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Athlete Burnout: A Physiological Perspective

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Dr. Gould has defined athlete burnout as a syndrome characterized by emotional and physical exhaustion, reduced sense of accomplishments, and sport devaluation. It results in physical, emotional and social withdrawal from a formerly enjoyable sport activity. In his paper, he has done an excellent job in describing the sources and consequences of athlete burnout among college athletes from a psychological perspective. In my reaction, I will comment on some measurement issues and provide a physiological perspective on some aspects of athlete burnout, including its relation to the overtraining syndrome.

Dr. Gould made clear in his paper that athlete burnout is a phenomenon difficult to define, measure, diagnose and study. There is no universally accepted definition; different definitions have been adopted by sport psychologists who have studied the syndrome, depending on their perspective (Cresswell & Eklund, 2006; Raedeke, 1997; Smith, 1986). Likewise, different models of determinants have been proposed (Coakley, 1992; Cresswell & Eklund, 2006; Lonsdale, Hodge, & Jackson, 2007; Raedeke, 1997; Silva, 1990; Smith, 1986). Thus, the nature of the phenomenon studied by different investigators has varied depending on how it has been defined and conceptualized.

There also has not been a uniform approach to the measurement of athlete burnout. Several questionnaires, including the Maslach Burnout Questionnaire, the Maslach Burnout General Inventory General Survey (Cresswell & Eklund, 2006), and the Eades Burnout Inventory (Gustafsson, 2007), as well as other scales assessing related constructs (Raedeke, 1997), have been used to determine the extent to which individuals possess characteristics and symptoms of athlete burnout. As a result, the constructs actually measured have varied, depending on the measurement instrument.

Finally, and perhaps most importantly, there has been no consensus on diagnostic criteria for the syndrome. As a result, most research on athlete burnout has not been conducted on individuals who have been diagnosed with the condition. Lack of specific diagnostic criteria for a multifaceted syndrome is not an unusual situation. For example, a similar situation existed for major depressive disorder, a syndrome with many symptoms very similar to those of athlete

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burnout, before specific diagnostic criteria were published by the American Psychiatric Association in 1994 (Association, 1994). Similarly, research and treatment of the metabolic syndrome was greatly hampered until a consensus scientific statement was issued by the American Heart Association and National Heart Lung and Blood Institute (Grundy et al., 2005) proposing specific diagnostic criteria based on cut points for each of the major symptoms of this multifaceted medical syndrome.

The lack of universally accepted definition, measurement instrument and diagnostic criteria is a major barrier to progress related to understanding and treatment of athlete burnout. Diagnostic criteria similar to those that exist for major depressive disorder and the metabolic syndrome are needed. Without diagnostic criteria, it will be difficult to make progress on the important unresolved problems related to athlete burnout identified by Dr. Gould, including determining the prevalence of the disorder, identifying causes and underlying mechanisms, developing treatments or interventions that reduce the risk of development, and studying the long-term consequences.

Dr. Gould pointed out that overtraining can contribute to the development of athlete burnout. Progressive increases in training intensity and volume to optimize adaptations that improve sport performance can lead to a state of overtraining, in which there is an unexplained, sustained decrement in performance, usually accompanied by physiological and psychological changes reflecting maladaptation. This condition is referred to as the overtraining syndrome, or staleness. Exercise physiologists have long been interested in the overtraining syndrome (Karpovitch, 1941), and many reviews on the topic exist (Armstrong & VanHeest, 2002; A. C. Fry & Kraemer, 1997; Lehman, Foster, & Keul, 1993; Meeusen et al., 2006; O'Connor, 1997).

The signs and symptoms of the overtraining syndrome are very similar to those of athlete burnout. They include an unexplained, sustained decrease in physical performance; general fatigue, malaise and loss of vigor; insomnia; decrease in appetite; irritability, restlessness, excitability and anxiousness; loss of body weight; loss of motivation; lack of mental concentration, and feelings of depression (Armstrong & VanHeest, 2002). Although athlete burnout is not always caused by overtraining, it can be a contributing factor.

Despite extensive research by exercise physiologists, the specific cause(s) of the overtraining syndrome remain unknown. It is hypothesized to reflect the effects of chronic stressors integrated by the hypothalamus of the brain, and resembles the stage of exhaustion of the General Adaptation Syndrome described by Hans Selye (1952). In this stage, attempts by the body to adapt to chronic stressors through specific adaptations that increase resistance to the stressor and complex nonspecific neuroendocrine and immune system changes are overwhelmed. The body no longer adapts to the stress of training, and physical and mental exhaustion, and other symptoms of the syndrome ensue. Alterations in the central nervous system, especially in the hypothalamic-pituitary-adrenocortical axis and sympathetic-adrenal-medullary axis, disturbances in endocrine function (cortisol, catecholamines, and reproductive hormones), and impaired immune function are involved. But exactly how these changes result in impaired physical performance and other symptoms of the syndrome remains to be clarified (Armstrong & VanHeest, 2002).

Extensive research by exercise physiologists and psychologists also has attempted to identify markers or predictors of the impending development of the overtraining syndrome, which might be used to regulate or titrate the intensity and volume of training in an attempt to avoid its development. A wide variety of physical performance, physiological and psychometric measures have been proposed by various investigators (Armstrong & VanHeest, 2002; Foster, 1998; Halson & Jeukendrup, 2004; Meeusen et al., 2006; Morgan, Brown, Raglin, O'Connor, & Ellickson, 1987; O'Connor, 1997; Urhausen & Kindermann, 2002; Verde, Thomas, & Shephard, 1992). Other than the onset of a sustained reduction in sport-specific performance, the hallmark of the overtraining syndrome, none of these have proven to be totally effective in predicting the onset of the overtraining syndrome. Of the measures proposed, the use of changes in negative mood (decrease in vigor or increase in anger, depression, fatigue) from the Profile of Mood States questionnaire or a seven-item scale suggested by Raglin and Morgan (1994) appear to be the most useful predictors of the development of overtraining (Morgan et al., 1987; O'Connor, 1997; O'Connor & Smith, 1999).

Despite a lack of fundamental knowledge about the cause of the overtraining syndrome, authoritative sources have provided recommendations for its prevention and treatment (Armstrong & VanHeest, 2002; R. W. Fry, Morton, & Keast, 1992; Meeusen et al., 2006). These recommendations include: (a) educating coaches and athletes about the signs and symptoms of the overtraining syndrome; (b) keeping accurate records of performance during training and competition, and adjusting daily training intensity and volume, or providing complete rest, when performance declines; (c) individualizing training intensity and using periodization in training; (d) having athletes maintain a log of subjective ratings of quality of sleep, fatigue, muscle soreness, body weight, early morning heart rate, illness, menstruation, and causes of stress other than training; (e) using a questionnaire to monitor mood state; (f) providing nutritional support to avoid inadequate carbohydrate intake that may result in physical exhaustion and poor performance; (g) providing psychological support to assist with other causes of psychological stress; and, if it develops, (h) treating overtraining syndrome with rest until performance improves. O'Connor (1997) has pointed out that because many athletes who suffer from overtraining syndrome are also diagnosed as depressed, it is possible that antidepressant medications will be effective in treating this syndrome.

I agree with Dr. Gould that the NCAA could help to improve the health and well-being of collegiate athletes by providing programs to educate athletes, coaches and athletic support staffs (athletic trainers, sports medicine physicians, sport nutritionists and sport psychologists) about athlete burnout, and methods of preventing and treating it. In addition, the NCAA could support research on the overtraining syndrome and athlete burnout by sport scientists at NCAA institutions.

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