# Mental Health Best Practices in NCAA: The Bidirectional Relationship between Mental Toughness and Self-Compassion

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## ABSTRACT

**Based on National Collegiate Athletic Association (NCAA) reports, student-athletes' well-being is compromised by sub-clinical issues of mental health (MH) disorders, such as depression and anxiety. Preliminary data have shown a positive relationship between mental toughness (MT) and MH, self- compassion (SC) and MH, and SC and MT. To date, possible indirect causal relationships between these three constructs have not been investigated.**

**PURPOSE: To confirm the three aforementioned relationships in NCAA athletes and explore the mediation role of MT and SC on the SC-MH and MT-MH relationships, respectively. Hypotheses: (1) MT will correlate positively with MH, (2) SC will correlate positively with MH, (3) MT will correlate positively with SC, (4) MT will mediate the SC-MH relationship, and (5) SC will mediate the MT-MH relationship.**

**METHODS: The Mental Toughness Index, the Self-Compassion Scale, and the Mental Health Continuum-Short Form were uploaded on Qualtrics. NCAA athletes were invited to participate via email. The sample ($n$=466) was predominantly Division III, White, female, freshmen, soccer players, and in-season ($M_{age}$=19.8, $SD$=1.8). The analysis consisted of two parts. In the first, bivariate correlations were computed among MT, SC, and MH. In the second, a structural equation model was constructed to test the bidirectional relationship between MT and SC, where MT and SC also had direct effects on MH. All analyses were completed in *R*.**

**RESULTS: The findings showed a positive relationship between MT and MH ($r$=0.371, $p$<0.001), MT and SC ($r$=0.461, $p$<0.001), and SC and MH ($r$=0.533, $p$<0.001). Therefore, evidence for hypotheses 1, 2, and 3 was found. In the bidirectional model, MT was found to be associated with higher SC levels (Unstd. Est = 0.29, SE = 0.068, Std. Est = 0.60), SC was predictive of lower levels of MT (Unstd. Est = -0.49, SE = 0.036, Std. Est = -0.24), and both main effects of MT and SC on MH were positive. Given both directional paths, MT to SC and SC to MT, were significant, we found evidence for hypotheses 4 and 5.**

**CONCLUSION: Our positive correlation results are in accordance with Gucciardi, Hanton, and Fleming (2017), Neff, Rude, and Kirkpatrick (2007), Wilson, Bennett, Mosewich, Faulkner, and Crocker (2018), and Ales, Kurzum, Deal, and Stamatis (2018). The full bidirectional model analysis revealed that MT is associated with increases in SC and increases in both MT and SC are associated with increases in MH. Therefore and concerning updating mental health best practices, both MT and SC psychological skill training can potentially increase MH levels. However, to most appropriately increase athletes' MH, stakeholders should prioritize MT, over and above SC, but not to its detriment. Possible limitations include self-assessment and athletes representing three institutions only. Similar, larger-scale research projects are needed in the future.**

## INTRODUCTION

Based on National Collegiate Athletic Association (NCAA) reports (National Collegiate Athletic Association 2017), student-athletes' well-being is compromised by sub-clinical issues of mental health (MH) disorders, such as depression and anxiety. Preliminary data have shown a positive relationship between mental toughness (MT) and MH, self- compassion (SC) and MH, and SC and MT. To date, possible indirect causal relationships between these three constructs have not been investigated.

Therefore, the purpose of this study was to confirm the three aforementioned relationships in NCAA athletes and explore the mediation role of MT and SC on the SC-MH and MT-MH relationships, respectively.

Hypotheses:

(1) MT will correlate positively with MH,
(2) SC will correlate positively with MH,
(3) MT will correlate positively with SC,
(4) MT will mediate the SC-MH relationship, and
(5) SC will mediate the MT-MH relationship.

## METHODS

### Participants

See Table 1 for demographic information ($n$=466) ($M_{age}$=19.8, $SD$=1.8).

### Instruments

Data were collected via the Mental Toughness Index (Gucciardi, Hanton, Gordon, Mallett, & Tremby, 2015), the Self-Compassion Scale (Neff, 2003), and the Mental Health Continuum-Short Form (Keyes, 2009).

### Procedure

The three questionnaires were upload on Qualtrics. All student-athletes from a Division I (i.e., Stephen F. Austin State University), a Division II (i.e., Barry University), and a Division III institution (i.e., State University of New York at Plattsburgh) were invited to participate via email.

### Data Analysis

The analysis consisted of two parts:

1. Bivariate correlations were computed among MT, SC, and MH and
2. A structural equation model was constructed to test the bidirectional relationship between MT and SC, where MT and SC also had direct effects on MH.

*Note*. All analyses were completed in *R*.

Table 1
Demographic information about participants (n=466)

| Variable | Count | Percentage |
|---|---|---|
| Gender | | |
| Male | 218 | 46.8 |
| Female | 248 | 53.2 |
| Race | | |
| Asian | 7 | 1.5 |
| Black | 45 | 9.7 |
| Hispanic | 75 | 16.1 |
| White | 325 | 69.7 |
| Other | 14 | 3.0 |
| Year in Program | | |
| < 1 Year | 174 | 37.3 |
| 1-2 Years | 132 | 28.3 |
| 2-3 Years | 74 | 15.9 |
| 3-4 Years | 68 | 14.6 |
| > 4 Years | 18 | 3.9 |
| Season | | |
| Preseason | 161 | 34.5 |
| Inseason | 192 | 41.2 |
| Post Season | 12 | 2.6 |
| Offseason | 101 | 21.7 |
| Division | | |
| DI | 102 | 21.9 |
| DII | 140 | 30.0 |
| DIII | 224 | 48.1 |
| Sport | | |
| Baseball | 47 | 10.1 |
| Basketball | 44 | 9.4 |
| Bowling | 2 | 0.4 |
| Cross Country | 8 | 1.7 |
| CC & Track and Field | 10 | 2.1 |
| Football | 17 | 3.6 |
| Golf | 8 | 1.7 |
| Ice Hockey | 19 | 4.1 |
| Lacrosse | 50 | 10.7 |
| Rowing | 22 | 4.7 |
| Soccer | 101 | 21.7 |
| Softball | 40 | 8.6 |
| Tennis | 21 | 4.5 |
| Track and Field | 48 | 10.3 |
| Volleyball | 29 | 6.2 |

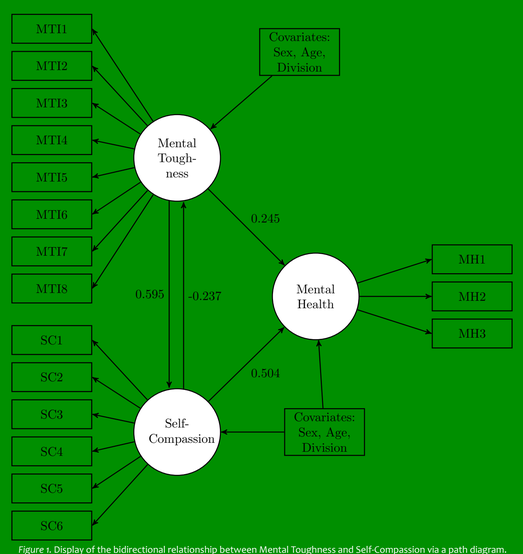


*Figure 1.* Display of the bidirectional relationship between Mental Toughness and Self-Compassion via a path diagram.

## RESULTS

Findings from analyses:

1. Correlation results

a. A positive relationship between MT and MH ($r$=0.371, $p$<0.001);
b. b. A positive relationship between MT and SC ($r$=0.461, $p$<0.001); and
c. A positive relationship between SC and MH ($r$=0.533, $p$<0.001).

✓ Therefore, evidence for hypotheses 1, 2, and 3 was found.

2. In the bidirectional SEM (please, see Figure 1)

a. MT was found to be associated with higher SC levels (Unstd. Est = 0.29, SE = 0.068, Std. Est = 0.60);
b. b. SC was predictive of lower levels of MT (Unstd. Est = -0.49, SE = 0.036, Std. Est = -0.24); and
c. Both main effects of MT and SC on MH were positive.

✓ Given both directional paths, MT to SC and SC to MT, were significant, we found evidence for hypotheses 4 and 5.

## CONCLUSION

Our positive correlation results are in accordance with Gucciardi, Hanton, and Fleming (2017), Neff, Rude, and Kirkpatrick (2007), Wilson, Bennett, Mosewich, Faulkner, and Crocker (2018), and Ales, Kurzum, Deal, and Stamatis (in press). The full bidirectional model analysis revealed that MT is associated with increases in SC and increases in both MT and SC are associated with increases in MH. Therefore and concerning updating mental health best practices, both MT and SC psychological skill training can potentially increase MH levels. However, to most appropriately increase athletes' MH, stakeholders should prioritize MT, over and above SC, but not to its detriment.

Possible limitations include self-assessment and athletes representing three institutions only. Self-assessment is related to personal bias that may lead to over-/underestimation. Concerning the latter, the sample does not represent the total body of NCAA athletes in regards to gender or race/ethnicity. Similar, larger-scale research projects are needed in the future.

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