Encyclopedia of Sport and Exercise Psychology
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benefit of combining autogenic training and imagery training for sporting performance has been documented by SP researchers such as Alain Groslambert and colleagues.

Conclusion

Given the proposed benefits of physical and mental relaxation strategies to sport performers, sport psychologists will continue to train performers in the use of these strategies to help performers reduce or control their cognitive and/or physical state. However, as with any strategy, the effectiveness of the use of the strategy during competition depends on the extent to which the strategies have been practiced. Once learned, these strategies can be used by performers to function better within competition and everyday life, and to allow other strategies to be learned more effectively.

Richard Neil and Owen Thomas

See also Attentional Focus; Autonomic Nervous System; Breathing Exercises; Centering; Imagery; Mindfulness; Response; Self-Talk

Further Readings


Resilience

Most athletes will encounter one or more major setbacks or adversities during their sporting career. An elite athlete may, for example, experience a career-threatening injury, garner demotion from a top-tier team because of poor performance, or need to relocate to another country to continue competing in their sport. Despite the potential for setbacks and adversities to negatively influence one’s developmental trajectories, in some cases, and for some athletes, exposure to major assaults on one’s typical level of functioning or performance does not always result in negative outcomes. Why is it that some athletes bounce back from adversity or experience minimal disruption when faced with these major assaults? The concept of resilience is central to coping with such demands and challenges. Although there remains considerable debate regarding a formal definition, common themes among most contemporary conceptualizations reveal that resilience encapsulates one’s capacity to regain or sustain relatively stable, healthy levels of psychological and physical functioning.

Historical Perspectives

The scientific study of resilience emerged about 40 years ago from research on children “at risk” (i.e., increased probability of a negative outcome) for psychopathology, often due to environmental
factors such as psychiatric history in the family or poverty. Within this line of investigation, researchers observed a significant degree of variability in impairment to normal levels of functioning ranging from maladaptive outcomes to instances of positive adjustment or adaptation. Intrigued by cases of positive outcomes despite risk or adversity, researchers subsequently advanced the study of resilience in four major waves: (1) identifying protective factors within individuals (e.g., optimism, self-efficacy), the family (e.g., socioeconomic status, parenting style), and communities (e.g., neighborhood qualities, public health system) that contribute to positive adaptation in the face of risk or adversity; (2) understanding the processes by which positive adaptation occurs across the life span; (3) evaluating the effectiveness and efficacy of interventions designed to protect or promote positive functioning among individuals, groups, or communities; and (4) integrating the first three waves of research across multiple levels of analysis and across disciplines including genetics, neurobiology, sociology, and cultures.

Resilience in Sport
The scientific study of resilience in sport has typically lacked the empirical and theoretical momentum evidenced within other areas of the parent discipline such as developmental and gerontological psychology. Only a handful of studies have systematically investigated resilience in sport via the simultaneous integration of the two core components of contemporary conceptualizations, namely (1) exposure to significant risk or adversity and (2) returning to, sustaining, or attaining positive adjustment or functioning. Nonetheless, a considerable body of knowledge has been generated through separate but related lines of inquiry examining the resilience phenomenon.

Risk, Stressors, and Adversity
Exposure to both acute and chronic stressful events can represent significant sources of risk to the development and functioning of athletes. Recent research on the types of stressors inherent within sport contexts has revealed that elite athletes experience and recall more demands associated with the sport organization (e.g., qualities of the coach and coaching style, poor support networks, financial concerns) than with the competitive environment (e.g., injury, pressure to perform well). Injury and the processes involved in returning to competition represent a major agenda within the sport psychology (SP) literature, not surprisingly because the phenomenon entails a range of physical and psychological traumas. Aligned with current conceptualizations of resilience, empirical evidence has revealed that some athletes can and do withstand or recover from these stressors or adversities that threaten their normal levels of functioning or performance.

Protective Factors
Researchers have revealed that personal resources are important constructs for understanding how individuals effectively approach and respond to various stressors and adversities. Self-efficacy (i.e., one’s belief in his or her ability to perform a specific task), optimism (i.e., tendency to expect good things to happen), hope (i.e., motivational state encompassing the “will” and the “way” to attain personally important goals), and coping (e.g., ways in which people respond when confronted with stress) are among the most important and widely studied personal resources. Most recently, researchers have explored such influential personal resources through the conceptual lens of mental toughness, which is considered a reservoir of personal resources that enable individuals to produce consistently high levels of performance or goal attainment despite everyday challenges and significant adversities. However, unlike mental toughness, resilience is not solely a fixed collection of personal attributes; thus, one must also consider the influence of a multitude of external assets for understanding person–stressor and adversity transactions. Social support, which involves the exchange of resources between two individuals (e.g., parents, coaches, teammates), is one of the frequently studied external assets in sport contexts with regard to managing stressors and adversities. Collectively, research has revealed that these protective factors and external assets can have both direct and indirect (i.e., moderates the negative effects of stress on psychosocial functioning and performance) relationships with stress, adversity, and important outcomes.

Conclusion
Research on the types of stressors and adversities (e.g., injury) experienced in sport contexts, and the various protective factors characteristic of elite
performers and their psychosocial environment, has provided insights into the ways that athletes and coaches respond to and cope with assaults on their development or normal levels of functioning. Nevertheless, the conceptual integration of empirical evidence and theoretical discussions on these independent streams of research within a resilience framework represents an important next step to guide future work. For example, exposure to different types of risk or adversity may trigger different assets and protective factors and, as a result, contribute to different outcomes.

Daniel F. Guacciardi

See also Coach–Athlete Relations; Competition; Coping; Mental Toughness; Optimism; Parenting; Self-Efficacy; Stress Management

Further Readings


Resistant Training

Resistance training (RT), also commonly referred to as strength training or weight training, is a form of anaerobic exercise that utilizes external resistance of varying loads to improve musculoskeletal fitness. Compared with aerobic exercise, there are significantly more variables to consider when structuring an appropriate RT bout or program. Some of these prescription considerations include repetitions, sets, load, rest intervals, exercise order, speed of movement, body part training split, and frequency. Also, unlike aerobic exercise, RT volume is not time-dependent but rather a function of repetitions x sets. Dumbbells, machines, resistance bands, free weights, and body weight can be successfully employed to provide resistance and overload. When applied correctly, RT causes increases in muscular strength, hypertrophy, and endurance. RT has also been used clinically to positively influence such conditions as arthritis, Type II diabetes, and musculoskeletal dysfunction and injury. RT is also particularly appropriate for older adults, as it reverses the typical age-related sarcopenia and consequent loss of strength. It has also become increasingly apparent that RT can impact psychological outcomes in addition to physiological outcomes. For example, RT has been linked with improvements in depression, anxiety, positive and negative affect, self-efficacy, cognition, and quality of life (QOL).

Resistance Training and Affective Responses

Much of the early work in this area found that acute RT resulted in either elevations or little to no change in state anxiety (SA) responses, suggesting that this was an inferior form of exercise for improving mental health in comparison to aerobic exercise. However, a number of studies have since observed improvements in SA and other relevant psychological outcomes. It appears that factors such as the type of RT routine performed, training load, and intensity influence the psychological responses accompanying acute RT.

Altering the RT load can significantly affect the acute metabolic, autonomic, and hormonal responses to training. Consistent with these responses, a growing number of investigations have documented improvements in psychological states following acute bouts of RT incorporating light to moderate training loads. Unfortunately, most of the prior investigations had notable differences in load determination and assignment, total volume, repetition ranges, and rest intervals between sets. This has made drawing conclusions regarding the dose-response relationship between acute RT and psychological responses difficult. Additionally, most of these studies have focused primarily on anxiolytic effects of exercise. However, a recent well-designed dose-response study has demonstrated that a moderate-intensity RT bout (70% of 10 repetition maximum [RM]) produces