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Exploring Target Panic and Performance Psychology Methods to Mitigate Target Panic in Archery Athletes

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ABSTRACT

Target panic refers to the inability to shoot confidently and accurately. In the world of competitive archery, “target panic” is a particular type of performance block that impacts over 90% of archers. Despite extensive research, a definitive cause for target panic’s various manifestations is still elusive. However, performance blocks in athletes are well-studied. Performance blocks are psychological and neurological barriers that prevent athletes from performing at a high level. Drawing on insights from research on performance blocks and anxiety sensitivity and disorders, this study reviews different psychological factors contributing to target panic, including perfectionism, anxiety sensitivity, and traumatic experiences. The paper additionally explores interventions to help cure target panic and performance blocks, such as SPT drills, imagery training, self-talk, cognitive-based techniques, and mindfulness-based interventions. SPT drills coupled with imagery training were effective in training muscle memory and confidence in archers. Mindfulness-based interventions helped with concentration. Cognitive-based techniques such as self-talk helped archers boost their confidence and ability to overcome anxiety and high forms of stress. In conclusion, this study emphasizes the importance of addressing the physical and cognitive dimensions of archery performance to manage performance blocks and target panic effectively.

Introduction

Within the competitive archery realm, the term "target panic" strikes fear and uncertainty among athletes. Despite advances in sports medicine, researchers have yet to pinpoint a definitive cause for this phenomenon's various forms and occurrences. Target panic poses a significant challenge for archers, constituting a psychological or neurological barrier that undermines their accuracy and confidence. Its manifestations include flinching, snapping, freezing, and punching, affecting each archer differently (Priambudi 2023). Even globally renowned archers like Michael Schloesser, Sarah Lopez, and Braden Gellenthien struggle to articulate a unified description of target panic. Some liken it to a fear of shooting, while others view it as any form of anxiety that inhibits optimal performance. Although concrete data on the prevalence of target panic among archers is scarce, researchers estimate that approximately 90% of them have grappled with it at some stage in their careers. This further emphasizes the taboo surrounding "target panic" within the athletic archery community.

Through different qualitative interviews, many studies have concluded that an amalgamation of intense anxiety causes that target panic. This can be related to the broader and more universal term, performance blocks. Performance blocks are a psychological disorder of control involving the loss of the ability to carry out specific movement patterns. They often result in involuntary jerks, spasms, tremors, and freezing. (Bawden & Maynard, 2001). Understanding the psychological aspects of archery is crucial for enhancing performance, as psychological factors like target panic can profoundly impact an archer's career.

Prevalence and Manifestation of Archery Target Panic

Target panic is a complex problem that significantly affects how well someone performs in archery. In new research, Prior and Coates (2019) investigated the causes of target panic and found that it is primarily a loss of conscious control over an action. They also discovered that of the 128 survey respondents, 118 had experienced target panic, so it seems like a nearly inevitable part of an archer's life. They further hypothesized that it might have to do with storing and reacting to a large amount of sensory information that is very important to the conscious mind. In addition, target panic can produce experiences that throw an archer off their game, like an athlete develops "the yips" in baseball, golf, or another activity (Rooke, 2023). This relates to the executive functioning of arcing the shot in a way that allows the brain to direct the body to perform the shot correctly and handle it when it matters most. Control problems can manifest as physically missing the proper form for the shot, flinching, or punching at the release. Archers troubled by target panic can manifest freezing up altogether or snap-shooting—the kind of release an animal might make at a perceived danger sign.

Besides the concrete symptoms, target panic also has psychological consequences. The presence of "anxiety sensitivity" (AS) in an archer's mental profile often accompanies the symptoms of an anxiety disorder, and indeed, AS is theoretically connected to the appearance of anxiety disorders like panic disorder. For instance, an archer with AS is almost certainly going to be alarmed by the sight of a panic attack, which in turn feeds into the performance anxiety of nighttime panic that makes a poor-shooting archer perpetually worsen. Research demonstrates that target panic is a widespread problem among archers, affecting as many as 90% of them at some point during their careers. Because the incidence of target panic is so high, it is essential to talk about it and try to understand what archers experience when they have it. By better understanding target panic, it might be possible to help archers manage and overcome this common problem.

All in all, target panic among professional archers takes numerous forms. It can be seen in an archer's struggle to maintain control, in their inability to concentrate, or in them repeatedly and overly flinching or freezing. Furthermore, for many a target-panicking archer, both the sight of the bullseye and the moment the bowstring is released can be rife with intense anxiety. And when panic singularly characterizes an individual's experience or, worse yet, becomes a nearly inescapable constant of an archer's competition life, then something needs to be done. That's where targeted interventions and support come in.

Psychological Factors Contributing to Target Panic

Delving further into the manifestation of target panic among archers, it is crucial to understand the numerous psychological factors behind the issue. As target panic is a similar type of performance block for archers, this section reviews the different psychological factors contributing to performance block and target panic.

Performance Blocks

Regarding performance blocks in all sports, the mental aspect plays an unprecedented role in affecting factors like pressure and anxiety. Research indicates that young elite athletes are particularly susceptible to high stress levels due to intense training loads, uncertainty related to the selection process and results, role conflicts, and pressure to excel in sports and academics. Markus Gerber studied 257 young athletes in North-Western Switzerland and followed up on a 6-month. It was found that about 1 in 10 of these athletes had clinically related burnout and depression, which can be correlated to the performance block that they were experiencing. The study also showed that mental toughness is a factor in fighting burnout and depression, thus decreasing performance blocks experienced (Gerber et al. 2018).

Another psychological aspect that contributes to performance block is perfectionistic ideals. Perfectionistic concerns are prevalent among elite athletes and have been linked to significant psychological distress, emphasizing the toll that performance expectations can have on mental well-being. A cross-sectional study was performed on first-year athletes from Norwegian elite sports high schools (n=711) and regular high school students (n=500). Using self-reported data, the study showed that psychological distress, perfectionism, and eating problems are prevalent among most sports athletes (Rosenvinge et al. 2018). Moreover, Koivula, Hassmén, and Fallby (2002) surveyed 178 professional Swedish athletes, 69 females and 109 males, who were all either Olympians or potential future Olympians. The questionnaire measured three critical factors among the athletes: self-esteem, perfectionism, and competitive anxiety/self-confidence. The researchers found that sports-related anxiety is positively correlated to patterns of negative perfectionism, which is dependent on athletes who relate their self-esteem to performance and competency (Koivula, Hassmén, and Fallby 2002). These findings can be applied directly to archery since sports performance blocks have several parallels with target panic struggles.

Target Panic

Anxiety plays a significant part in the development of target panic among archers. This is because of the sort of complex interactions that form in an archer's mind when they are attempting to make a shot while in the grip of profound anxiety. To understand just why target panic can arise – and more importantly, how it can be reined in and turned to just occasional symptoms if it must be at all – it's valuable to first understand what happens inside the anxious mind during shot execution. An anxious archer is one who fills their thoughts with all the many things that can go wrong during a shot; things their poor, under siege follow-through can try to fix if the miracle of landing a decent shot is to occur. Next comes the apprehension that dominates the moment of release and the anticipation of where the shot will go if it doesn't have the archer's intentions or hopes behind it. And then there's the issue of tension and pain – a grand moment of spectacle that can take an archer under the influence of profound anxiety and keep 'em there, shot after shot.

Furthermore, research on panic shows an influence on an individual's perception of threat, fear of the unknown, coping behaviors, and social psychological factors. The study conducted by Prior and Coates (2019) gathered senior archers (archers above the age of 18) of various skill levels (ranging from club archers to professional archers) who were actively participating in archery and had prior experience of target panic. The study used an interpretative phenomenological analysis to give participants who were to be interviewed the ability to share their personal experiences with target panic and how they perceived it. Participants were interviewed and asked to give their accounts of their target panic. The case of participant David shows my looming fear of sudden shock such as loud noises can cause that target panic. David stated that his target panic gets triggered when he hears sudden, loud noises, often making the body flinch or cringe as a reaction. This is a clear performance block since David unwillingly anticipates an unfavorable situation while shooting, and it results in growing anxiety and discomfort. He states that this anxiety oftentimes causes him to avoid releasing a shot altogether and enter a cycle of lifting the bow and letting it down, which can hinder archery performance. Another participant, Jessica, opened up on her problem of anxiety for her safety during her shooting process, which shows that target panic can also manifest from thoughts of post-trauma. This is because she experienced an injury due to her bow malfunctioning in the past. She states that "'your conscious mind and subconscious mind are connected'" and that the bad memories from her subconscious state of mind creep into her conscious mind in the middle of a shot and cause her to panic. This suggests that traumatic experiences can cause an anxious subconscious state of mind and can result in increased levels of stress (Prior and Coates 2019).

Interventions in Performance Psychology for Managing Target Panic

The current exigency with the prevalence of target panic and its overwhelming impacts on archers calls for specific interventions that can help overcome the shared issue. This section of the paper provides an overview of the existing interventions aimed at mitigating target panic. Because of the several different aspects linked to performance blocks in archery, there are many different methods by which interventions are designed to target specific weaknesses for archers.

SPT-Drill

Archery is a sport that requires mental competency, but it also demands great physical ability. As explained in detail earlier, psychological factors are extremely important when it comes to impacting target panic. However, it is important to recognize that a strong physical base can support levels of self-esteem and confidence, which may ultimately assist in minimizing anxiety levels while shooting. Not only this but when physical competency is trained alongside psychological strengthening, they can synergize to improve overall skill and performance. Amini et al. conducted a study on 45 undergraduate military science students (shooters) between 18 and 25 years old in order to find the relationship between cognitive and motor training and their effect on shooting skills. They utilized three different experimental groups and had "cognitive imagery" and "motor representation" intervention strategies to compare the participant's "acquisition" and "retention" of shooting skills. The researchers found that cognitive imaging and motor representation interventions included together had the most significant impact on improving shooting skills. Shooters oftentimes only focus on refining their motor and physical skills, so they begin to neglect the importance of mental training. However, this study shows that cognitive training is a catalyst for improving "basic skills required in perceptual-motor activities" (Amini et al. 2022).

For archery specifically, archers oftentimes get caught up in the process of diligently practicing their shooting form and the technical processes and end up disregarding all the important mental factors that have just as much of an effect on their shot. Therefore, taking the findings from Amini et al. into consideration, it is important to find an intervention for managing target panic that targets both physical and cognitive areas. Priambudi (2023) performed a study on 12 archery athletes, 9 males, and 3 females, in order to find an intervention to minimize symptoms of target panic. They used classroom action research to find the effectiveness of their intervention strategies over the course of their training program. The researchers chose to utilize Specific Physical Training (SPT), which is a physical conditioning drill for archers, and mental imagery. These two intervention approaches targeted both physical and mental aspects of the athletes' weaknesses: the rationale was their hope to change archers' "perceptions of archery situations and techniques" so that they could view archery situations from different angles and have varying perspectives to help alleviate panic-related symptoms. After 5 weeks of training, Priambudi found that SPT and mental imagery intervention methods did show a "significant change in the ability to control target panic symptoms."

The SPT-Drill specifically was found effective in improving "flexibility," "structure," "endurance," and "power to feel the expansion movement." These factors allowed for a smoother and more confident shooting process that allowed athletes to overcome flinching and maintain consistency. For the mental aspect, the imagery method allowed for growth in areas such as "self-confidence, concentration, emotional control, and positive thinking." As opposed to the SPT-Drill, overcoming target panic symptoms such as "freezing and snap-shooting" were dependent on the athletes' improved imagery. Overall, the combination of the two interventions is "expected to synergize" for archers to feel more collected under pressure and anxiety-inducing situations so that they do not experience symptoms of target panic to an extreme extent.

Cognitive Behavioral Techniques: Imagery Training and Self-Talk

To tackle target panic, archers can experience the positive impacts of both imagery training and self-talk tactics. Imagery training is a psychological tool that requires an individual to imagine specific archery shooting scenes, which will activate the networks responsible for motor functioning. Consequently, as a result of doing this training, an archer's awareness will progress, and progressions can continually be made toward optimal performance (Chang et al., 2010). Self-talk is a technique used to better control an archer's focus and maintain proper technique. Specifically for performance techniques in sports, research has found that self-talk can alter the perception of effort cardio-respiratory outcomes during exercise and cortisol surrounding exercise (Basset et al., 2021). With the use of motivational interviewing techniques, having positive motivational self-talk and imagery training can regulate levels of arousal and moods (Hardy et al., 2014). The idea is that a phrase or image is enough, but with an understanding the physiology and belief of the mind then an archer will be in a state of homeostasis eliminating target panic.

The application of imagery training and self-talk has been suggested as a way of managing state anxiety and performance in archery. A study that will be focused on is a study carried out by Isar et al. (2022) in which the effect of imagery training and instructional self-talk on cognitive state anxiety, somatic state anxiety, self-confidence, and archery performance was studied. The study was conducted among 45 athletes of Sports School Malaysia Pahang. The intervention lasted about 6 weeks for all groups in the study and the results showed that there was improved confidence in archery performance and reduced state anxiety. The study provides evidence of the beneficial influence of combining imagery training and self-talk on a decrease of anxiety and increased performance in archery.

Adopting these mental skills training strategies has been viewed as a beneficial way of increasing an athlete's psychological preparedness and overall success in competitive environments. Chang et al. carried out a study with 18 right-hand archers that shows that motor imagery allows for more precise movements. They tested active imagery conditioning against a nonmotor imagery task as a control. It showed that motor imagery increased the cortical processes, which caused the performance to be more consistent.

Mindfulness-Based Interventions

Mindfulness-based interventions have shown efficacy in increasing attentional control and decreasing anxiety among diverse populations, including athletes such as archers. Studies provide evidence that mindfulness interventions are useful for improving symptoms both physically and psychologically (Shapiro et al., 2005). As an example, research on the effects of the mindfulness-based intervention Mindfulness-based Peak Performance (MBPP) showed enhanced results on athletes' performance and cognitive functioning among archers (Wu et al., 2021). Mindfulness training appears to be valuable in optimizing sports performance and mental health in sports environments. Moreover, mindfulness interventions emphasize cultivating greater attention and awareness of the present-moment experience (Creswell, 2017). Studies have revealed that mindfulness-based interventions could reduce symptoms of anxiety and depression, develop mindfulness skills, and enhance quality of life. In addition, the results of the mindfulness-based skill development program showed that mental skills and mindfulness levels were enhanced in highly skilled archers.

In a study by Wu, TY, et. al (2021), the authors examine the impact of mindfulness-based interventions (MBI) or mindfulness-based peak performance (MBPP) on athletes' performance and cognitive function in archers. Mindfulness-based interventions involve psychological constructs, and certain practices, and facilitate academicians to specifically influence individual effects on concentration, clarity, acceptance, and equanimity in mindfulness processes. A group of 23 competitive archers from the National Taiwan University of Sport volunteered to take part in an experiment that was conducted to investigate the influence of mindfulness-based interventions (MBIs) on athletic performance and cognitive functions among archers (Wu, TY, et. al, 2021).

The study's methodology was based off of a regulated mindfulness-based peak performance (MBPP) program, which all of the participants were required to complete. The program was comprised of eight 60-minute sessions, meeting two times a week for 4 weeks. The aim of this program was to improve levels of mindfulness and performance among the athletes by introducing an array of mindfulness exercises such as mindful check-ins, mindful breathing, body scanning, seated meditation, mindful walking and mindful listening. The average second test scores for the participants (mean = 621.70, standard deviation = 32.08) were greater than the average test scores of the first test (mean = 613.48, SD = 29.72). Examining the test results of both trials, it was concluded that the shooting scores of the participants in the second trial was higher than that of the first trial.

In another experiment, researchers tried to understand whether [MBIs] can positively influence archery performance. Subjects utilized in the research comprised 11 elite recurve archers enrolled on the Turkish National Archery Team (Terzioğlu, Z & Çakir, Ş). According to the Terzioglu and Cakir study, there was evidence suggesting that the training program enhanced the archers' relaxation, activation, competition planning, and refocusing skills.

Conclusion

This paper aims to provide a comprehensive overview of the current scholarly literature surrounding the issue of target panic among archers and the existing interventions that seek to mitigate its effects. It introduces the complexity of performance blocks by demonstrating how they form in athletes, the physical and psychological effects, and strategic approaches that can be utilized to minimize their impact. Target panic is also shown to be a sports performance block. Target panic manifests in archers in several different ways, mainly through an archer having to deal with psychological issues that can harm confidence and the overall ability to shoot comfortably. Interventions in performance psychology are promising treatments to target panic for archers. SPT drills, cognitive behavioral techniques, and mindfulness-based interventions have been shown to be effective in treating target panic, anxiety, and low confidence. SPT drills primarily target the physical aspect of archery performance, aiming to improve flexibility, structure endurance, and power. It involves physical conditioning drills tailored to enhance archer's motor skills and physical competencies. The aforementioned research suggests that combining SPT drills with mental imagery can significantly improve an archer's ability to control target panic symptoms such as freezing or snap shooting. Cognitive-based techniques, like self-talk and imagery training, improve the cognitive aspect of archer performance which regulates focus, confidence, and emotional control. Studies have shown that utilizing both imagery training and self-talk can lead to reduced anxiety sensitivity therefore preventing target panic symptoms from occuring. Mindfulness-based interventions target both the physical and psychological aspects of archery. The interventions involve practicing breathing, body control, meditation, and listening to cultivate awareness of the moment. These help with relaxation skills and therefore remove anxiety from the moment the archer shoots.

Based on the review, it is recommended that coaching staff and archery athletes incorporate both physical and mental training into their regimens to help reduce the onset of target panic and its various symptoms. In addition to this, the paper also draws attention to the lack of research being done on target panic specifically, even though it manifests in most archers at least once in their careers. Further research should be done to compare different interventions and their effectiveness towards different manifestations of target panic.

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References

Abbas, A., Bi, Y., Bourtsoulatze, E., Chadha, A., & Andreopoulos, Y. (2019). Graph-based object classification for neuromorphic vision sensing. https://doi.org/10.1109/iccv.2019.00058
Amini, A., Porali fatide, S., Salehi, M., Avazpour, S., & ghabelnezam, A. (2022). Effect of mental imagery and motor representation strategies on acquisition and retention of shooting skills: A RCT trial. *Humanistic Approach to Sport and Exercise Studies (HASES)*, *2*(2), 0–0. https://doi.org/10.52547/hases.2.2.1
Basset, F., Hohl, R., Kaushal, N., & Kelly, L. (2021). Type of self-talk matters: its effects on perceived exertion, cardiorespiratory, and cortisol responses during an iso-metabolic endurance exercise. Psychophysiology, 59(3). https://doi.org/10.1111/psyp.13980
Biswal, K., & Srivastava, K. (2022). Mindfulness-based practices, psychological capital, burnout and performance anxiety. Development in Learning Organizations an International Journal, 36(6), 4-7. https://doi.org/10.1108/dlo-10-2021-0188
Bawden, M., & Maynard, I. (2001). Towards an understanding of the personal experience of the “yips” in Cricketers. *Journal of Sports Sciences*, *19*(12), 937–953. https://doi.org/10.1080/026404101317108444
Chang, Y., Kim, J., Kim, Y., Lee, H., Lee, J., Seo, J., ... & Song, H. (2010). Neural correlates of motor imagery for elite archers. NMR in Biomedicine, 24(4), 366-372. https://doi.org/10.1002/nbm.1600
Creswell, J. (2017). Mindfulness interventions. Annual Review of Psychology, 68(1), 491-516. https://doi.org/10.1146/annurev-psych-042716-051139
Davis, E., Loiacono, R., & Summers, R. (2008). The rush to adrenaline: drugs in sport acting on the β-adrenergic system. British Journal of Pharmacology, 154(3), 584-597. https://doi.org/10.1038/bjp.2008.164
Gerber, M., Best, S. R., Meerstetter, F., Walter, M., Ludyga, S., Brand, S., … & Gustafsson, H. (2018). Effects of stress and mental toughness on burnout and depressive symptoms: a prospective study with young elite athletes. Journal of Science and Medicine in Sport, 21(12), 1200-1205. https://doi.org/10.1016/j.jsams.2018.05.018
Gmamdya, H. (2023). The positive impact of combining motor imagery, action observation and coach’s feedback on archery accuracy of young athletes. Perceptual and Motor Skills, 130(5), 2226-2248. https://doi.org/10.1177/00315125231193218
Hardy, J., Begley, K., & Blanchfield, A. (2014). It's good but it's not right: instructional self-talk and skilled performance. Journal of Applied Sport Psychology, 27(2), 132-139. https://doi.org/10.1080/10413200.2014.959624
Hatzigeorgiadis, A., Zourbanos, N., Galanis, E., & Theodorakis, Y. (2011). Self-talk and sports performance. Perspectives on Psychological Science, 6(4), 348-356. https://doi.org/10.1177/1745691611413136
Isar, M., Rasyid, N., & Aziz, S. (2022). Effects of imagery training and self-talk towards state anxiety and archery performance. International Journal of Human Movement and Sports Sciences, 10(4A), 41-45. https://doi.org/10.13189/saj.2022.101307
Koivula, N., Hassmén, P., & Fallby, J. (2002). Self-esteem and perfectionism in elite athletes: Effects on competitive anxiety and self-confidence. *Personality and Individual Differences*, *32*(5), 865–875. https://doi.org/10.1016/s0191-8869(01)00092-7
Magill, M., Gaume, J., Apodaca, T., Walthers, J., Mastroleo, N., Borsari, B., ... & Longabaugh, R. (2014). The technical hypothesis of motivational interviewing: a meta-analysis of mi’s key causal model. Journal of Consulting and Clinical Psychology, 82(6), 973-983. https://doi.org/10.1037/a0036833
Priambudi, M. (2023). 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
Prior, E. E., & Coates, J. K. (2019). Archers’ experiences of target panic: An interpretative phenomenological analysis. *Qualitative Research in Sport, Exercise and Health*, *12*(2), 224–241. https://doi.org/10.1080/2159676x.2019.1599061

Reinhart, R., McClenahan, L., & Woodman, G. (2015). Visualizing trumps vision in training attention. Psychological Science, 26(7), 1114-1122. https://doi.org/10.1177/0956797615577619
Richlan, F. (2023). Virtual training, real effects: a narrative review on sports performance enhancement through interventions in virtual reality. Frontiers in Psychology, 14. https://doi.org/10.3389/fpsyg.2023.1240790
Rizal, H., Hajar, M., Kuan, G., Savadelavar, M., & Kueh, Y. (2019). The effects of progressive muscular relaxation on novice archers' state anxiety, heart rate and performance scores. International Journal of Public Health and Clinical Sciences, 6(4). https://doi.org/10.32827/ijphcs.6.4.96
Rooke, E. (2023). Target panic: disrupted ecologies of skill in archery. Area, 55(3), 348-355. https://doi.org/10.1111/area.12859
Rosenvinge, J. H., Sundgot-Borgen, J., Pettersen, G., Martinsen, M., Stornæs, A. V., & Pensgaard, A. M. (2018). Are adolescent elite athletes less psychologically distressed than controls? a cross-sectional study of 966 norwegian adolescents. Open Access Journal of Sports Medicine, Volume 9, 115-123. https://doi.org/10.2147/oajsm.s156658
Shapiro, S., Carlson, L., Astin, J., & Freedman, B. (2005). Mechanisms of mindfulness. Journal of Clinical Psychology, 62(3), 373-386. https://doi.org/10.1002/jclp.20237
Shin, B., Oh, J., Kim, B., Kim, H., Kim, H., Kim, S., ... & Kim, J. (2021). Effectiveness of self-guided virtual reality–based cognitive behavioral therapy for panic disorder: randomized controlled trial. Jmir Mental Health, 8(11), e30590. https://doi.org/10.2196/30590
Terzioğlu, Z., & Cakir, S. (2020). Effectiveness of a mindfulness-based skill development program on elite archers' mental skills and mindfulness levels. Akdeniz Spor Bilimleri Dergisi, 3(2), 303-316. https://doi.org/10.38021/asbid.832808
Tod, D., Hardy, J., & Oliver, E. (2011). Effects of self-talk: a systematic review. Journal of Sport and Exercise Psychology, 33(5), 666-687. https://doi.org/10.1123/jsep.33.5.666
Wu, T. Y., Nien, J. T., Kuan, G., Wu, C. H., Chang, Y., Chen, H. C., … & Chang, Y. K. (2021). The effects of mindfulness-based intervention on shooting performance and cognitive functions in archers. Frontiers in Psychology, 12. https://doi.org/10.3389/fpsyg.2021.661961