

Measuring Mental Toughness in Firefighters: Preliminary Results on the Concurrent Validity of Two Inventories

PETER BEITIA¹, ANDREAS STAMATIS², FACSM, & ZACHARIAS PAPADAKIS¹

¹Human Performance Laboratory, Barry University; Miami Shores, FL

²Exercise and Nutrition Science; SUNY Plattsburgh; Plattsburgh, NY

Category: Graduate

Advisor / Mentor: Papadakis, Zacharias (zpapadakis@barry.edu)

ABSTRACT

Mental toughness (MT) research is predominantly cross-sectional and based on self-assessment. MT has been consistently positively associated with performance metrics when investigated in stressful and demanding environments, such as sports and tactical. The Sports Mental Toughness Questionnaire (SMTQ) has been used extensively in sports, while the Military Training Mental Toughness Inventory (MTMTI) in the military. In firefighting, MT research is scarce. There is no firefighting-specific MT instrument. Firefighters are considered tactical athletes. **PURPOSE:** To examine the concurrent validity of SMTQ and MTMTI in firefighters via a repeated-measure design. **METHODS:** Male firefighters from two departments ($n = 14$; Age: 29.0 ± 7.0 ; BMI: 26.3 ± 2.7) participated in the data collection process that took place over two days (two administrations; once per day). The firefighter's MT level was assessed via both inventories. SMTQ (14 items; 4-point Likert scale) was administered to participants (self-assessment), while the MTMTI (6 items; 7-point Likert scale) to two of their officers (peer-rating). We computed the mean SMTQ and MTMTI scores over the two days (for the MTMTI scores we first calculated the mean score per day per assessor and then, combined both assessors) and for statistical analysis, we converted them to z-scores. Concurrent validity was assessed with Pearson (r) correlation, Concordance correlation coefficient (CCC), and two-way random Intraclass correlation coefficient (ICC_{2k}) agreement on z-scores using R statistical packages in Jamovi version 2.3 ($p < .05$). **RESULTS:** Inventories were significantly negative correlated ($r = -.68$, $p = .008$, 95%CI [-.89, -.23]) and had poor strength of agreement (CCC = $-.68$, 95%CI [-.88, -.25]) and reliability-agreement ($ICC_{2k} < .001$, 95%CI [-1.58, .61]). **CONCLUSION:** Our results do not indicate agreement between the two inventories. Therefore, the inferences of the MT scores of these two different inventories are not in agreement, either. This could suggest the need for a firefighting-specific MT instrument. Regardless, practitioners should be cautious when interpreting the scores of the current MT instruments on this specific tactical population.