Brian Cook  
Neuropsychiatric Research Institute

Kelly A. Cotter  
Sacramento State University

Cathy Craig  
Queen's University Belfast

Peter R. E. Crocker  
University of British Columbia

Jennifer Cumming  
University of Birmingham

Andreas Daffertshofer  
VU University Amsterdam

Keith Davids  
Queensland University of Technology

Matt S. Dicks  
University of Portsmouth

James Dimmock  
University of Western Australia

Shawna E. Doerksen  
Pennsylvania State University

Rachel L. Duckham  
Loughborough University

William L. Dunlop  
University of British Columbia

David A. Dzwialowski  
Kansas State University

Peter R. Eastwood  
University of Western Australia

David W. Eccles  
Durham University

Jacquelynne S. Eccles  
University of Michigan

Alfred Effenberg  
University of Hanover

Panteleimon Ekkekakis  
Iowa State University

Robert C. Eklund  
University of Stirling

Steriani Elavsky  
Pennsylvania State University

Lydia Emm  
University of Bath

Paul A. Estabrooks  
Virginia Polytechnic Institute and State University

Roger Eston  
University of South Australia

Jennifer L. Emier  
University of North Carolina at Greensboro

Mark Eys  
Wilfrid Laurier University

Damian Farrow  
Victoria University and Australian Institute of Sport

Guy Faulkner  
University of Toronto

Bradley Fawver  
University of Florida

Luke Felton  
Loughborough University

Leah J. Ferguson  
University of Saskatchewan

Edson Filho  
University of Chieti-Pescara

Lucie Finez  
Laboratoire SPMS

Leslee A. Fisher  
University of Tennessee

Brian Focht  
Ohio State University

Emily Galvin  
Miami University

Kimberley L. Gammage  
Brock University

Jennifer I. Gapin  
Southern Illinois University, Edwardsville

Frank L. Gardner  
Kean University

Lael Gershgoren  
Wingate Institute

Diane L. Gill  
University of North Carolina at Greensboro

Fiona B. Gillison  
University of Bath

Todd A. Gilson  
Northern Illinois University

Adam D. Gorman  
Australian Institute of Sport

Daniel Gould  
Michigan State University

Rob Gray  
University of Birmingham

Christy Greenleaf  
University of Wisconsin–Milwaukee

Iain Greenlees  
University of Chichester

J. Robert Grove  
University of Western Australia

Daniel F. Guacciardi  
Curtin University

Katie E. Gunnell  
University of British Columbia

Oscar Gutierrez  
Florida State University

Martin S. Hagger  
Curtin University

G. M. Hancock  
University of Central Florida

P. A. Hancock  
University of Central Florida

Yuri L. Hanin  
Research Institute for Olympic Sports, Jyväskylä University

James Hardy  
Bangor University

Mental Toughness

Athletes are confronted with a variety of stressors, challenges, and adversities, external (e.g., hostile crowds, referee errors, challenged by an opponent, sport and life balance) and internal (e.g., fatigue, self-doubt, emotional instability), which are characteristic of the training and competition contexts of sport. Some athletes manage these demands or challenges positively, either having a smooth progression through the performance cycle or successfully negotiating these challenges in constructive ways. However, for other athletes, such demands or challenges can overwhelm their coping resources, creating major distress and negatively influencing their performance and goal attainment. What accounts for these individual differences in athletes’ ability to manage both negatively (e.g., injury, deselection) and positively (e.g., winning streak, taking the lead in a match) construed challenges and demands? Most scholars, practitioners, and the general public suggest that the answer lies in an athlete's mental toughness. Although mental toughness remains a contested concept, common themes among most contemporary conceptualizations reveal that mental toughness encapsulates a reservoir of personal resources that enable individuals to produce consistently high levels of performance or goal attainment despite everyday challenges and significant adversities.

Historical Perspective

The scientific study of mental toughness, which has its evolutionary roots in personality research on “tough-mindedness” dating back to the 1950s, has garnered a modest amount of empirical attention in recent years. Prior to this influx of research and theory development, much of what was known about mental toughness was based on anecdotal reports and disseminated predominantly through the popular media. The result was a diverse selection of definitions and explanations of mental toughness that largely included an assortment of beneficial psychological characteristics (e.g., resilience, insensitivity to criticism) and mental skills (e.g., arousal regulation, visualization). The conceptual confusion created from this lack of consistency and understanding resulted in numerous beneficial psychological characteristics being incorrectly labeled as mental toughness, particularly as they were based on authors’ opinions rather than empirical research. Encouragingly, empirical research on mental toughness has blossomed over the last decade, with independent but related streams of research focused on its conceptualization, measurement, and development.

Conceptualizing Mental Toughness

Mental toughness is typically employed by scholars, practitioners, and the general public as an umbrella term to describe a multitude of facets, including cognitive, affective, and behavioral concepts that are pertinent to the attainment and sustenance of high performance despite stress, challenge, or adversity. Much of the past decade of scholarly activity has been concerned with elucidating an understanding of the core personal resources associated with mental toughness. Owing to the lack of prior theory and empirical research, most researchers have approached the systematic task of generating insights into this elusive concept using an inductive process in which key stakeholders’ (e.g., athletes, coaches, sport psychologists) perceptions of mental toughness were generated and explored. With an emphasis on the rich, real-world context in which the concept occurs, these scholars have sought to identify and understand patterns of relationships within and across sources of either sport-general (i.e., informants from a variety of sports) or sport-specific samples (e.g., informants from a specific sport such as cricket, soccer or football). Other researchers have sought to integrate these inductively derived data with established theory and empirical research on hardiness, which is conceptualized as a cognitive personality variable consisting of a sense of control, commitment, and challenge.

Research on such a broad psychological concept has led to several different ideas about what mental toughness encapsulates. For example, as depicted
in one of the most widely employed conceptualizations, mental toughness is said to comprise four distinct components of confidence, control, commitment, and challenge. Other conceptualizations of mental toughness encompass a much wider net of personal resources to include key attributes such as sport knowledge, attentional regulation, emotional awareness and regulation, and coping with failure and success. Nevertheless, despite these differing viewpoints on the content and breadth of its key facets, several core components have emerged across these studies and appear to capture the essence of the current state of affairs. These core components include general self-efficacy (i.e., generalized belief that one is capable of achieving his or her goals or producing high levels of performance), optimism (i.e., tendency to expect positive events in the future, and attribute positive causes and outcomes to different events), success mindset (i.e., desire to achieve success and ability to act upon this motive), sport knowledge (i.e., knowledge of the performance context and its application for goal attainment or high performance), self-regulation (i.e., capacity to optimally manage one’s thoughts, focus, and emotions), resilience (i.e., perceived capacity to successfully cope with or bounce back from potentially significant risks or adversities), and buoyancy (i.e., ability to effectively execute the required skills and processes in response to the challenges and pressures of everyday life). Interestingly, each of these key facets has a rich history of theory and empirical research that have not yet been adequately drawn upon for the conceptual evolution of mental toughness. For example, Charles Snyder’s theory of hope offers a useful backdrop upon which to conceptually integrate the success mind-set (i.e., agency thinking) and sport knowledge (i.e., pathways thinking) facets of mental toughness. Theoretical integration and development remains an important avenue of future work for this concept.

Measuring Mental Toughness

The debate over a common definition and conceptualization of mental toughness has not slowed the amount of research on its measurement. Indeed, the methodological development of measurement tools for key facets of optimal human functioning can greatly accelerate scientific advancements in theory (e.g., basis for rigorous empirical tests of construct conceptualization) and practice (e.g., monitoring and evaluation). As with efforts designed to generate insights into its key components, scholars have developed self-report measures of mental toughness that are designed to generalize across all sports (e.g., Mental Toughness Questionnaire 48 [MTQ48]) or capture conceptualizations that are unique and specific to individual sports such as cricket (Cricket Mental Toughness Inventory) and Australian football (Australian Football Mental Toughness Inventory).

Conceptual (e.g., clearly articulated model supported by empirical evidence), statistical (e.g., analyses performed to develop and substantiate reliability and validity), and practical (e.g., predict or explain behavior or performance) issues are inextricably linked to the construct validation process and fundamental to ascertaining the usefulness of a psychometric tool for theory and practice. An assessment of the currently available sport-general and sport-specific measures against these three criteria reveals that there is currently no “gold standard” tool for assessing mental toughness. For example, although the conceptual model underpinning the Cricket Mental Toughness Inventory has received support via rigorous, hypothesis-testing statistical procedures (i.e., confirmatory factor analysis), it suffers from a major concern related to its ability to generalize to other sports and across most athletes (e.g., males and females). In contrast, the MTQ48, which is the most widely employed measure of mental toughness, has been the subject of debate with regard to its conceptual rationale and factor structure. These conceptual, statistical, and practical concerns remain the primary focus of future work on its measurement. In the meantime, an alternative approach to the measurement of mental toughness in future research might involve the use of existing measures to capture the key facets (e.g., Generalized Self-Efficacy scale, Dispositional Hope Scale).

Developing Mental Toughness

Attempts to understand mental toughness often lead to discussions or questions about its development. These questions on mental toughness development raise some of the most interesting issues facing this scholarly field of inquiry. Among the most heated discussions are those that concern the “nature” versus “nurture” debate. Although aspects of mental toughness may be considered heritable, as with related research on personality,
one cannot deny that a significant amount of variance remains unexplained by nature, thereby implicating the important role of environments (e.g., home environment, sport environment) and social agents (e.g., parents, coaches) for its development or enhancement. Indeed, the centrality of both nature and nature is evident among key stakeholders’ retrospective perceptions of mental toughness.

Several important findings can be gleaned from the existing research on mental toughness development. First, individuals seem to acquire some degree of mental toughness from their family network (e.g., offering social support, providing reinforcement and encouragement, having realistic beliefs in their child’s abilities, serving as a positive role model) during their formative years prior to participating in sport. This “generalized form” of mental toughness is subsequently refined into a “sport-specific form” and maintained through one’s interactions with key social agents such as coaches (e.g., coach–athlete relationship, player development vs. coaching success, motivational climate) and teammates (e.g., mentoring, competitive rivalry, role models). Second, there is evidence to suggest that some mechanisms of influence facilitate (e.g., simulation training, social support) the developmental process, whereas others (e.g., controlling coaching, low and unrealistic expectations) thwart or undermine efforts to develop mental toughness. In particular, these underlying mechanisms are said to operate in a combined, rather than an independent manner, to facilitate the development of mental toughness. Third, the most beneficial learning and motivational climates appear to differ throughout this long-term developmental process as athletes gain experience and transition into higher levels or different types of competitions. For example, enjoyment and skill mastery are considered key to the early years or the period in which one initially becomes involved in sport, whereas competitive rivalries and performance setbacks become prominent features in the middle years when sport demands greater discipline from individuals owing to structured training regimes and sport specialization. Finally, it appears that mental toughness can be both 

**Conclusion**

Mental toughness is the umbrella term often employed to describe one’s capacity to deal effectively with both major assaults on one’s normal level of functioning and “everyday” challenges in the pursuit of high performance. Despite entering its second decade of empirical research activity, what constitutes mental toughness and therefore how it is assessed remains a complicated area of study. Some consistencies across the available research have emerged with regard to its core facets and important development influences, yet debate still exists as to a precise or commonly accepted definition and conceptualization of mental toughness. Although recent advancements in its conceptualization, measurement, and development are important, mental toughness, as a scholarly field of inquiry, is still in its infancy when compared with the literatures on its key components (e.g., self-efficacy, optimism). Thus, future work on mental toughness could do well to leverage off such established theory and research. Mental toughness has the potential to become an influential concept in the field of sport and exercise psychology (SEP), yet much scholarly work remains to be done to better understand its makeup and influence on behavior.

Daniel F. Gucciardi

**See also** Competition; Coping; Optimism; Resilience; Self-Efficacy; Stress Management

**Further Readings**


**MENTORING**

Mentoring is a process in which a mentor, who is typically more experienced or older, helps a mentee or protégé grow and develop in some way. As such, a mentor may be thought of as a guide, tutor, counselor, or adviser. In sport and exercise