclusive evidence regarding their effectiveness remains elusive. Therefore, this study represents a significant and timely endeavour, seeking to validate the efficacy of an innovative integrated approach in addressing target panic and posture-related issues in archery. The methodology and findings of this study are poised to make a major contribution to the field, providing insight into effective interventions for athletes facing these challenges.

METHOD

The method used was the action research classroom method or classroom action research in this context called sports action research (PTO). Action Research is systematic research carried out by sports classes or sports clubs with athlete subjects and the ultimate goal of the research is the success or completeness of the training program after treatment which is usually specific to the mastery of certain techniques (Mashud, 2022). The design used in this study was Sports Action Research (PTO) with two cycles with research procedures including planning, acting, observing, and reflecting for two cycles. Sports Action Research Process (PTO) with research procedures including planning, acting, observation, and reflecting for two cycles (Sugiyono, 2018).

The cycle model developed by Kemmis and Mc Taggart consists of 4 (four) stages namely; 1) the planning, 2) the action implementation stage, 3) the observation stage, and 4) the reflection stage (Ahwan et al., 2023).

This research was carried out with two cycles of flow based on reflection as a basis for determining the continuation of the cycle until it reached the targeted criteria. To find out how far the intervention has achieved the integration of the Specific Physical Training (SPT) Drill method with Imagery.

The instrument in this study used skill observation sheets that had been validated by experts whose threshold score criteria fulfilled was 75% of the mastery of 4 (four) target panic symptoms which became an observational aspect of the assessment, namely, the bow arm for flinching symptoms, release arm for punching symptoms, duration of aiming/clicking for freezing symptoms, and aiming for snap-shooting symptoms. The research subjects were all Para-Archery athletes from the NPCI South Kalimantan (19), totalling 12 athletes consisting of 9 males and 3 females with W2 and Standing disability classifications which can be seen in the table below.

Table 1. Characteristics of the Participant Subjects

Level	Classification		Total	Gender		Age	Career (year)
	W2	Standing		Male	Female		
Beginner	1	3	4	3	1	20-34	< 1
National	-	7	7	5	2	24-42	> 3
Elite	-	1	1	1	-	46	> 9

The research was conducted from the 3rd week of May to the 4th week of June (5 weeks) in 2023 at the NPCI South Kalimantan Archery Field, Banjarbaru City, South Kalimantan (7). Data analysis in this class action research, researchers used quantitative and qualitative methods to analyze the assessment data in each cycle. The percentage formula used in quantitative data. The formula used is:

$$X = \frac{F}{N} \times 100$$

Information:

X = Percentage sought

F = Acquisition Value

N = Number of Samples

9

RESULTS AND DISCUSSION

Description of Preliminary Observations

In the initial observation of the South Kalimantan NPCI Pelatprov Archery Team, only 3 out of 12 athletes (25%) met the criteria of being able to control a target panic under pressure and the rest did not meet the criteria (75%) experienced at least one of the symptoms of a panic target. The data can be seen in the following table.

Table 2. The Results of the Initial Observation Target Panic Control Skills

Subject	Score	Result
1	56.25	Not qualified
2	75	Qualified
3	68.75	Not qualified
4	56.25	Not qualified
5	56.25	Not qualified
6	43.75	Not qualified
7	50	Not qualified
8	81.25	Qualified
9	68.75	Not qualified
10	50	Not qualified
11	68.75	Not qualified
12	75	Qualified

From the presentation of the table above, only 3 athletes met the criteria or qualified to be able to minimize the symptoms of target panic (TP). Three athletes met the criteria, two of which were athletes who had more than three years of experience and one of whom had less than one year's experience. Let's look at the percentage comparison chart below.

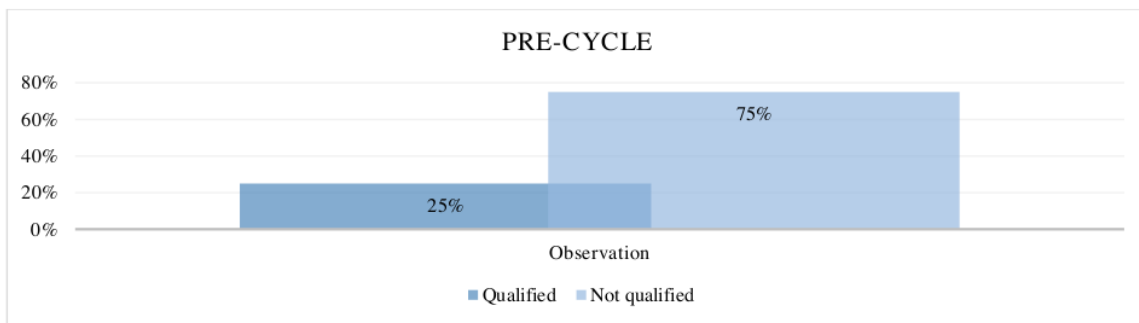


Figure 1. Observation Chart

All athletes in each division most athletes who did not qualify experienced all assessment symptoms and the worst value is in the aiming phase. Almost all of them said that they were aiming outside the yellow ring or outside the 10's ring (snapshooting). Based on the explanation of the observation data above, the researcher concluded that the above problems need to be carried out in the first cycle of intervention for 2 weeks which is carried out 4 times (30mins) each week in shooting repetition training sessions (special preparation phase) with a total of 8 meetings.

Description of Cycle I

From the initial observation of cycle I which was carried out for 2 weeks in 8 meetings and then we do the test, the results were as follows.

Table 3. The Results of the Cycle I Target Panic Control Skills

Subject	Score	Result
1	62.5	Not qualified
2	81.25	Qualified
3	75	Qualified
4	62.5	Not qualified
5	62.5	Not qualified
6	31.25	Not qualified
7	56.25	Not qualified
8	81.25	Qualified
9	68.75	Not qualified
10	56.25	Not qualified
11	75	Qualified
12	75	Qualified

As many as 5 athletes were known to meet the criteria for target panic control (TP) technical skills, but almost all athletes had implications except for only one athlete who experienced a decrease in the overall score obtained. Subject number 6 experienced a decrease in overall score, the subject stated that he had difficulty in all aspects of the assessment. The bow and release arm do not have follow through, the expansion when aiming is also loose so snap shooting occurs. But this was an increase of 66.67% and a decrease of 22.22%, for the whole percentage in Cycle I is as follows.

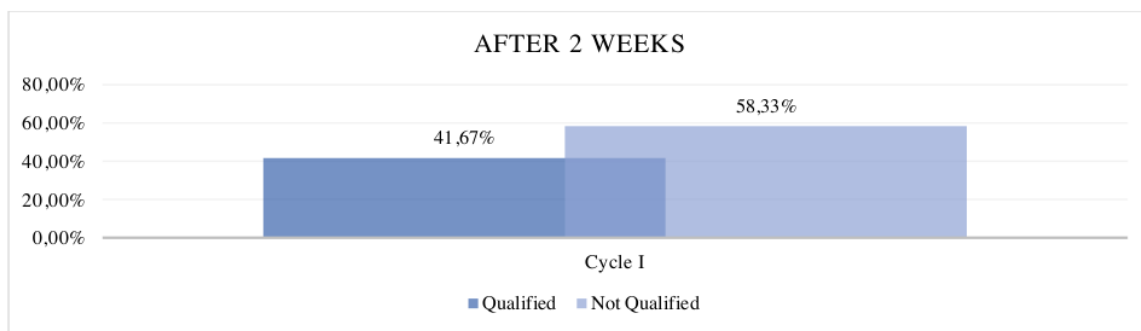


Figure 2. The Cycle I Chart

21

Based on the results of the TP control skills test, delays in the athlete's understanding (resource) of the coach's demand is a factors inhibiting athletes from being able to meet the criteria specified for each TP symptom. Thus, the intervention of implementing the SPT-Drill integration model with imagery was continued with an increase in volume for 3 weeks of 12 meetings. This is done at least to help athletes understand the process and make technical improvements to minimize TP symptoms.

Description of Cycle II

26

After 3 weeks of intervention for 12 meetings in Cycle II, the results are shown in the table below.

Table 4. The Results of the Cycle II Target Panic Control Skills

Subject	Score	Result
1	75	Qualified
2	87.5	Qualified
3	81.25	Qualified
4	75	Qualified
5	75	Qualified
6	37.5	Not qualified
7	62.5	Not qualified
8	81.25	Qualified
9	75	Qualified
10	75	Qualified
11	81.25	Qualified
12	81.25	Qualified

In Cycle II there were significant changes, the SPT-Drill method seemed to have an impact on the follow through phase, overall the archer had an acceptable follow through movement. These results as a whole had reached the target of reaching $75 \geq x \leq 100$ which experiencing an increase of 99.98% and a decrease of 28.58%. It can be seen in the graph below.

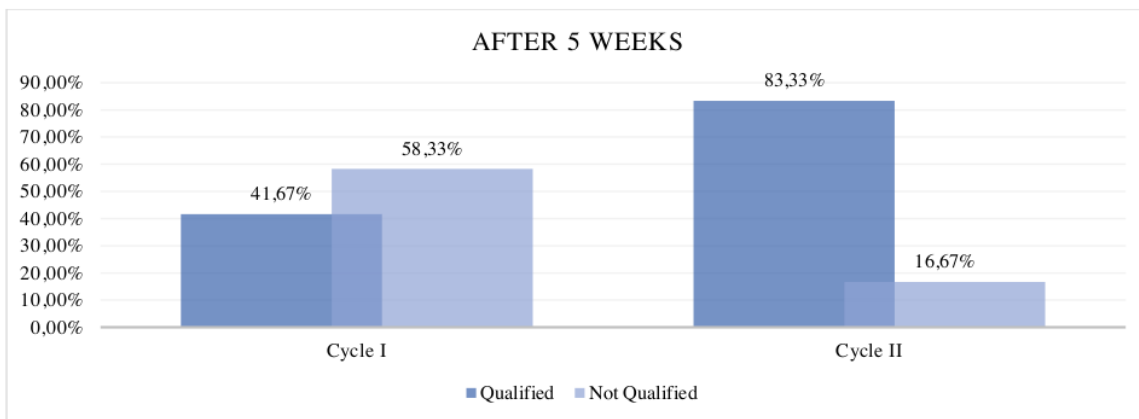


Figure 3. The Cycle I & II Chart

Based on the results of Cycle II above, the result is that to get a significant change in the ability to control target panic symptoms, more volume and an in-depth approach to athletes are needed to provide the understanding requested by the researcher as well as the coach in this context. As for athletes who are unable to control the symptoms of target panic, researchers have observed data that athletes are not disciplined in carrying out the integration model offered by applying SPT-Drill objectives with imagery in repetition sessions. Several times it happened that athletes did not recover from technical errors that they did when there was a target panic.

Target panic can occur in varying degrees of severity along with the frequency of occurrence. Keep in mind that archers can have one or more symptoms, 1) flinching is a sudden movement immediately before or during a release, often occurring from the bow arm, resulting in an incorrect shot, 2) snap shooting is quick and spontaneous release when the sight first crosses the centre of the target (bull eyes) and before the archer sets a shot at the centre of the target; this phenomenon may continue to the archer releasing even before the sight has reached the centre of the target, 3) freezing is the inability to move the gaze from the point of aim to the centre of the target; the inability to release the arrow even when the sight is firmly fixed on the target; or, with clicker-wielding (recurve) archers who experience increased back, shoulder and arm strain to the point of inability to pull the arrow via the clicker, 4) punching is jerking the mechanical release in an effort to release as soon as possible (rush), or the archer holding the bowstring with his fingers (recurve), pulling the bowstring or moving the releasing hand forward (towards the target) when released.

Based on data analysis, the results of target panic control exercises in the first cycle increased from 3 athletes to 5 athletes, namely 41.67%, in the second cycle there was an increase of 83.33% to 10 athletes who were declared able to control TP. In the first cycle $0 \leq x < 75$ is said not to meet the criteria, then there is an increase in the second cycle reaching $75 \geq x \leq 100$ training achievements are said to have met the criteria, then the skills results that occur in the second cycle increase 99.98% and decrease 28.58%. From the initial observations to the second cycle, it can be concluded that the application of the SPT-Drill integration model with imagery can improve archer skills in controlling target panic (TP) symptoms, but its effectiveness is influenced by the way the trainer conveys what is requested (demand) to the athlete's ability in understanding and doing (resource). When the demand is greater than the resource, this will be a threat, and vice versa, when the resource is greater than the demand, this will be a positive challenge (Richard, 2012). Cognitive conflict in the mind is also known as cognitive reappraisal (Wang et al., 2022), namely using cognitive reassessment in decisions taken must pay attention to the potential use of cognitive resources and must be directed to increase self-confidence or develop a positive orientation to generate joy. The previous study showed the beneficial impact of combining three methods, Motor Imagery, Action Observation and Coach's Feedback improve shooting accuracy for these archers (Gmamdy et al., 2023).

Theoretically, it is said that by trying to apply SPT-Drill which includes flexibility, structure, resistance (endurance), and power to feel the expansion movement that should at least be able to overcome flinching (Lee, 2013a; Yuriy et al., 2014) in the recurve, compound, and ronde nasional divisions for symptoms of target panic. Overcoming freezing and snap-shooting in the aiming process, it is considered capable of being overcome with improved athlete performance imagery (Anuar & Bahar, 2023), namely imagining proper and appropriate shooting techniques. However, the combination of physical training and visualization is expected to synergize so that athletes can relax and feel comfortable with themselves, then they are expected to be able to control themselves in the competitive conditions of qualifying and elimination rounds or when conditions are under pressure.

In the context of the interventions carried out on technical aspects, SPT Flexibility, SPT Structure, SPT Holding, and SPT Power are actually very suitable. Agree with the research (Kim et al., 2015) which mentions several important factors in the physical and technical (specific) aspects including pulling a bow without arrows, lengthening by maintaining the balance of the left and right shoulders when aiming (aiming), shooting consistency during clicker time, maintaining speed and direction during release (follow through), a full draw skills by maintaining left and right shoulder balance. On the mental aspect, namely, self-confidence, concentration, emotional control, and positive thinking, the concept is built through the imagery method. By mastering self-concept (mental) and the techniques mentioned earlier, target panic control can be minimized (Lee, 2013b).

Research with other variables by Klämpfl et al. (2013) regarding yips is a multi-etiological phenomenon characterized by involuntary movements that can affect putting performance (hits close to the hole) by golfers. Diagnostics are essential for a better understanding of what causes the yips but are still lacking. So from the results of the description of this study and relevant research, the events of target panic and yips have in common that anticipation in oneself that is not realized can hinder accuracy. In relation to the success of the archer in controlling target panic is very dependent on the individual's habits in overcoming the stressor that it depends on the habit of the mind, the habit of the heart, and the habit of the hands (Basuki, 2016). The effectiveness of the integration of SPT-Drill with imagery is highly dependent on its application by athletes during repetition training (shooting in large accumulated amounts). In addition, its effectiveness is affected by the archer's ability to understand the proper technique when the target's symptoms of panic appear.

The implications of this research can improve the skills of archery athletes in dealing with panic targets if coaches and athletes trust each other with the same perception whose role can help athletes quickly get out of this stress zone. The SPT-Drill that is carried out should be able to handle the symptoms of flinching and punching because the aim of this method is to position a full draw according to the athlete's body posture so that decision-making is not entirely on the athlete to create natural and simple movements (Axford, 2017). Elite athletes execute them smoothly and naturally, paying little attention to the target so they prioritize technical processes (Bennett & Maynard, 2017). Then, imagery plays a very important role in helping athletes create an ideal shooting concept before starting practice or competition (Scott et al., 2022).

Recommendations for this research include; 1) the integration of this method is mainly applied to the two divisions of the Ronde Nasional (Standard bow) and recurve, 2) in the compound division the coach must carefully observe the problems experienced by athletes. Generally, the symptoms that occur start from the execution of punching so the application of this method integration becomes a significant differentiation, adapted to the needs of athletes, 3) by applying the integration of methods to observational assessment, the coach will really understand the emotional character of athletes.

From implications and recommendation, the point is that the coach as the planner of the training program plays a role in the success of the athlete in overcoming the problem, besides that the athlete must also control emotions as self-management in getting out of the negative stress state and immediately mastering himself to create confidence because pleasure must always be present in every shot. Those who succeed in mastering these skills are those who are able to master management timing. In accordance with previous studies about the comparison of archers with different skill levels (Baifa et al., 2023). The results of a study on the integration of the SPT-Drill method with imagery concluded that by using the integration of these two methods athletes who were exposed to target panic were able to control it. Previous studies on combining

motor imagery, feedback, and action observation have had a positive impact on accuracy (Gmamdya et al., 2023). This research can not prove that the integration of this method can be used by other coaches and get significant results, but it is possible that this method can be applied.

CONCLUSION

The sports action research conducted over two 5-week cycles with 20 sessions, incorporating the SPT-Drill method and imagery integration, has proven to be an effective intervention for controlling target panic in archery. The key to success is the reduction of repetition and the enhancement of cognitive abilities to cope with stress, addressing the symptoms that arise during target panic. Notably, this study pioneers the integration of these two methods, a unique approach not explored in previous research. Recommendations extend to the application of this integrated method, particularly in the Ronde Nasional divisions (standard bow and recurve). For the compound division, coaches are advised to closely observe and address athletes' specific problems, particularly those stemming from punching execution. The research emphasises the contribution that more experienced archers demonstrate in superior timing management, suggesting a focus on optimising temporal coordination during aiming and clicking phases.

Practical implications involve coaches using observational assessments to comprehend athletes' emotional characteristics and engage in meaningful discussions. Recognising that athletes aspire to attain good technique with limited resources, it is suggested that coaches prioritise the process over immediate results. In cases of "chronic" target panic, providing athletes with a longer rest period is recommended to alleviate traumatic events resulting from high performance expectations. Recognising limitations due to the study's focus on athletes with disabilities and the variations in body structure and understanding of technique, it is imperative for future research to delve deeper into specific training in psychology for archery. This recommendation aims to further enhance our understanding of the psychological aspects of archery training, particularly for individuals with unique challenges and requirements.

ACKNOWLEDGEMENTS

Thank you to the Master of Physical Education postgraduate lecturers of Universitas Lambung Mangkurat and to the National Paralympics Committee of Indonesia (NPCI), South Kalimantan Province, along with the athletes, which gives us the opportunity to train this team so we can learn and write down any activities in training and pour them into this article.

CONFLICT OF INTEREST

All authors declare no conflict of interest.

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