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Relations of resilience and hardiness with sport achievement and mental health in a sample of athletes

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Abstract

This study investigated the association of resilience and hardiness with sport achievement and mental health in a sample of athletes. 139 athletes (96 males, 43 females) completed Connor-Davidson Resilience Scale (CD-RISC), Hardiness Scale (HS), and Mental Health Inventory (MHI). The athletes’ coaches were asked to rate the Sport Achievement Scale (SAS) in order to measure athletes’ sport achievement. The results revealed that both resilience and hardiness were positively associated with sport achievement and psychological well-being, and negatively associated with psychological distress. It can be concluded that resilience and hardiness can predict changes of sport achievement and mental health in athletes.

Keywords: Resilience, hardiness, sport achievement, mental health, sport psychology

1. Introduction

Research on sport achievement has focused on the stress related factors and situations and coping behaviors of athletes to stress. Sport achievement and success is largely influenced by typical stressors in sport (Anshel, Williams, & Williams, 2000; Sheard, 2009). Findings indicate that inability in effective coping to sport related stress is harmful for athlete performance and personal satisfaction (e.g., Gaudreau & Blondin, 2002). One of the theoretical models in studying coping strategies to sport related stress is positive psychology. Resilience is a construct has flourished across many disciplines of psychology and health like positive psychology (Yi-Frazier, Smith, Vitalino, Yi, Mai, Hillman, & Weinger, 2009). Resilience has had numerous meanings in prior research as a dynamic process of adaptation to adverse and unpleasant experiences (Luthar & Cicchetti, 2000; Masten, 2001) but generally refers to an individual capacity in the face of stressful events (Yi-Frazier et al., 2009) and a pattern of functioning indicative of positive adaptation in context of risk or adversity, underlying two conditions: (a) exposure to risk and (b) positive adaptation (Ong, Bergeman, & Boker, 2009). In other definitions it is called stress resistance (Garmzy, 1985) or post traumatic growth (Tedeschi, Park, & Calhoun, 1998). According to Bonanno (2004), resilience is more than surviving from life stresses and is not synonymous with invulnerability (Philippe, Lecours, & Beaulieu-Pelletier, 2009) but corresponds to successful adjustment (Donnellan, Conger, McAdams, & Neppl 2009),

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behavioral adjustment (Leve, Fisher, & Chamberlain, 2009) and hanging to balance after prior disequilibrium (Richardson, 2002).

Current theories of resilience regard it as a multidimensional construct including internal variables as temperament and personality and individual differences (Mancini & Bonanno, 2009; Campbell-sills, Cohan, & Stein, 2006) and external factors like social environment with a neurological functioning as mediating mechanism (Leve et al., 2009; Davis, Lueckken, Lemery-Chalfant, 2009). Mancini & Bonanno (2009) propose a model of resilience in which, individual differences, appraisal processes, social support, and coping strategies, determine the likelihood of resilience. Although resilience was regarded as a characteristic excluded to extraordinary people as assumed in primary studies of this construct, but resilience can be observed in various people and different developmental stages including childhood, adolescence, and adulthood (Davis et al., 2009) emerges of ordinary, normative human resources in the minds, brain and bodies in family and their communities (Donnellan et al., 2009). People often show resilience in the face of adversity rather than ruminate over the bad things that happen in their lives (MacAdams, 2008). In a broader view, themes of resilience apply not only to individuals but to families and community (Zautra, 2009). Historically, resilience research has been largely the purview of developmental investigators dealing with early childhood and adulthood (Ong et al., 2009) and now has progressed to include early, middle, and late adulthood (Fava & Tomba, 2009). Clinical psychologists recently examined resilience in situations of economic hardship, social inequality and discrimination, psychological trauma, loss, bereavement, depression and pain (Davis et al., 2009; Donnellan et al., 2009; Keyes, 2009; Mancini & Bonanno, 2009; Southwick, Vythilingam, & Chamey, 2005; Zautra, Johnson, & Davis, 2005). The consistent results approve positive and protective effects of resilience in stress resistance (Ong et al., 2009), successful adjustment (Donnellan et al., 2009), positive emotions (Philippe et al., 2009), better quality of relationships with others (Bonanno, Papa, Moskowitz, & Folkman, 2005), subjective well-being (Burns & Anstey, 2010), physical and psychological health and well-being (Davis et al., 2009; Fava & Tomba, 2009), and even speedy recovery illness (Yi-Frazier et al., 2009). In opposite, low levels of resilience relates to vulnerability, low levels of well-being, psychological disorders, maladaptive coping behavior, and negative defenses (Campbell-sills et al., 2006; Fava & Tomba, 2009; Philippe et al., 2009; Yi-Frazier et al., 2009).

The other psychological construct, determinant in sport achievement is hardiness. Hardiness is defined as the presence of three interrelated dispositions: commitment, control, and challenge (Kobasa, Maddi, & Kahn, 1982; Maddi, Harvey, Khoshaba, Lu, Persico, & Brow, 2006). Hardiness acts as a buffer to major life stressors (Maddi et al., 2006). High hardiness is associated with lower psychological distress and higher quality of life (Hoge, Austin, & Pollack, 2007) and the person high in hardiness is marked by increased commitment, sense of control, and challenge (Johnsen, Eid, Pallesen, Bartone, & Nissestad, 2009). Hardiness is a psychological style associated with resilience, good health, and good performance under a range of stressful conditions and is potentially a valuable personality style for highly demanding situations and occupations (Bartone, Roland, Picano, & Williams, 2008). Previous research has established hardiness as a dispositional factor in preserving and enhancing performance and physical and mental health despite stressful circumstances (Maddi et al., 2006). In the field of sport psychology few studies have done, examining the effect of hardiness on sport performance (e.g., Maddi & Hess, 1992; Golby & Sheard, 2004). Despite the significance of resilience and hardiness in the field of sport psychology, specially due to the direct effects of these constructs on sport achievement and athlete performance, few investigations are done and the findings are primary. This study has three primary aims as stated here: Hypothesis 1. There is a positive relation between resilience and hardiness and sport achievement in athletes. Hypothesis 2. Resilience and hardiness will be positively related to psychological well-being of athletes. Hypothesis 3. Resilience and hardiness will be negatively related to psychological distress.

2. Method

2.1. Participants

The participants of present study consisted of 149 athletes (96 males, 43 females) from the Faculty of Physical Education & Sport Science, University of Tehran, and several sport clubs. Their mean age was 23 years (sd=2.98) for all participants, 23.30 (sd=3.16) for males, and 22, 24 (sd=2.34) for females.
2.2. Instruments

2.2.1. Connor-Davidson Resilience Scale (CD-RIS)- The CD-RISC (Connor & Davidson, 2003) consists of 25 questions that are rated on a 5-point Likert-type scale ranging from 0 (not true at all) to 4 (true nearly all the time). The minimum and maximum score in the scale is respectively 0 and 100. The primary study related to psychometric properties has acknowledged the reliability and validity of scale (Connor & Davidson, 2003). Internal consistency, test-retest reliability, and convergent and divergent validity of scale have been reported adequate. The CD-RISC includes 5 subscales: personal competence/tenacity, trust in ones instinct/tolerance of negative affects, positive acceptance of change/secure relationships, control, and spirituality.

2.2.2. Hardiness Scale (HS)- The HS is an 45-item scale that yields a total hardiness score (a composite of the scores of the three subscales), as well as scores for the three 15-item subscales: Commitment, Control, and Challenge. Scores were recorded on a 4-point Likert scale anchored at 0 = not at all true and 3 = very true. Studies have shown the HS to have acceptable internal consistency (.88 - .93 for commitment, .85 - .94 for control, .89 - .95 for challenge, and .87 - .94 for total hardiness), and satisfactory test-retest reliability (.82 - .90 for commitment, .80 - .88 for control, .79 - .87 for challenge, and .80 - .88 for total hardiness; Besharat, 2008).

2.2.3. Mental Health Inventory- The MHI is a 34-item, and to assess 2 Situations including Psychological Well-being & Psychological distress. Each item is related on a five-point Likert scale ranging from 1= Strongly disagree to 5 = Strongly agree. To examine reliability and validity of the MHI in Iranian samples, Test-retest reliability and internal consistency of the MHI were examined at satisfactory levels (r = .89 for Psychological Well-being, r = .87 for Psychological distress, p < 0.001 in normal participants, and r = .77 for Psychological Well-being, r = .82 for Psychological distress, p < 0.001 in patient participants; Besharat, 2006). Concurrent validity of the MHI was calculated according to correlation coefficients between the scores on the MHI and total score of GHQ. All correlations were statistically significant (r = -.85, p < 0.001 for Psychological Well-being and r = .86, p < 0.001 for Psychological distress; Besharat, 2006).

2.2.4. Sport Achievement Scale (SAS)- The Sport Achievement Scale (SAS) is a 16-item self-report measure which is answered by coaches and provides a score that reveals athletes’ sport achievements. Scores were recorded on a five-point Likert scale from “very low” to “very high”. The results of content validity which were assessed according to sport coaches show that Kendal concordance coefficient is 0.54. The results of the $X^2$ for assessing statistical meaning of this coefficient ($X^2 = 163.18, df = 15, P < 0.001$) was significant (Besharat, Abbasi, & Shojaeddin, 2002).

2.3. Procedure

Athletes from the Faculty of Physical Education & Sport Science, University of Tehran, and several sport clubs were invited to take part in this study. Those who approved, gave verbal consent prior to commencement of the study and completed all of the self-report questionnaires. Participant were debriefed about the study and thanked for taking part.

2.4. Statistical analysis

The data was analyzed employing Pearson’s correlation in order to estimate the associations between resilience, hardiness and other variables, regression analysis in order to assess the percentage of explained variance by predictor variables, and ANOVA and multivariate analysis of variance in order to examine the differences in resilience and hardiness between criterion variables and sex difference.

3. Results

Pearson’s correlation coefficients show that, resilience and hardiness are positively correlated with sport achievement and psychological well-being and negatively correlated with psychological distress and both correlation coefficients are statistically significant (p<0.001). According to the results, our hypotheses are supported. Resilience and hardiness are positively associated with sport achievement and psychological well-being as
suggested in hypotheses 1 and 2; and the negative association of resilience and hardiness with psychological distress supports the prediction of hypothesis 3. The results of Pearson’s correlation are presented in Table 1. Regression Analysis and ANOVA were computed to determine the contribution of resilience and hardiness as predictor variables in variability of each variable of sport achievement, psychological well-being, and psychological distress as criterion variables. Statistical properties of regression analysis and results of ANOVA are presented in Table 2.

### Table 1. Intercorrelation among variables

<table>
<thead>
<tr>
<th>Variables</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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<tbody>
<tr>
<td>1. Resilience</td>
<td>1</td>
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<tr>
<td>2. Hardiness</td>
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<td>3. Sport achievement</td>
<td>0.647</td>
<td>0.539</td>
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<tr>
<td>4. Psychological well-being</td>
<td>0.569</td>
<td>0.486</td>
<td>0.486</td>
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<td>5. Psychological distress</td>
<td>-0.367</td>
<td>-0.454</td>
<td>-0.437</td>
<td>-0.337</td>
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</tbody>
</table>

* P < 0.01

### Table 2. Regression analysis and analysis of variance (ANOVA) of all research variables

<table>
<thead>
<tr>
<th>Variables</th>
<th>F*</th>
<th>R</th>
<th>R²</th>
<th>SE</th>
<th>β</th>
<th>t*</th>
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<td><strong>Sport achievement</strong></td>
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<tr>
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<tr>
<td>Resilience</td>
<td>106.260</td>
<td>0.781</td>
<td>0.610</td>
<td>4.992</td>
<td>0.188</td>
<td>2.422</td>
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<tr>
<td>Psychological well-being</td>
<td>37.891</td>
<td>0.598</td>
<td>0.358</td>
<td>7.568</td>
<td>0.376</td>
<td>3.780</td>
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<tr>
<td>Resilience</td>
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<td>Hardiness</td>
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<tr>
<td>Psychological distress</td>
<td>18.426</td>
<td>0.462</td>
<td>0.213</td>
<td>14.066</td>
<td>-0.313</td>
<td>-2.844</td>
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<td>Resilience</td>
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<td>Hardiness</td>
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* P < 0.01

The results for sport achievement reveal that resilience and hardiness account for 61% of the variance in sport achievement (F = 106.260, p < 0.001). Resilience (t = 2.422, β = 0.188) and hardiness (t = 8.171, β = 0.634) are significantly accounted for variance of sport achievement. The results for psychological well-being show that resilience and hardiness account for 35% of the variance in psychological well-being (F = 37.891, p < 0.001). Resilience (t = 3.780, β = 0.376) and hardiness (t = 2.678, β = 0.267) are significantly accounted for variance of psychological well-being. And the results for psychological distress show that resilience and hardiness account for 21% of the variance in psychological distress (F = 18.426, p < 0.001). Resilience (t = 2.844, β = 0.313) and hardiness (t = 1.644, β = 0.251) are significantly accounted for variance of psychological distress. Multivariate analysis of variance was used to compare the male and female athletes on the variables and the results showed no significant sex difference between athletes. Findings revealed similarities between males and females on research questions.

### 4. Conclusion and Discussion

The present study found that resilience and hardiness have positive relationship with sport achievement and psychological well-being and negative relationship with psychological distress which can predict the variations related to sport achievement & psychological well-being and distress in athletes. Ong et al. (2009) Zautra (2009) and Tugade & Fredrickson (2004) indicate that trait resilience is generative of positive emotions with beneficial effects when present during times of stress. High levels of resilience help individuals and athletes bounce back from stressors...
by expressing positive emotions. According to this explanation, positive emotions may provide an important psychological time-out, sustaining continued coping efforts and restore vital resources had been depleted by stress (Ong et al., 2009). Philippe et al. (2009) proposed positive emotional memories networking (EMN) as mediating the relationship between resilience and elicitation of positive emotions after induction of sadness and anxiety, following emotional regulation and better performance in athletes. Resilience help athletes thrive through taxing situations because they can rely on positive EMN related to these situations.

An other explanation, suggest that resilience reinforces self-esteem and successful coping toward adversity experiences (Bonanno, 2004; Benetti & Kambouropoulos, 2006), considering that there is a negative relationship between life stressors and self-esteem (Luria & Torjman, 2009). Resilience lead to adjustment and adaptation by enhancing self-esteem. Self-esteem is implicated in better adjustment and coping with and greater resistance to stress (Luria & Torjman, 2009) in athletes. Stress resistance, adaptive outgrowth, and emotional complexity act as resources that draw upon during times of challenge (Ong et al., 2009) following psychological distress regulation. High resilient athletes have ability of effectively regulate negative emotional arousal (Ong et al., 2009) in the midst of stress. Personal characteristics and individual differences related to resilience, is accounted as the other explanation for positive outcomes in athletes. They facilitate self-esteem through compensatory and buffering effects (Donnellan et al., 2009). These positive characteristics help athletes increase the possibility for success by promoting positive adaptation, and behavioral adjustment (Davis et al., 2009). Additionally personality resources including locus of control, self-efficacy self-esteem and emotional stability seen in high resilient and hardy athletes, contribute in moderating and coping with stress through less increase in stress perception leading to better performance and well-being. Each of these traits has been suggested as a resilience resource and together they provide a central personality resource for resistance to stress (Luria & Torjman, 2009). Individual differences in resilience including self-enhancing biases, coping, identity continuity, dismissive attachment, and prior beliefs (Mancini & Bonanno, 2009) are related to mental health of athletes.

Competence and personal tenacity are the other factors of resilience (Leve et al., 2009; Connor & Davidson, 2003), linking resilience to sport achievement and mental health in athletes. Self of coherence (SOC) conceptualized as a condition of resiliency, links to well-being and mental health (Evans, Marsh, & Weigel, 2008) in athletes. Well-being research typically delineates between related cognitive and affective psychological constructs and as a cognitive psychological resource, resilience may function to optimize subjective well-being by increasing positive and decreasing negative affectivity (Burns & Anstey, 2010). Hardiness and its relation to sport achievement and mental health are stated. Hardy characteristic of athletes, provide appropriate and necessary conditions for achievement through commitment, lead to deeply engaged and interested (Johnsen et al., 2009) in sport tasks and performance rather than restraining into isolation under stress (Maddi et al., 2006). This commitment refers to athlete ability by turning sport events into something meaningful and important (Hoge et al., 2007) and interpret experience as interesting and worthwhile (Johnsen et al., 2009) which increase probability of success. Sense of control and challenge are other factors contributing in hardiness. Sense of control help athletes believe they can control or influence what happens (Bartone et al., 2008) and interpret experience as something, over which they can exert control (Johnsen et al., 2009) and challenge not only present opportunity to learn and grow during demanding situations, but cause athletes to be internally motivated and create their own sense of purpose (Barton et al., 2008) and see change as natural and an opportunity to grow by what is learned through negative experiences as well as positive experiences (Maddi et al., 2006), which totally enhance athletes performance. Additionally, transformational leadership which includes four components of influence, individualized consideration inspirational motivation, and intellectual stimulation, is facilitated and predicted by personality hardiness (Johnsen et al., 2009) linking to successful performance. On the other hand, hardiness is associated with lower psychological distress and higher quality of life (Hoge et al., 2007) and good health and well-being (Kobasa et al., 1982). Transformational coping strategies seen in hardy individuals and the buffering effects of hardiness maintain and enhance health under a wide range of stressful contexts, improving well-being and mental health and lead to effective functioning (Maddi et al., 2006) in athletes.

In summary, the present study indicates the significance positive relationship of resilience and hardiness with psychological well-being and sport achievement and its significance negative relationship with psychological distress. This study provides support for previous research and current theories about resilience and hardiness. Comparable results to previous studies, suggest that provision of educational programs for sport schools, coaches and athletes can acquire practical and useful guidelines to promote levels of resilience (e.g., see Luthar, Cicchetti, & Becker, 2000) and hardiness. Learning special skills like problem solving (Campbell-Sills et al., 2006) is suggested as one of the major factors of resilience and hardiness programs. Identifying athletes with low resilience resources
can inform a psychoeducational coping skills intervention designed to reduce maladaptive coping strategies (Yi-Frazier et al., 2009). Further research is suggested to investigate factors related to resilience and hardiness in various sport fields independently. Long-term gains of resilience and hardiness are needed to be determined in longitudinal studies. In addition prospective studies should concurrently examine psychological and biological resilience/hardiness characteristics and other related variables, in order to achieve to broader theoretical and practical consequences in theories and interventions of resilience and hardiness. Simple correlations among variables and restriction of research population in generalization of findings are limitations of this study which must be considered.

References


