



Assessing Mental Toughness


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What is Mental Toughness?

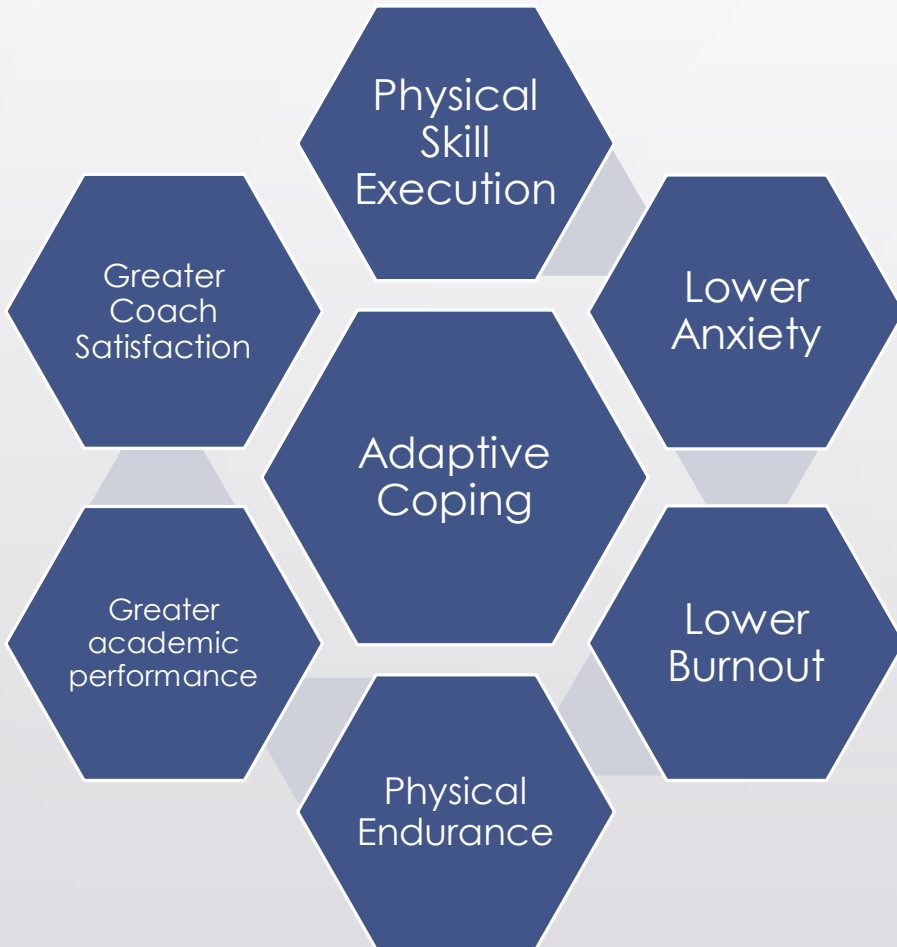
- Mental toughness has been defined as “a personal capacity to deliver high performance on a regular basis despite varying degrees of situational demands” (Gucciardi & Hanton, 2016, pg 442)



Mental toughness research

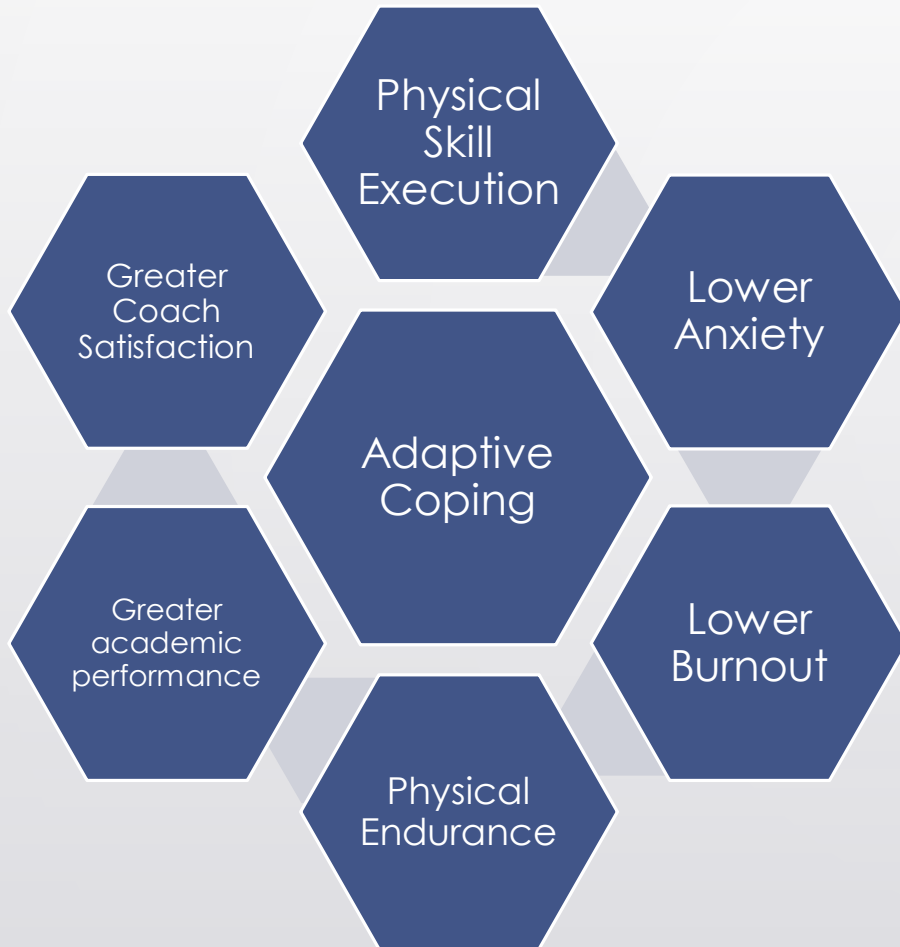
- Previous research has focused on defining and conceptualizing the concept
- It is often used to describe a collection of psychological characteristics thought to be central to high performance

Mental Toughness Correlates



(Crust & Clough, 2005; Crust, Earle, Perry, Earle, Clough, & Clough, 2014; Madigan & Nicholls 2017; Nicholls, Polman, Levy, & Backhouse, 2008; Rodahl, Giske, Peters, & Hoigaard, 2015; Schaefer, Vella, Allen, & Magee, 2016)

Mental Toughness Correlates



- Associated with less shame and anger, particularly following competition (Cowden, Crust, Joynt, & Hook, 2018)
- Less critical self when performance is inadequate (Cowden et al., 2018)



Limitations in Mental Toughness Literature

- Currently there are about 10 different mental toughness measures
- General vs Sport-Specific Measures
- Conceptual Models
- Multidimensional vs. unidimensional measures
- These concerns call into question the very nature of the construct of mental toughness and our understanding of how it operates



Assessing Mental Toughness

Scale	Problem
The Psychological Performance Inventory (Loehr, 1986)	No reliability or validity information
The Psychological Performance Inventory-A (Golby, Sheard, & vanWersch, 2007)	Good reliability but only minimal work on validity
Australian Football (Gucciardi, Gordon, & Dimmock, 2009) or Cricket Mental Toughness Measures (Gucciardi & Gordon, 2009)	May account for contextual factors related to sport, but limited in practical application beyond those sports
The Mental Toughness Index (Gucciardi, Hanton, Gordon, Mallett, & Temby, 2015)	Good reliability but further work outside of Australia needs to be done



Conceptual Model Concerns

Scale	Problems
MTQ-48 (Clough, Earle, & Sewell, 2002)	Criticized for incorporating concept of hardiness
SMTQ (Sheard, Golby, & Wersch, 2009)	Failing to identify an explicit conceptual model

- It is important to be able to identify the conceptual foundation upon which a measure is based, as the model used has an influence on the dimensionality of the MT measure developed



Dimensionality

- Some researchers advocate for MT as a multidimensional construct (Clough, et al., 2002; Sheard, et al., 2009) while others propose a unidimensional concept (Gucciardi, 2017).
- Psychometric analyses of measures that advocate for multidimensionality have been criticized due to lack of support of existing dimensions (Gucciardi et al., 2011).
- Same construct label may be measuring different components of MT
 - the MTQ48 (Clough et al., 2002) and CMTI (Gucciardi & Gordon, 2009) include *control* as a central component of MT, but one emphasizes both *emotional and life control*, while *attentional control* is proposed by the other, respectively.

Framework of Mental Toughness (Jones et al., 2007)

Attitude/ mindset		Training			Competition						Post- competition	
belief	focus	using long-term goals as the source of motivation	controlling the environment	pushing yourself to the limit	belief	staying focused	regulating performance	handling pressure	awareness and control of thoughts & feelings	controlling the environment	handling failure	handling success

Figure 1 — Mental-toughness framework.



Initial Measurement Research

- Project 1: Development of MTS
- Project 2: Validity and Reliability of MTS
 - MTS related to flow, self-efficacy, self-esteem, goal-orientated (Convergent validity)
 - MTS had no relation to GPA or social desirability (Divergent Validity)
 - MTS was related to coaches' ranking of the athlete (Criterion Validity)

Madrigal, L. Hamill, S., & Gill, D. (2013). Mind over matter, the development of a new mental toughness scale: The Mental Toughness Scale (MTS). *The Sport Psychologist*, 27, 62-77.



Further Psychometric Work on the MTS

- CFA confirmed support for MTS as a unidimensional structure
 - MTS is gender invariant at factor structure and factor loadings
- Divergent & Convergent Validity support: MT is moderately correlated to hardiness, grit, optimism, low correlation to competitive anxiety
- Further investigation on psychometric properties of the MTS in high school athletes (ages 14-17)

Madrigal, L., Gill, D. L., & Willse, J. T. (2017). Gender and the relationships among mental toughness, hardiness, optimism, and coping in collegiate athletics: A structural equation modeling approach. *Journal of Sport Behavior, 40*, 68-86



Other Assessment Methods

- Parent's perception of athletes' mental toughness
- Coaches' rankings/ratings of mental toughness of athletes
- Triangulation between the athlete perception, coach perception, and athlete behavior may be another route



Behavior Assessments of Mental Toughness

Taxonomy of positive and negative behaviours included in the coding program

- K = Cheer (e.g. “come-on” or “yes”)
 - I = Instructive self-talk
 - P = Positive self-talk
 - C = Complimenting opponent
 - V = Fist bump
 - O = Practicing the stroke motion
 - F = Expression of frustration or anger
 - N = Negative self-talk
 - T = Expression of disappointment
 - X = Anger or frustration about external factors (opponent, court, weather)
 - E = Disappointment about external factors (opponent, court, weather)
 - H = Negative attitude (gestures with arms or the head, trudging on the court)
 - Z = Complaining non-verbally about external factors (opponent, court, weather)
 - W = Anger or frustration aimed at external things (racket, net, fence, court or chair)
 - M = Disappointment aimed at external things (racket, net, fence, court or chair)
 - Y = Other verbal behaviours
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MT behaviors in Tennis

Table 2

Item content and descriptive statistics for the informant measure of mentally tough behaviours.

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- | | |
|-----|--|
| 1. | My daughter/son consistently bounces back from setbacks |
| 2. | My daughter/son works hard no matter what setbacks s/he encounters |
| 3. | No matter how my daughter/son is feeling, s/he is able to perform to the best of her/his ability |
| 4. | My daughter/son keeps performing well when challenged |
| 5. | My daughter/son does what s/he needs to do to perform well |
| 6. | My daughter/son refuses to give up when things get tough |
| 7. | My daughter/son responds well to challenges |
| 8. | My daughter/son is good at fighting for every point |
| 9. | When things don't go to plan, my daughter/son is good at changing the way s/he plays |
| 10. | In general, my daughter/son is a good decision maker |



MT Behaviors in Volleyball

Mentally Tough Behavior	Mentally Weak Behavior
Non-verbal/Verbal leadership	Negative nonverbal/verbal after missed point
Demanding ball	
Attempted save or save	
Automatic/Intuitive Move	
Taking responsibility for broken play	
Accurate serving	
Quick recovery/Persistence	
Court Awareness	
Composed play/Intelligence	
Rising to the occasion	
Playing through pain	



Final Thoughts

- Measurement consistency is lacking in mental toughness literature
- Behavior or other ways to enhance assessment of mental toughness beyond self-report is needed
- Defining the concept and having a clear framework to base assessment method is crucial for interpretation



Questions

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Mental Toughness Scale Items

1	I have an inner <i>self-belief</i> that makes me believe I can achieve anything I set my mind to.
2	<i>After a success</i> , I know when to stop celebrating in order to focus on the next challenge.
3	I have an <i>inner drive to take advantage of the</i> moment when I know I can win.
4	I know what needs to be done in order to achieve the level of performance required to win.
5	I have the patience and discipline to control my efforts to achieve each goal along the ladder of success.
6	Even though I am tired, I continue to train to achieve my goal.
7	I use all aspects of a very difficult training environment to my advantage.
8	I am able to increase my effort if it is required to win.
9	When an obstacle is in my way I find a way to overcome it.
10	I accept, embrace, and even welcome the elements of training that are considered painful.
11	I have total commitment to my performance goal until every possible opportunity of success has passed.