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Stress in Sport

Stress has been identified as a critical facet in sport, influencing individual and team performance as well as social functioning. The inability to manage stress in sport is strongly associated with increased anxiety and burn-out, increased aggression and violence, decreased self-esteem and enjoyment, decreased performance expectancies, and performance difficulties. Nevertheless, one of the primary challenges in understanding and controlling stress revolves around conceptualizing stress. This dilemma is revealed in the following definition of stress:

Generally, any force that when applied to a system causes some significant modification of its form, usually with the connotation that the modification is a deformation or a distortion. The term is used with respect to physical, psychological and social forces and pressures. Note that stress in this sense is a cause; it is the antecedent of some effect. 2. A state of psychological tension produced by the kinds of forces or pressures alluded to in 1. Note that stress in this sense is an effect; it is the result of other pressures. When meaning 2 is intended, the term stressor is typically used to refer to the causal agent. (p. 716, Reber & Reber, *The Penguin Dictionary of Psychology*, 2001).

The first part of the definition identifies stress as a 'stimulus'. Research based on this approach emphasized how social cultural factors (social class, age gender, racism, life changes, etc) produce stress reactions. A popular investigation of psychological stress focused on identifying common life changes or events ranging from holidays, to sexual difficulties, to death of a spouse. Sport research tended to concentrate on factors such as the pressure of important sporting events, expectations of significant others, coaching and

playing demands, financial difficulties, and the like. This point of reference also leads to the use of such terms as good stress (eustress) and bad stress (distress).

The second part of the above definition focuses more on the stress response. This orientation emphasizes the physiological and emotional responses (such as arousal and anxiety) or the consequences of being placed in demanding sporting situations. Stress as a response was popular because scientists could study the relationship between particular biological/ physiological reactions and further consequences such as illness or performance breakdowns. Physiological effects included activation of the adrenal glands, producing stress hormones (cortisol, aldosterone, & epinephrine). The stress response included increase neural excitability, cardiovascular changes, increased metabolic activity, neurological sweating, and changes in the gastrointestinal functioning. Thus, a stress response to sport stressors could include increase heart rate, heart stroke volume, sweating palms (and other body parts), muscular tension or control problems, butterflies in the stomach, nauseating feelings, diarrhea, and need to urinate. Psychological responses are also important such as emotional reactions (fear and anxiety) as well as changes in cognitive information processing.

Both the stimulus and response conceptualizations are limiting. Researchers have found large individual differences in how athletes (and nonathletes) react to the same objective stimulus. Because of these difficulties, the general consensus in the research field is that stress is best conceptualized as a process involving a dynamic interaction between the person and the environment (Lazarus, 1999). This viewpoint recognizes that an athlete's physiological, emotional, and cognitive responses to sporting stressors will

be heavily determined by the athlete's motives, goals, cognitive and coping abilities, physical conditioning, and other internal person factors.

The Stress Process

To better understand the stress process in sport performers, it is best to identify the critical components of the process. These components are environmental demands, cognitive appraisal, physiological arousal, action tendencies or impulses, coping strategies, and emotions. A comprehensive discussion of these components and their role in the stress process is beyond the scope of this article (see reading list). Nevertheless, a succinct discussion will help the reader understand the role of these components in sport stress.

Environmental demands create the initial stressor conditions. Common sport stressors include opponent and team-mate abilities and actions, match importance, referee decisions, playing conditions, sport crowd or audience behaviour, coach's actions, equipment, financial pressures, and the support and expectations of significant others. None of these stressors, however, are sufficient in themselves to produce stress responses. Research has indicated in the majority of cases it is how the athlete evaluates the meaning of the stressors that produces stress responses

The late Richard Lazarus suggested that psychological stress requires a judgment that the person-environment interactions involves one of the three stress relationships (harm-loss, threat, challenge). Harm/loss and threat are negative interpretations whereas challenge involves the person perceiving possible benefits but requiring the high cognitive and physical effort. The type of stress relationship is dependent upon the cognitive appraisal of the environmental demands and one's ability to manage these

demands (their coping ability). There are two interrelated types of appraisal. Primary appraisal involves determining “what is at stake”? The athlete must quickly evaluate, much which is done automatically, if the sporting situation is important to one’s goals (motivation aspect) and whether the situation threatens, harms or benefits these goals. An important aspect of this process is determining the potential consequences of succeeding or failing to meet the stressor demands. Secondary appraisal involves determining “what can be done”! This evaluation involves determining who is or was responsible, future expectancies, perceived control, and coping options.

The appraisal of environmental demands and perceived consequences will produce discrete emotions (ie., anxiety, anger, fear, happiness) and associated physiological states such as arousal and action impulses. For example, anxiety occurs if the athlete appraises that they are likely to fail to achieve success in a very important event. This emotion is usually associated with high arousal and an action impulse to escape or withdraw. Coping is a critical process that can moderate this emotional experience. Sport researchers have recognised that coping strategies play an important role in how athletes of various ages manage and change stress and emotion. Coping refers to cognitive and behavioral actions used to manage the external and internal demands of a stressful situation. Most conceptual models of coping feature at least two broad coping dimensions: Problem-focused coping refers to efforts that attempt to change the situational demands. Common problem-focused strategies in sport include increasing effort, planning, and information seeking. Emotion-focused coping are efforts to manage emotions. These type of coping includes coping strategies like seeking emotional support, acceptance, relaxation, and positive reappraisal. Many researchers

propose a third category, avoidance coping, which includes individuals' efforts to remove themselves either physically or mentally from the stressful situation. The strategies selected by an athlete are contingent (a) the appraisal that the strategy will help manage the situation and (b) the confidence the athlete has in using the strategy in that situation.

Coping strategies can impact the stress process both in the competition preparation stage and when the athlete actually confronts a stressor. For example, an athlete can plan a course of strategic action to neutralize an opponent's strengths. Other preparation strategies might include positive imagery, suppressing competing activities (e.g., partying with friends), and fine tuning physical and technical training. Successful confrontation coping strategies might include utilizing coaching assistance and the competition plan, positive self-talk, arousal control, and increasing effort.

How stress impacts performance

We can understand how stress can effect sporting performance by examining how emotional experience can potentially disrupt underlying performance mechanisms. Stress can exert an influence on the physiological components of performance via an increase in arousal. Increased heart rate, sweaty hands, and muscular tension can influence fine motor control and dexterity. For example, research with elite rifle and pistol shooters show that the ability to control heart-rate and muscular tension is critical for top performance. Top golf professionals have reported being unable to feel their arms and hands when faced with putts that are worth hundreds of thousands of dollars.

Stress can also influence cognitive information processing such as perception, decision making, memory, and response selection. Anxiety states can impair the ability to

identify important information. The combination of anxiety and arousal can produce two performance impairing states: (a) narrowing of attention such that critical information needed for optimal performance are missed or (b) hyper-distractibility such that the athlete is again unable to focus on the important information. Examples from sport include mistakenly passing a ball to the wrong team, forgetting part of a sequence in a play, being unable to think, and not recognizing the position of athletes in either defensive or offensive formations.

Emotional control problems associated with stress can also cause problems such as violence or withdraw from the sporting situation. Action impulses associated with strong emotions such as anger may result in the athlete striking another. There have been numerous cases in the media where athletes have loss control in highly stressful situations and have attacked other athletes, coaches, referees, or spectators. These are clearly cases where athletes have lacked or chosen not to use coping strategies to manage their action impulses.

Prolong experience of stress-related anxiety and sadness may contribute to athletes withdrawing from sport, disrupting everyday social functioning, experiencing illness, and, in extreme cases, to committing suicide. Burnout in sport is becoming an increasing concern in organized sport at both the youth and adult level. Burnout is associated with emotional exhaustion, feelings of isolation, low motivation, negative feelings, and concentration problems. Burnout occurs from overtraining combined with prolonged exposure to high pressure to perform. Some sport research indicates that

athletes who have a tendency to have very high, self-imposed standards and have an inability to accept flaws or failures within oneself are at greater risk for burnout.

Managing Stress

Given that sporting demands can produce undesirable consequences, it is important to identify ways to either reduce the stressor demands or help athletes manage stress more effectively. There are several key areas of stress management interventions including environmental management; the athlete's physical, technical, and strategic preparation; and the athlete's psychological skills and coping strategies. Since stress involves an interaction between the environment and the person, interventions should target both aspects of this relationship. Environmental management can include providing supportive coaching and parental feedback, placing athletes in training and competitive conditions that promote challenge rather than threat, developing training programs that allow for proper physical and psychological adaptation and allow sufficient rest for recovery, and modification of sporting equipment and rules that promote the development of skills, greater success and enjoyment.

Since stress occurs when the athlete perceives an imbalance between situational demands and their resources, one means to reduce stress is to improve physical, technical, and tactical expertise. As athletes become stronger, faster, more skilful, and more strategically adept, they will be better able to handle more demanding sport situations. However, increased ability often results in the athlete entering higher competition with increased demands. Psychological skills and coping strategy training can help athletes manage stress. There are a number of effective skills such as relaxation, energising, biofeedback, goal-setting, imagery, self-talk, cognitive restructuring, problem-solving,

time management, refocusing, and attention control. Some intervention strategies may primarily affect only one component of stress (i.e., progressive relaxation target muscular and arousal activation) whereas other strategies may directly or indirectly affect several components (i.e., goal setting can impact the adoption of specific motivational goals, and motivate changes in physical and psychological training).

Sport research has found that coping skills training can help athletes learn a number of coping skills to effectively manage stress and emotion. Stress Inoculation Training, developed by Dr. Donald Meichenbaum, is a coping skills training intervention in which athletes learn a variety of coping responses. Athletes practice individually relevant coping skills, starting with small manageable doses of stress and progressing to more stress-inducing settings. A second program, developed by Dr Ronald Smith, called Stress Management Training involves having athletes develop an “integrated coping response” that enables them to better manage stressful situations. The integrated coping response combines both breathing / relaxation component and self-talk. Athletes practice this integrated response to control high levels of arousal generated through a technique called “induced affect”.

This article has emphasized that stress is a complex process that results from a dynamic transaction between the environment and the person. The sporting environment places numerous demands on the athlete, the athlete evaluates the meaning of these demands and responds, and the environment counters with new demands. It is difficult to determine what types of situations and sports are inherently more stressful than others since so much depends on what the athlete bring to the situation in terms of goals,

motives, physical and psychological skills. The ability to cope with the competitive pressure is critical in all levels of sport to ensure positive psychological growth.

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