

Examining the Relationship Between Anxiety Levels and Sports Performance Among Athletes

Mohit Kumar

Student, Department of Physical Education
Punjabi University, Patiyala
ms6530080@gmail.com

Abstract: *This study examines the association between anxiety and performance from a cognitive-behavioural viewpoint, focusing on the impact of psychological factors on the performance of athletes. Anxiety has been one of the most prevalent psychological problems in athletes and one of the key reasons for seeking consultation with sports psychologists. Excessive anxiety can get in the way of concentration, confidence, decision making and general performance, making it an important area of research in sports psychology. To get a full account of this relationship the study looks at the theoretical basis of anxiety including cognitive and behavioural models which describe the effects of anxious thoughts and emotional responses on performance outcomes. It also reviews empirical research that has examined the complex relationship between different types of anxiety (cognitive anxiety and somatic anxiety) and athletic performance in a variety of sport settings. Furthermore, the study assesses the effectiveness of cognitive-behavioural interventions such as cognitive restructuring, relaxation techniques, self-talk, goal setting and imagery, in reducing anxiety and improving athletic performance. Evidence-based therapeutic approaches have been shown to be quite successful in enhancing athletes' psychological resilience and competitive outcomes. The study concludes by highlighting gaps in the current research, providing practical recommendations for coaches and sport psychologists, and suggesting areas for future research to enhance the understanding and application of cognitive-behavioural strategies in improving sports performance.*

Keywords: Performance, Anxiety, Athletics, Cognitive-Behavioural

I. INTRODUCTION

Anxiety and stress management skills are essential for every athlete, but especially for the best among them. Anxiety and stress problems accounted for more than 50% of athlete consultations during the Olympics, according to research. A large amount of literature has investigated the connection between anxiety and performance in sporting contexts. The cognitive-behavioral viewpoint will be used to examine pertinent studies in this study. Moreover, the study's findings about the connection between the two concepts are also covered. Furthermore, the literature review that investigates the effectiveness of CBT is included. Despite the large amount of data gathered, the results are restricted since the researchers had trouble with the terminology. For this reason, looking at the original idea of anxiety is crucial.

II. CONCEPTUAL FRAMEWORKS OF ANXIETY

Summarising previous research on anxiety and athletic performance has proven difficult due to various challenges, including methodological shortcomings such as imprecise operational definitions and an inadequately defined theoretical framework. The vocabulary utilised in the subsequent sections of this text shall possess operational definitions established herein. It will also provide a summary of the hypotheses that scholars have utilised to elucidate the relationship between anxiety and sports performance. The principal challenge in study is that scholars have not adequately operationalized the concept of anxiety in relation to sports performance. Terms such as arousal, activation, stress, and anxiety have been employed interchangeably. An individual has anxiety when uncertain about their ability



to manage a challenging situation. The differentiation between trait and state anxiety is another essential issue that must be clarified. Trait anxiety can be understood as a cognitive framework that an individual utilises to navigate challenges in their environment, while state anxiety is considered more particular and is often associated with activation of the autonomic nervous system. Performance is affected by trait anxiety, as individuals with heightened levels of trait anxiety often direct greater attention to particular aspects associated with state anxiety.

Previous research from fields other than sport and exercise psychology has shown that those who suffer from high trait anxiety also tend to experience state anxiety. State anxiety and a tendency to ignore risk-related information are symptoms of low trait anxiety. People who are anxious in both their thoughts and their actions tend to do worse in sports, while those who are anxious in both areas tend to do better. A number of ideas have sought to explain the connection between excitement and performance; one of them is the inverted-U hypothesis. It was stated that performance would improve concurrently with heightened arousal, but that performance would deteriorate with an extreme rise in arousal. In other words, as stress began to manifest, an individual remained confident in their ability to cope, resulting in improved performance. Performance deteriorated when a stressor reached a level that induced self-doubt regarding one's ability to manage it. This notion elucidated the reduction in performance due to stress; nevertheless, it failed to account for the varying responses of athletes exposed to the same stressor. The concept of individualised zones of maximum efficiency is employed by researchers to elucidate individual differences in performance.

This concept posits that each individual possesses a unique pre-performance anxiety threshold that optimally facilitates peak performance. Performance will deteriorate if pre-performance anxiety exceeds the optimal zone of functioning, whether excessively high or low. The recollection of an athlete's anxiety levels before to their optimal performances might be utilised to determine their Individual Zone of Optimal Functioning (IZOF). Anxiety and performance can be assessed repeatedly. Researchers found that the IZOF model surpasses the inverted U-theory as a predictor of performance. Although this model surpasses the inverted-U hypothesis, it remains incapable of elucidating the factors that contribute to performance discrepancies across athletes. The cognitive interpretations of anxiety experiences by successful and unsuccessful athletes may elucidate the observed disparities between the two groups. Reversal theory posits that a person's perception of arousal fluctuates according to their present circumstances. Athletes in telic states see their arousal as anxiety due to their goal-oriented attention. In para-telic states, athletes interpret their arousal as enthusiasm due to their focus on their actions. Individuals can swiftly transition between states, leading to varied interpretations of arousal, which then affects their performance. This theory attempts to incorporate both physiological and cognitive factors in explaining the relationship between anxiety and performance, yet it fails to offer a satisfying rationale for their association.

Multidimensional anxiety theory shed light on how reversal theory integrates cognitive and physiological aspects. There is a negative relationship between performance anxiety and cognitive anxiety, according to the research. Cognitive anxiety is related to worries about what will happen if anything goes wrong. One separate cognitive component, self-confidence, has been shown to positively correlate with performance in a linear fashion. Research has shown that somatic anxiety, or bodily symptoms, and performance create an inverted U-shaped association. This approach tackles each component of anxiety separately, even though it covers a lot of ground. The following model looked at how two of the three factors interacted with each other. By applying the catastrophic model to the link between anxiety and performance, physiological arousal, and cognitive anxiety are all examined. Because people attribute different meanings to their own physiological symptoms, physiological arousal may impact performance. According to this theory, while physiological arousal levels are low, elevated cognitive anxiety improves performance. However, when physiological arousal levels are high, it has the opposite effect. In addition, when cognitive stress is relatively low, changes in physiological arousal have little effect on performance.

Cognitive anxiety may have a positive or negative effect on performance as bodily arousal rises and falls. Reducing physiological arousal is the only way to counteract the performance drop that occurs when adrenaline levels increase. Though it lacks a confidence component, the model's interactive approach seems to be the most effective way for



explaining observed behaviour. We have a good grasp on how these variables interact with one another, but we still don't know how to put these frameworks into practise. For this specific reason, two separate scales have been created. It seems that the most often used instrument is the Competitive State Anxiety Inventory-2 (CSAI-2). Somatic anxiety refers to how one feels physically aroused; cognitive anxiety refers to how one feels about one's worries and negative expectations; and self-confidence is the third component. Even though the catastrophic model isn't very certain, studies show that it does exist apart from cognitive anxiety, which is something we'll get into further later on.

The developers of the "Sport Anxiety Scale (SAS)" are Smith, Smoll, and Schutz. The measure evaluates somatic anxiety, attentional disruption, and dispositional cognitive anxiety. It is a reliable instrument that aligns with the catastrophic model of anxiety and performance, but it is utilised less frequently. Researchers would significantly advance their development of acceptable operational definitions by utilising any of these scales. Let us now concentrate on the research conducted regarding the relationship between performance and anxiety.

III. ANXIETY'S IMPACT ON ATHLETICS

The impact of anxiety on physical performance is a well-studied topic. When it comes to intense competition, amateur athletes who participate in solo sports show more anxiety than those who participate in team sports, according to the research. Additionally, athletes who participate in solo non-contact sports show less levels of state anxiety compared to those who participate in solitary contact sports. Using the aforementioned theoretical frameworks, this section will evaluate the research. Research has shown that those suffering from cognitive anxiety tend to perform worse. This is valid irrespective of how skilled the person is. Two levels of scenario criticality were set as requirements for collegiate softball players. While physical anxiety was constant across all situations, athletes' levels of cognitive anxiety were much higher in the high urgency condition. An individual's mental evaluation of a given circumstance clearly affects the final results. Theoretically, peak performers in athletic endeavours see arousal as a tool for improvement. A study with a subset of swimmers found that those who felt their anxiety hindered their performance scored higher on measures of anxiety intensity than those who felt it helped them perform better. According to Jones, Swain, and Hardy (1993) and Swain and Jones (1996), this has been seen in gymnasts and basketball players alike. According to research by Gould, Petrichikoff, and Weinberg (1984), the best way to predict cognitive anxiety is to look at one's level of experience; the authors found that the more years of experience one has, the lower their cognitive anxiety would be.

Research conducted with a cohort of tennis players supported this perspective. In contrast to novices, advanced participants—individuals with more extensive experience in the sport—exhibited more favourable evaluations of their fear (Perry & Williams, 1998). Similar results have been observed with a group of skilled swimmers. Perhaps due to their prior experiences with arousal and coping strategies. The research conducted by Jones, Swain, and Cale (1990) identified goal-setting, an individual's perception of preparation, and an evaluation of previous performances as the most significant predictors of cognitive anxiety, thereby supporting this assertion. Research indicates that self-confidence levels differ across rookie and elite athletes (Perry & Williams, 1998). The seasoned players in a tennis research demonstrated much higher levels of self-assurance compared to the novices. This finding pertains to both swimmers and gymnasts (Bejek & Hagyet, 1996). The perception of preparation and environmental circumstances are the research-identified predictors of self-confidence (Jones, Swain & Cale, 1990). Other research has revealed that an individual's perceived level of expertise is the most accurate predictor of self-confidence. It is logical to evaluate an individual's previous experiences with a certain situation. Research demonstrates that self-confidence accounts for a greater proportion of performance variability than physical or cognitive anxiety. A strong level of self-confidence, which may mitigate cognitive pain, is the most significant trait possessed by exceptional performers.

The interaction of these elements with somatic anxiety provides a clearer comprehension of their actual effects, notwithstanding research on cognitive anxiety and self-confidence illuminating their influence on athletic performance. In a cohort of ninety-one athletes, aged 14 to 36, participating in track and field, swimming, and football, individuals exhibiting higher self-confidence and lower somatic and cognitive anxiety perceived their overall anxiety levels as beneficial to their performance (Wiggins & Brustad, 1996). Researchers have demonstrated that athletes in solitary



sports, such as track and field, have much higher levels of somatic anxiety and markedly lower levels of self-confidence compared to those in team sports, such as basketball (Kirby and Liu, 1999). Research conducted with figure skaters also supports this. Research by Martin and Hall (1997) indicates that skaters experienced heightened physical and cognitive anxiety prior to an individual professional event compared to a team competition. This may be attributed to the diffusion of responsibility within a team context, which does not occur in an individual setting.

Researchers focusing on the relationship among physical anxiety, cognitive stress, and self-confidence have identified notable gender disparities. In the CSAI-2, women had elevated somatic anxiety scores and diminished self-confidence compared to men (Thuot, Kavouras, & Kenefick, 1998). This study investigated the venue of a sporting event, revealing that away games correlated with elevated physical anxiety and diminished self-confidence. Finally, Thuot et al. (1998) found that as opponents' talents increased, adolescents of all genders exhibited significantly elevated levels of physical and cognitive anxiety, accompanied by a reduction in self-confidence. Studies examining both gender and anxiety factors offer some evidence for this assertion. The perceived talent and probability of success among males significantly influenced both physical and cognitive anxiety. The levels of cognitive anxiety and self-confidence in females are affected by their performance preparation and the significance they attribute to achieving success. These gender differences underscore the imperative of developing therapies tailored to individual needs and the importance of considering all pertinent factors when designing an intervention. Anxiety evidently impacts sports performance in various ways. The effects vary based on gender, sport, and level of experience. Sports psychologists must consider the three main dimensions of anxiety—cognitive, somatic, and self-confidence—to assist athletes in attaining optimal performance. Sports psychologists ought to assist their clients in achieving this optimal state, since research indicates that successful athletes who perceive their anxiety as beneficial exhibit elevated self-confidence and diminished physical and cognitive anxiety levels. This leads us to our subsequent topic: the array of therapies accessible for addressing anxiety within the context of athletics.

IV. COGNITIVE-BEHAVIOURAL INTERVENTIONS IN ATHLETICS

Research presented in this research indicates that athletes must effectively regulate their anxiety to optimise performance during critical moments. A notable disparity in an athlete's performance between training and competition may suggest excessive stimulation or difficulty achieving the appropriate level of arousal. Athletics has gained from advancements in anxiety reduction techniques overall. Prominent achievers and researchers utilise the following anxiety management techniques: goal-setting, cognitive restructuring, diaphragmatic breathing, progressive muscle relaxation, imagery, and positive thinking. This section will evaluate studies on effective ways for alleviating anxiety in sports contexts. This section will encompass particular therapies and therapeutic issues. Researchers have already examined several sports to determine the efficacy of cognitive-behavioral therapy. The nature and approach of the selected treatment techniques have differed significantly. Initial research in the domain focused on therapies aimed at alleviating anxiety within therapeutic settings. The attention difficulties and in-game anxiety of two female collegiate basketball players markedly improved following training in relaxation, visualisation, and cognitive restructuring (Meyers, Schleser, & Okwumabua, 1982). The therapies improve performance by reducing anxiety and enhancing self-esteem.

The effectiveness of cognitive-behavioral therapy in enhancing sports performance has been repeatedly confirmed by subsequent study. The aforementioned cognitive-behavioral treatments were used in a seven-week, twice-daily group session. A decrease in anxiety was seen in the treatment group compared to the control group that did not get any therapy (Holm, Beckwith, Ehde, & Tinius, 1996). According to a research that used a multiple baseline design, a cognitive-behavioral intervention significantly reduced cognitive and somatic stress and improved self-confidence (Savoy, 1997).

However, the boost in self-assurance could have been due to the individualised nature of the treatment. This notion is supported by further studies with college basketball players who participated in either a group program or a hybrid program combining group and individual training. Participating athletes were the only ones to see an uptick in self-



assurance, but all athletes reported lessened physical and cognitive anxiety (Savoy & Beitel, 1997). This shows that although group therapy may help with cognitive and physical anxiety, athletes who are having trouble believing in themselves may benefit more from individualised care. Improved self-confidence and markedly less physical and mental anxiety were seen in tennis players who participated in one of four interventions: imagery, relaxation, cognitive, or restructuring. If a control group that did not get any therapy had been included of the trial, the data may have shown that the groups were different. According to the studies, cognitive-behavioural treatments really work to boost performance. According to studies conducted on hockey players, the most effective way to reduce anxiety is to use techniques that are specific to each player's dominant anxiety type, whether it be physical or cognitive. Therefore, before adopting solutions, it is vital to evaluate the athlete's needs. Our attention will now be directed into the particular methods that make up these procedures: relaxation, cognitive, imagery, and restructuring.

Relaxation: A approach discussed in the literature to mitigate physical and cognitive stress is relaxation. Clinical populations have been efficiently treated utilising these two approaches. Although comprehensive examination of the methodologies utilised in these two therapies is beyond the scope of this publication, they are an essential component of any intervention designed to alleviate anxiety and enhance performance. According to Butler (1996), athletes sometimes find it challenging to reduce their arousal levels post-competition. Consequently, the utilisation of gradual muscle relaxation is recommended. It may assist athletes who had difficulty sleeping the night prior to a significant tournament. Previous study indicates that both tactics are beneficial in alleviating anxiety, with their initial efficacy maximised when paired with imagery that highlights relaxation. The athlete may discontinue the use of relaxing visualisation after they master these techniques.

Athletes seeking to improve their performance may also gain advantages from mental practice and visualisation techniques. It provides them with a sense of familiarity regarding the task and positive reinforcement for their expected success. This method has been shown to be effective with collegiate athletes across all sports. The findings indicate that participants who underwent the imaging intervention significantly surpassed the delayed-training control group in athletic performance and sport competition anxiety. The internal mechanisms of images are not understood. Studies have revealed that the capacity for mental visualisation and the existence of engaging pictures may reliably forecast anxiety levels associated with cognitive performance. The ability to visualise was linked to bodily state anxiety, whereas the capability to visualise motivational mastery correlated with self-confidence. The researchers identified a significant association between the utilisation of imagery and capability, suggesting that an increase in utilisation corresponded with an enhancement in ability. Butler (1996) identified that the subsequent factors are essential for an effective visualising routine:

- The decision to rely on presumed knowledge. Prior to visualising, one should relax. In addition to engaging all of the senses, a realistic recreation of the game should incorporate the venue.
- Staying focused on the planned method is essential. Rather of looking directly at the camera while they do the skill, they need to adopt an internal perspective, as if they were experiencing it firsthand. In addition, the imagination exercise is enhanced by trying to feel the movement.
- One should practice the skill in "real time," without changing the pace or tempo. Because of their technical knowledge and the fact that it helps dispel the myth that psychologists are dangerous, coaches should be included in the development of an imagery exercise.

Cognitive: Cognitive restructuring is essential in treatment to assist patients in reducing cognitive anxiety by allowing them to reinterpret their activation states. It may be beneficial to decrease the importance of competitions, so revealing an athlete's true ability. The multidimensional anxiety hypothesis posits that a decrease in cognitive anxiety coupled with an increase in self-confidence enables exceptional performers to achieve optimal performance. This indicates that diminishing the importance of challenges and targeting a moderate level of physical anxiety may be suitable therapies. A vital element of cognitive reorganisation is goal formulation. It is essential to refrain from establishing extremely ambitious objectives for individuals, since this may result in elevated anxiety levels that could hinder performance. It is



recommended that individuals establish several more attainable objectives that decompose the task into its fundamental components (Orlick, 1986). Although individual methods like relaxation, visualisation, and cognitive therapies might alleviate anxiety in athletes, their synergistic effects are significantly more powerful. Butler (1996) introduces a mnemonic device termed PRESSURE, which encompasses all three phases of intervention for individuals facing difficulties in competitive environments. The following is an examination of the term:

- Diaphragmatic breathing methods may be necessary before to a competition in order to prevent performance-lowering over-arousal.
- This is the belief that your problems do not originate from inside you. This will be helpful for athletes who feel like they are under an excessive amount of pressure.
- Realising how important it is for individuals to have faith in themselves and their skills is crucial.
- Keeping your focus on the task at hand is fundamental. If you're training or competing, this will help.
- This is particularly useful in team sports because it makes players consider the roles that other players will play and the importance of working together as a unit.
- In what ways does this event matter in the real world? No matter how big or little the competition is, you should always give it your all.

This memory aid is advised for individuals who experience cognitive, physical, and self-confidence challenges related to sports anxiety. The extent of cognitive effort required to implement these methods influences performance. Gould et al. (1993) posited that the extent to which participants implemented these therapies directly influenced their status as Olympic wrestling medallists or non-medallists. This indicates that winners were more inclined to implement the interventions instinctively. The bulk of elite athletes have already discerned, to some degree, how to attain the activation state necessary for their sport. The diverse demands imposed on an athlete during a competition contribute significantly to the excitement of sports. This raises doubts about the efficacy of any singular approach in assisting all individuals. It is therefore recommended to conduct a precise assessment of the athlete's needs.

V. CONCLUSION

Performance is significantly affected by anxiety, as shown by the aforementioned consequences. Early studies were hindered by the fact that the term "anxiety" lacked defined operationally. Academics in the future will have the disaster model to refer to when trying to decipher the effects of physical and mental pain on productivity. More than that, we can now dissect the many aspects of anxiety in the context of athletics. Thanks to the CSAI-2 and SAS, researchers can now reliably assess several forms of anxiety, including cognitive, physical, self-confidence, and attention disruption. Anxiolytic cognitive-behavioral treatments with small sample numbers may be studied using the rapidly expanding field of multiple baseline research designs. Manual therapy has recently become an integral part of professional management for many anxiety disorders, particularly those seen in the athletic setting. When designing treatments for athletes, sports psychologists should take into account more than only the physical aspects of their performance. Psychological health performance models make use of the Profile of Mood States (Morgan, 1985). Individuals exhibiting psychological states typified by greater optimism and lower stress, despair, anger, exhaustion, and bewilderment are able to function at their peak, according to the notion. Often described by the term "iceberg profile," this serves to discern between people who have achieved major success and those who have not. If the sample is homogeneous with respect to talent and the sport played, this profile may have some power. Contrary to what some scholars have said, it does not distinguish between highly successful and less successful athletes. Therefore, it's crucial to take into account all parts of a person's psychological functioning in order for sports psychology treatments to be as effective as possible.



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