

STRATEGIES COUNTERATING ANXIETY TO MAINTAIN OPTIMUM
PERFOMANCE

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ABSTRACT

The relationship between anxiety and sport performance is explored by comparing the efficacy of performance and individualized variants of the inverted-U hypothesis with the Zone of Optimal Function (ZOF) theory. ZOF or Inverted-U criteria were used to identify cases when athletes possessed optimal precompetition anxiety. For ZOF, optimal ranges were based upon each athlete's recollection of anxiety associated with best past performance. An Athlete can be either *inside* or *outside* the optimal anxiety range. We are going to examine the motivational orientations of athletes using the Achievement Goal Theory (AGT; Nicholls, 1989) and Reversal Theory (RT; Apter, 1989). Both theories are useful for determining how individuals varying in motivational orientations differ in their participation motives. Task and ego orientations in AGT were linked with specific motivational orientations in RT. The two theories have similar motivational orientation constructs, which can be used in examining what motivates athletes to counteract performance decline whenever in high anxiety competition. We will use these theories to predict the best methods to maintain peak performance during high stress. Then, we'll discuss how coping strategies, self-confidence, competition experience, motivation and goals will address strategies to help decrease performance impairments caused by anxiety. After we will be incorporating the strategies with athletes individually to find the best methods to help maintain the optimum level of performance for each individual.

Introduction

Anxiety is widely believed to influence various aspects of performance such as sports. Anxiety refers to a heightened state of arousal that produces feelings of discomfort, excessive concern or worry. Arousal is a state in which varies in intensity and mediated by the sympathetic nervous system, in which changes in bodily processes prepare an individual to respond to a perceived demand for action (Gatchel & Baum, 1983; Lacey, 1967). There is a relationship between the two, the theory that describes the relationship is the inverted-U hypothesis. The inverted-U hypothesis indicates that performance should be optimized when anxiety is within a moderate range. As anxiety levels either exceed or fall below the moderate level, performance decreases. The inverted-U hypothesis was originally intended to describe the relationship between arousal and performance (Malmo, 1958), but it also expresses terms of anxiety rather than physiological activity (Landers & Boutcher, 1986). The optimal range of anxiety of the inverted-U hypothesis depends on the sports specific motor task and the athlete's individual range of optimal functioning of performance. Fine motor skills like croquet are thought to require a relatively lower optimal range of anxiety, whereas performance in gross motor tasks involving considerable physical effort like football should be optimized with higher anxiety levels. Thus, different levels of anxiety will be required for optimal performance in sport tasks with distinct energy or motor requirements, whereas anxiety should be similar for comparably skilled athletes competing in the same event.

A theory that focuses and incorporates individual differences has been proposed by Hanin (1978, 1986). Hanin's Zone of Optimal Function (ZOF) theory, or Individual Zones of Optimal. The theory states that performance is optimized when anxiety falls

within an optimal zone. ZOF theory indicates that the optimal anxiety zone may lie anywhere within the anxiety continuum and range from low to high depending upon the individual. Studies found by Hanin (1986) has shown that athletes perform best when anxiety is either low or high, rather than moderate. Moreover, Hanin (1978, 1986) has found that the optimal range in anxiety is not influenced by the task characteristics of the sporting event. ZOF theory posits that optimal anxiety may range from low to high among participants in any given sport.

An athlete's own zone of optimal function is determined by assessing state anxiety with the State-Trait Anxiety Inventory (STAI) (Spielberger, Gorsuch, Lushene, Vagg & Jacobs, 1983) prior to a series of competitions. STAI is completed based on how athletes recall feeling just prior to her/his own best performance, this is supported research by Hanin (1978, 1986) who has found that recalled anxiety levels correlate highly (0.7 to 0.8) with the actual precompetition anxiety values. This method differs from the individualized variation of the inverted-U hypothesis employed by Sonstroem and Bernard (1982) where the median level of pre-competition anxiety of each athlete always serves as the optimal value. Additionally, there is a correlation between predicted and actual anxiety values have been found to range from 0.6 to 0.8. When in high anxiety competition or more difficult there is a higher accuracy. The ability to anticipate or predict anxiety prior to competition is useful for identifying athletes likely to need some form of intervention, coping strategies and coaching techniques before competing. However, decreasing arousal, and therefore anxiety, may not be desirable for improving sports performance. As described by Slusher (1967), "Each time man 'takes the field',

with anxiety, he embraces it. It, motivates him, toward greater realization of his skill in contest” (p. 192)

Pre-competition arousal is typically necessary for optimal response to competitive demands (Mahoney & Meyers, 1989; Oxendine, 1970). The level of arousal can enhance or hinder performance, which depends on factors such as task characteristics and individual differences (Landers, 1980; Weinberg, 1989). Evidence indicates that across individuals and situations an athlete’s performance may suffer from over- or under arousal (e.g., Fenz, 1975; Fenz & Jones, 1972; Mahoney & Avenier, 1977). Arousal modulation, therefore, has become an important intervention in sports performance.

The study that provides support for the general concept of the interaction hypothesis of the catastrophe model (Orbach, 1999). An interaction exists between the anxiety components as influencing performance. Participants with high self-confidence performed better than those with low self-confidence. This result strengthens the existing body of knowledge which maintains that self-confidence is a crucial variable in influencing athletic performance (Feltz, 1988; Williams & Krane, 1998). It was found that athletes who experience high cognitive and low somatic anxiety do best only when they are self-confident. Furthermore, athletes under the conditions of high cognitive and somatic anxiety perform worse only when they are not self-confident. The results indicate that to better predict performance based on anxiety conditions, it is important to understand the relationship between anxiety and other influential variables such as confidence in ability.

The catastrophe model suggests while under conditions of high cognitive and somatic anxiety an athletes performance will worsen. However, athletes who are self-

confident and experience anxiety conditions do not have a performance drop compared to those who are not self-confident. This indicates the importance of determining self-confidence when attempting to explain and to understand the relationship between anxiety and performance. Findings have concluded that self-confidence may decrease performance drops when in high anxiety states. When an athlete believes that they are going to perform successfully and having a positive attitude may make the difference between experiencing anxiety as a positive factor or as a negative one as it relates to athletic performance. Furthermore, giving strategies of how to manage stress, being mindful about emotions and situations, athletes can learn cognitive restructuring methods to learn how to interpret certain anxiety symptoms as beneficial to performance.

Researchers in sport psychology have emphasized the differences between anxiety by using the catastrophe model to understand the association between cognitive anxiety, somatic anxiety, related physiological symptoms, and athletic performance. Cognitive anxiety is “negative expectations, emotional distress and cognitive concerns about oneself, the situation at hand, and potential consequences” (Woodman & Hardy, 2003, p. 443). Somatic anxiety is the physical components to one’s physiological arousal (Woodman & Hardy, 2003, p. 443). Martens’ multidimensional anxiety theory proposes that a negative linear relationship exists between cognitive anxiety and performance while a curvilinear relationship exists between somatic anxiety and performance. The relationship between cognitive anxiety and physiological arousal may be either positively or negatively related to performance depending on both factors’ intensity.

Results of a study (Duncan et. al, 2016) support the catastrophe model in that timing performance was negatively affected when physiological arousal was high (via

manipulation of exercise intensity/ Highly competitive games), and cognitive anxiety was higher than that at rest (manipulation of competition/practice conditions). The results of the study displayed that cognitive anxiety was the main factor in whether there was a 'catastrophic' failure in performance but only when the performance task was more cognitively demanding (via a higher stimulus speed on the anticipation timer). When the less cognitively demanding stimulus speed was present, there is an inverted-U relationship between (exercise intensity and performance). In addition, a major prediction of the catastrophe model is that when cognitive anxiety is high, performance will increase or decrease depending on whether physiological arousal is decreasing or increasing. The results suggested that cognitive anxiety was significantly higher, during high-intensity exercise (90% HRR) during both the competitive performance conditions compared to the practice performance conditions.

In a study (Hardy I; Parfitt, G 1991) results showed that there were some potential gains and catastrophic drops in performance that occur while participants are in high cognitive anxiety. Results demonstrated stability of skilled performers, even when performing complex motor task in conditions of low cognitive anxiety but extremely high physiological arousal. Both cognitive anxiety & physiological arousal can affect performance positively or negatively. Recent studies have acknowledged that anxiety effects performance usually by inference or motivational effects. Wine (1971) and Hamilton (1975) said that interference happens because of the anxious individuals own personal thoughts and concerns of the task. Therefore, when a person has extreme somatic anxiety, it will affect performance.

Reasons to why athletes or individuals may be susceptible to decrease or increase in performance is because having a difference in their current aspirations and their previous achievements in performance. Depending on the difference in their goal discrepancy athletes may have more motivation and effort in high anxiety tasks when there was a realistic chance of success. On the other hand, if the task is too hard or difficult, then the athlete could have declined performance since the task is too difficult. Erez & Zidon (1984) has displayed that goal difficulty can have a positive or negative effect on performance, when the goal is either accepted or if it rejected. It should be noted that physiological arousal could reflect effort to cope for high demanding tasks. The next conclusion is that physiological must be reduced by coping mechanisms if that athlete wants to regain or maintain their optimum level of performance.

Discussion

One popular method of coaching is “inner game”, which emphasizes the importance of relaxed effortless concentration. Which has been argued to reduce decrements in performance while in stressful situations and high cognitive tasks loads in humanistic psychology literature, Ravizza (1977) reported that 90% of optimum performances athletes have said their performance was effortless. Meaning the athlete must practice and have years of experience to have mastery of their sport, to not have cognitive tasks impairments.

Neuroticism is positively related to somatic anxiety and physiological arousal and is negatively related to self-confidence. This indicate that neuroticism might be an

important personality trait in understanding an athlete's emotional and physiological state before an important competition neuroticism's ability to predict cognitive and physiological responses to stress may be related to the appraisal styles of athletes. Schneider (2004) found that neuroticism is associated with threat appraisal, meaning that threatened individuals may have low self-efficacy regarding their coping. Another study, threat appraisal has been shown to be associated with increased cardiac output coupled with increased total peripheral resistance (Tomaka, Blascovich, Kelsey & Leitten, 1993). These results can explain the positive relationship between neuroticism and somatic anxiety, as well as physiological arousal in the high anxiety group.

During high competition games and playoff games athletes are under a lot of pressure, they may have a higher susceptibility to choking. When an athlete is highly motivated to succeed, their performance level may drop dramatically due to them increasing their effort, increasing effort can substantially decrease performance instead of increasing it. Athletes are accused of choking when they do not perform well during competitions or when they do not perform up to their previous exhibited standards. The definition of checking is "performance decrements under pressure circumstances. To understand choking, the term pressure is also important. Pressure is "any factor or combination of variables that increase the importance of performing well in a particular moment (Daniel 1989). Researchers have found that choking is likely caused by audience, self-consciousness, performance expectations and task characteristics

Choking has been shown to occur because of disruptions in working memory; explicit processes. Having pressure about performing at a certain level can raise anxiety. Which increases an athlete's attention to skill processes and their step-by-step control

(Beilock & Carr, 2001). By extension, if an athlete has implicit knowledge of a skill, or perceives control over it, then the athlete will focus less on these step-by-step processes and be more likely to succeed under pressure. An athlete's level of expertise in his or her sport has also been linked to successful performance under pressure, by way of a reliance on implicit knowledge. Evidence suggests that professional athletes rely more on implicit knowledge of a skill, while novices rely more on their explicit knowledge (e.g., Beilock, Carr, MacMahon, & Starkes, 2002; Gray, 2004). As a result, experts are more prone to choking under pressure when they focus on the explicit processes of a skill (e.g., Beilock & Carr, 2001).

Interventions such as relaxation, meditation, and stress management training (Meichenbaum, 1977; Woolfolk & Lehrer, 1984) have been used to effectively manage over-arousal and anxiety in athletes (DeWitt, 1980; Murphy & Woolfolk, 1987; Smith, 1985; Ziegler, Klinzing & Williamson, 1982). Athlete interventions generally involve skill development which includes at least one anxiety management strategy (Orlick, 1986; Suinn, 1985). "Under-arousal" has the athlete to psychologically ready themselves, mental preparation heightens arousal thereby preparing the athlete to perform (Weinberg, Gould & Jackson 1980). Elevated arousal is key in strength movements and in high mastery tasks (Martens, 1977; Oxendine, 1970). Shelton and Mahoney (1978) documented the effectiveness of such mental preparation strategies, although without directly assessing arousal or anxiety change.

Performance increases for athletes when they have previous competitive experience, and it's the greatest when athletes are allowed to generate their own preparation strategies. This variation in strategy effectiveness suggests that such mental

preparations strategies can be learned through an accumulation of competitive experience or quickly trained after moderate amounts of experience. Findings in study (Whelan, J. P., et.al, 2019) clearly indicate that experience in competitive performance preparation is an important factor in the use of mental preparation strategies. Psych-up strategies promoted a style of attentional focus that did not facilitate complex precision performance. Mental preparation strategies may not produce a level of arousal that facilitates performance.

Arousal changes do not clearly explain the strength-performance increases, heart rate changes were related to performance change for subjects with extreme competitive experience histories. On average, low competitive experienced athletes realized neither an arousal nor a performance gain. Athletes with moderate competitive experience had a performance increase, but a heart rate decrease. Finally, both heart rate and performance increases were found for subjects with considerable competitive experience histories. Mental preparation strategies have minimal effects on individuals with little competitive experience. Although, highly competitive experienced subjects, compared to the moderate competitive experienced subjects, were more readily aroused by participation in the task.

Close links between two motivational orientations and sport participation motives consistent with a study by White and Duda (1994). High task orientation was found to be strongly linked to the intrinsic-typed sport motives such as skill, excitement/challenge, and fit. Youth high in task orientation who adopt a self-referenced perception of ability, desire to pursue mastery- and skill-related goals which allow their personal and mastery development in the sport setting. This confirms that task-oriented youth tend to participate in sport and physical activity for intrinsic values or reasons. High ego-oriented

youth desire to outperform others in the comparison process to demonstrate their superior ability and attain social status or recognition. Their main concern is superiority over others instead of personal mastery and self-progress. (Nicholls,1989). This shows that High ego-oriented youth are extrinsically motivated towards their sport and physical activity participation (White & Duda,1994) and their personal success tends to be attributed to external factors. Individuals who are serious minded and goal-directed are likely to endorse more serious types of sport motives such as skill improvement (Lindner & Kerr,2000,2001) and try to get approval or consensus from significant others (Apter,2001). Participants high in conformist orientation showed a preference for the team/friend motive. This means that conformist-oriented individuals are willing to fit in and comply with group norms (Apter,2001).

According to Nicholls (1989), individuals have two different goal orientations which influence how individuals construe their competence or define their subjective success in the achievement settings. One orientation is Task orientation is concerned with mastery, self-learning, and personal improvement. Task-oriented youth tend to participate in sport and physical activity for intrinsic values or reasons. Ego orientation constitutes the comparison of own performance to that of others. An ego involved individual adopts a perception of ability based off other abilities. He/she experiences subjective success when he/she has a better performance than others in the social comparison process. High ego individuals outperform others in the comparison process to demonstrate their superior ability and attain social status or recognition. Their main goal is superiority over others in a normative manner instead of personal mastery and self-progress in a self-referenced term (Nicholls,1989). This shows that they are extrinsically

motivated towards their sport and physical activity participation (White & Duda,1994) their personal success tends to be attributed to external factors.

Dispositional goal orientations play an important role by influencing the individuals' motivated behaviors and cognitions or beliefs in the achievement setting. Previous research has shown a relationship between goal orientations and achievement behavior patterns such as effort, task choice, performance, and persistence (e.g.,Cury,Biddle,Sarrazin,& Famose,1997;van Yperen & Duda,1999). Task orientation can have behaviors such as exerting high effort, choosing challenging tasks, and showing greater persistence. Ego orientation on the other hand may lead to maladaptive patterns such as exerting less effort and demonstrating a lack of persistence, particularly at low perceived competence and in the face of adverse outcomes.

Goal orientations have also been linked with one's beliefs or cognitions such as beliefs about sport success, purposes of sport, sportsperson-like behaviors, and intrinsic motivation (e.g.,Rasle,Coulomb,& Pfister,1998; White,Duda,& Keller,1998; Whitehead, Lee,& Hatzigeorgiadis,2003; Yoo & Kim,2002). For example, task orientation is related to the belief that sport success results from high effort and co-operation, sportsperson-like behaviors, and intrinsic motivation. Ego orientation conversely corresponds to beliefs that success is dependent on superior ability or external factors, purpose of sport being concerned with fostering social status, unsportsperson-like conduct, and declining intrinsic motivation. Individuals who are serious minded and goal-directed are likely to endorse more serious types of sport motives such as skill improvement (Lindner & Kerr,2000,2001). A study by (Sit, C. H. P., & Lindner, K. J. 2005) concludes that RT appears to be a useful theory to studying participation

motivation in sports. RT application to sport motivation could therefore be regarded as a new research direction for researchers in sport psychology to determine how to motivate an athlete the best depending on their motivational orientation.

Reversal Theory is motives that govern or direct human behavior, and that are referred to as “meta motivational states” (Apter,1989). There are four pairs of states, and the states are each very different. The first is telic (being serious, goal-directed, achievement) , paratelic (playful,unconcern,fun-seeking). The 2nd is conformist (compliant and co-operative) and negativistic (rebellious and defiant). The 3rd is autic (gain something for own sake,self-centred) and alloic (give something for others,other-centred). Lastly, mastery (being competent and gaining control or power) and sympathy (empathetic with others) (Apter,1989, 2001). These four pairs of metamotivational states are important to understanding the human motivational process (Kerr,1997,2001) and they are related to the basic psychological needs of an individual’s goal. With the understanding of an athlete own motivational state then we can emphasize the importance of everyone’s reversible views on what constitutes his/her preferred levels of anxiety and motivation. Therefore, we can help an Athlete change their level of what they think they can handle, then we will be able to increase their performance peak. Also, we can reverse an athlete’s thinking on how much stress they can handle by motivating them depending on their motivational state.

Implications and Conclusion

Attempts to explain why there's a decrease in performance because of anxiety is based off research by (Wine & Hamilton, 1971, 1975). They found interference or motivational effects can be the cause of a performance drop. This occurs when anxious athletes get preoccupied with their own personal thoughts and concerns of the task. It can be noted that high anxiety players have a larger difference in their current skill level and their desired aspirations in performance. Depending on the goal discrepancy on performance can either enhance motivation and effort when there's a moderate probability of achieving that goal. Conversely, if the task is too difficult or impossible, the greater goal discrepancy of high anxious athletes could be expected to reduce their motivation which can result in decreased performance. (Erez & Zidon, 1984) has shown that goal difficulty is positively related to performance when the goal remains accepted, but it is negatively related to performance if the goal becomes rejected. However, (Maiden & Sherry, 1986) has also shown that goal acceptance is significantly reduced when an individual has intrinsic anxiety, implying that anxious athletes do indeed have a greater goal discrepancy.

There are several possibilities that can explain why there's performance decline in athletes. First explanation could be because of physiological arousal could reflect the effort which is required to cope with demands of the task. Meaning that physiological arousal will have to be reduced before athletes are able to cope well enough to invest the extra effort required to reach their peak performance. Another possibility is athletes may waste cognitive resources by telling themselves to "try harder" instead of getting on with the task by distraction (Deffenbacher, 1980), a reduction in cognitive capacity.

High confident athletes who experience high cognitive and low somatic anxiety perform their best. When athletes are not confident, they will not improve their performance, especially when experiencing high cognitive and somatic anxiety. The catastrophe model hypothesizes that the worst performance will occur under conditions of high cognitive and somatic anxiety. However, participants that are self-confident and experience these anxiety conditions do not have performance drops compared to those who were not self-confident. This indicates the importance of determining self-confidence when attempting to explain and to understand the relationship between anxiety and performance. It can be concluded that self-confidence may decrease harmful anxiety effects. Self-confidence is a critical variable that determines whether an athlete's performance will improve.

Athletes should be trained to rely on perceptions of control rather than explicit knowledge when performing motor task to decrease susceptibility to choking. Coaches and Sport Psychologist should steer athletes away from reinvesting attention in the competitive task, to reduce performance anxiety, and train athletes toward feelings of confidence and perceived control, for successful performance under pressure. To increase peak performance and excel in sports, interventions should be aimed toward strategies to increase self-confidence, find an athlete's motivation orientation to improve their willingness to learn and make progress toward personal or team goals. Leadership is one of the most important qualities for a coach or captain of team. A coach / captain of the teams needs to be effective in directing, controlling, communicating, influencing, and motivating the team. When a team has effective leadership, this ensures group cohesion,

task roles, and execution of team goals. Every Coach/ Captain of team adopts a different style of leadership for their team based on the personalities of the team members.

Whether an athlete believes that they have a high probability to perform successfully may make the difference between experiencing anxiety as a positive factor or as a negative one as related to athletic performance. Furthermore, it is recommended that athletes experience stress management strategies that deal separately with cognitive and somatic anxiety. Instead of attempting to reduce the intensity of the cognitive anxiety symptoms, athletes should learn cognitively restructuring methods to learn how to interpret certain anxiety symptoms as beneficial to performance. Also, they should learn how they motivate themselves to improve on their performance tasks. Basis of all human experience is interpretation which means, to understand and help the athlete we must get inside his/her world of meaning. Meaningful discoveries will only come from understanding the individual case. To truly help an athlete we must remember they are a person First, athlete 2nd. Coaches and staff should remember that the most important influence on personality is Individual's conscious awareness, Freedom to choose, Self-determination and, experiences in life.

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