

Mental toughness, Hardiness and Athletic Burnout in University Athletes

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Abstract

A correlational study was conducted to explore the relationship between mental toughness, hardiness, and athletic burnout in university athletes. It was hypothesized that 1) mental toughness and hardiness would be negatively related to athletic burnout in university athletes, and 2) Hardiness would moderate the relationship between mental toughness and athletic burnout in university athletes. The sample comprised 116 university athletes aged 17-27 years ($M = 21.74$, $SD = 2.15$) collected through a non-probability purposive sampling technique. Mental toughness Inventory (Gucciardi et al., 2009); Athletic Burnout Questionnaire (Raedeke & Smith, 2001), and Personal Views Survey III-R (PVSIII-R) (Maddi & Khoshaba, 2001) were used for assessment. Findings revealed that mental toughness and hardiness were negatively correlated with athletic burnout, suggesting that psychologically resilient athletes are less prone to burnout symptoms. Additionally, mental toughness was positively associated with hardiness. However, moderation analysis indicated that hardiness had a limited role in moderating the mental toughness–burnout relationships, with commitment and control showing specific interaction effects. These findings contribute to understanding psychological resilience in athletic performance and provide insights for burnout prevention strategies.

Keywords: Mental Toughness, Hardiness, Athletic Burnout, University Athletes

Introduction

Sports play a crucial role in life, enhancing endurance, muscle strength, and overall fitness. Engaging in sports sharpens the mind, boosts mental strength, and teaches individuals how to handle failures with dignity (Malm et al., 2019). Team sports, in particular, improve interpersonal skills and help individuals become

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effective team players (Jones et al., 2007). However, athletes face various psychological pressures to achieve peak performance. Psychological attributes play a key role in linking athletes to success (Golby & Wood, 2016). In today's sports world, trophies, fan support, and media attention are often reserved for the winners — those who not only overcome physical challenges but also maintain psychological superiority over their opponents (Etnier, 2009).

In universities, many students participate in sports, which can contribute to developing social skills and self-esteem. However, athletes experience unique stressors compared to non-athlete students. These include the physical and psychological demands of training, competition, and balancing academics with sports, potentially leading to emotional and psychological problems. Prolonged intense training without adequate rest can result in overtraining syndrome. Additionally, chronic stress can lead to athlete burnout, negatively affecting performance and increasing the likelihood of withdrawal from sports (Golby & Wood, 2016; McLoughlin et al., 2021).

Athlete burnout is commonly understood through a psychosocial framework encompassing three key dimensions: physical and emotional exhaustion, sport devaluation, and a reduced sense of athletic accomplishment (Raedeke, 1997). This concept is adapted from Maslach and Jackson's (1984) original model, which has been widely supported in occupational settings and has also gained recognition in sports (Cresswell & Eklund, 2006, 2007). Burnout in athletes is thought to negatively influence the quality of their sports experiences, leading to decreased performance and ultimately discontinuing sports participation (Raedeke & Smith, 2004).

Research shows that burnout is associated with a lack of motivation, while higher intrinsic motivation is negatively correlated with burnout (Cresswell & Eklund, 2005; Raedeke & Smith, 2001). Additionally, shifts toward less self-determined motivation, such as extrinsic motivation and amotivation, are linked to higher burnout levels throughout the season (Cresswell & Eklund, 2005). Burnout is also believed to negatively impact athletes' physical and mental well-being (Glandorf et al., 2023).

It has been observed that mental toughness plays an important role in the performance of athletes. Mental toughness refers to a set of qualities that include exceptional determination, resilience under pressure, and the ability to stay focused

in high-stress situations. It involves maintaining an optimal level of arousal throughout the competition, a relentless drive to compete even when injured, and an unwavering attitude when facing defeat. Mentally tough athletes are willing to take risks when their opponents play cautiously and show a steadfast commitment to finishing a contest rather than conceding (Cashmore, 2002). Coaches and athletes indicate that 50% of performance is mental and that the concept of being mentally tough is one of the most important characteristics that an athlete can possess (Loehr, 1986). Gucciardi et al. (2009) proposed a model that explains how mental toughness operates. According to this model, mental toughness involves both covert and overt thoughts, behaviors, and reactions to situations that present varying degrees of challenges, hardships, and stress. It is shaped by a combination of inherent traits and developed sport-specific values, attitudes, cognitions, and emotions. These factors influence how individuals perceive and respond to both positive and negative pressures, challenges, and adversities, enabling them to consistently pursue and achieve their goals. Loehr (1986) suggested that individuals high in mental toughness are disciplined thinkers who respond to pressure in ways that enable them to remain relaxed, calm, and energized because they can increase their flow of positive energy in crisis and adversity. This constellation of stress-buffering and performance-enhancing characteristics has become associated with the hardy personality style (Maddi & Khoshaba, 2001; Atkinson, 2013).

Hardiness is a psychological concept used to describe the trait or characteristic of those who remain physically or mentally healthy when and after confronting hardships, trauma, and life obstacles. Hardiness has been studied extensively in the literature and consists of three primary components: commitment, control, and challenge (Lamert & Lamert, 1999; Kobasa, 1979). Athletes with a strong sense of commitment believe in staying involved with events and people around them, even when stress mounts. Performers strong in control want to keep trying to affect outcomes, even if it is difficult. Those strong in the face of challenge consider change to be normal and an opportunity in which to grow and develop (Maddi, 2006). Hardiness can, therefore, be conceived as an individual's propensity to manage the demands of situations ranging from absolute resilience to extreme vulnerability (Maddi, 2006; Maddi & Khoshaba, 2005). Thus, hardy people are those who remain committed to their lives and feel intricately involved with the activities in their daily lives. In sport-specific contexts, hardiness has been recognized as a crucial personality trait. Research shows that football players with high levels of hardiness demonstrate better peripheral vision (Rogers et al., 2003), interpret anxiety more

positively (Hanton et al., 2003), cope more effectively with stress (Goss, 1994; Kelley, 1994), and exhibit greater resistance to burnout (Hendrix et al., 2000). Additionally, hardiness has been linked to reduced injury recovery time among high-level athletes (Ford et al., 2000). In student-athletes, it plays a vital role in lowering stress levels and can help prevent burnout to some extent (Low, 2021). While previous research has established the negative impact of burnout on athletes (Raedeke & Smith, 2004; Cresswell & Eklund, 2007), less is known about the moderating role of hardiness in this context, particularly among university athletes. Recent studies (e.g., McLoughlin et al., 2021; Glandorf et al., 2023) have emphasized the importance of psychological resilience, yet the interaction between mental toughness and hardiness remains underexplored. This study aims to address this gap by investigating whether hardiness moderates the relationship between mental toughness and athletic burnout in university athletes. So, based on the above scenario, this study aims to investigate the relationship between mental toughness, hardiness, and athletic burnout in university athletes and also to assess how hardiness moderates the relationship between mental toughness and athletic burnout in university athletes.

❖ **Hypotheses of the Study**

- Mental toughness and hardiness would be negatively related to athletic burnout in university athletes.
- Mental toughness would be positively related to hardiness in university athletes.
- Hardiness is likely to moderate the relationship between mental toughness and athletic burnout in university athletes.

Methodology

❖ **Research Design**

- **A correlational research design was used.**

❖ **Sample and Sampling Strategy**

The sample was comprised of 116 athletes of different games from a public sector university in Lahore. The age range of the participants was 17-27 years ($M = 21.74$, $SD=2.15$). Non-probability purposive sampling technique was used to collect data. Both men and women athletes were included. Only those athletes were included who had a minimum experience of one year and were representing their respective teams in the Inter-University competitions. In the sample, 51 (44%) were women and 65 (56%) were men.

- ❖ **Assessment Measures**
- **Demographic Information Sheet**

A self-prepared demographic information sheet was used to get information about participant's age, gender, department, program, GPA, residence, year of study, total duration attached to the university, type of game which they play, the total experience of playing that game and last position in sports.

- ❖ **Mental Toughness Inventory (Gucciardi et al., 2009)**

This is 15 items inventory consisting of five subscales i.e., affective intelligence, desire to achieve, resilience, attentional control, and self-belief. Studies have found acceptable internal consistency for Affective intelligence .72, for desire to achieve .74, for resilience .70, for attentional control .70, for Self-belief .71 (Gucciardi et al., 2009). The sum of all the items gives the composite score of the overall scale as well as the subscale. A higher score indicates higher mental toughness. The Urdu version of this tool (Kausar & Solomon, 2014) was used in this study. This scale showed a .82 alpha reliability in the present study.

- ❖ **Personal Views Survey III-R (PVSIII-R) (Maddi & Khoshaba, 2001)**

The PVS III-R is an 18-item scale that yields a total hardiness score (a composite of the scores of the three subscales), as well as scores for the 3 six-item subscales: commitment, control, and challenge. Higher scores indicate desirable levels of hardiness. Studies have shown the PVS III-R to have acceptable internal consistency .70 –.75 for commitment, .61–.84 for control, .60–.71 for challenge, and .80 – .88 for total hardiness (Maddi & Khoshaba, 2001). The authors translated this scale in the present study. This scale showed a .65 to .79 alpha reliabilities of scale and its subscales in the present study.

- ❖ **Athletic Burnout Questionnaire (Raedeke & Smith, 2001)**

The ABQ is a 15-item self-report inventory containing three 5-item subscales, including emotional/physical, reduced sense of sports accomplishment, and devaluation of sports participation. A high score on all three subscales indicates a high level of burnout. The authors translated this scale in the present study. This scale reported a .85 alpha reliability in the present study.

❖ Procedure

An authority letter explaining the nature of the study was sought from the department and permission to collect data was taken from the concerned authorities. All the scales were used after obtaining permission from their respective authors. Before starting the administration of questionnaires, participants were briefed about the nature and the purpose of the study, and consent was taken from them. They were assured of the confidentiality of their information, and they were given the right to withdraw at any time. It took approximately 15 to 20 minutes to complete the questionnaires. Participants were approached in their sports department, girls' hostel, and on the ground. After the completion of the data collection, the data was analyzed and discussed further.

❖ Results

All the results were analyzed using SPSS version 23. Pearson product-moment correlation was applied to find out the relationship between mental toughness, hardiness, and athletic burnout in university athletes (See Table 1).

Table 1 - Pearson Product Moment Correlation between Mental Toughness, Athletic Burnout, and Hardiness

	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Mental Toughness	.73***												
2. Affective Intelligence		.54***											
3. Desire to Achieve			.53***										
4. Resilience				.50***									
5. Attentional Control					.52***								
6. Self-Belief						.37***							
7. Athletic Burnout							.23*						
8. Physical/Emotional Exhaustion								.90***					
9. Reduced sense of accomplishment									.86***				
10. Sports Devaluation										.67***			
11. Hardiness											.73***		
12. Commitment												.17	
13. Control													.14
14. Challenge													

* $p < .05$. ** $p < .01$. *** $p < .001$

Table 1 showed that mental toughness was positively related to hardiness and negatively related to athletic burnout in university athletes. The same trend was found between the subscales of these variables. Further, athletic burnout and its subscales of physical and emotional exhaustion, reduced sense of accomplishment,

and sports devaluation were negatively related to the control subscale of hardiness. Further reduced sense of accomplishment was negatively related to commitment in university athletes.

To check the moderating role of hardiness in the relationship between mental toughness and athletic burnout in university athletes, Multiple Hierarchical Regression analysis was applied to the total scores of study variables (see Table 2).

Table 2- Interaction Effect of Mental Toughness and Hardiness in Predicting Athletic Burnout (N=116)

Variables	B	95% CI for B		SE B	β	R ²	ΔR^2
		LL	UL				
Step 1							
Constant	7.780	5.162	10.398	1.32		.10**	.10**
Gender ^a	1.070*	.303	1.837	.39	.25*		
GPA in last semester	-.874*	-1.639	-.109	.39	-.20*		
Step 2							
Constant	7.653	5.040	10.266	1.32		.12***	.02
Gender	1.057	.293	1.820	.39	.24*		
GPA in last semester	-.823	-1.588	-.058	.39	-.19*		
Hardiness	-.05	-.021	.126	.04	-.13		
Step 3							
Constant	8.727	6.306	11.148	1.22		.28***	.15***
Gender	.299	-.462	1.060	.38	.07		
GPA in last semester	-.613	-1.315	.090	.35	-.14		
Hardiness	.091	.023	.160	.03	.22*		
Mental toughness	-.10***	-.140	-.059	.02	-.44***		
Step 4							
Constant	8.715	6.275	11.155	1.23		.28***	.00
Gender	.299	-.465	1.064	.39	.07		
GPA in last semester	-.61	-1.317	.095	.36	-.14		
Hardiness	.089	.010	.168	.04	.21*		
Mental toughness	-.099	-.141	-.057	.02	-.44***		
Hardiness X Mental toughness	.000	-.006	.007	.003	.01		

^a0 = men, 1 = women. * $p < .05$. ** $p < .01$. *** $p < .001$

Table 2, the overall variance explained by the model of Athletic burnout was 28% with $F(5, 110) = 8.54$, $p < .001$. The results showed a non-significant interaction effect of hardiness and mental toughness in predicting athletic burnout in university

athletes. Findings also showed that mental toughness negatively predicted athletic burnout ($\beta = -.44$, $p < .001$), however, hardiness did not predict it. Further GPA in the last semester negatively predicted athletic burnout ($\beta = -.20$, $p < .05$).

Further the same analyses were performed on the subscales of all three variables to see the moderating role of hardiness (commitment, control, and challenge) in determining the relationship between mental toughness (affective intelligence, desire to achieve, resilience, attentional control, self-belief) and athletic burnout (emotional/physical, reduced sense of sport accomplishment, and devaluation of sport participation) (See Table 3, 4, & 5).

Table 3 - Interaction effect of Subscales of Mental Toughness and Hardiness in Predicting Physical and Emotional Exhaustion of Athletic Burnout in University Athletes

Variables	B	95% CI for B		SE B	β	R ²	ΔR^2
		LL	UL				
Step 1						.08*	.08*
Constant	1.99	.880	3.104	.56			
Gender ^a	.29*	.003	.587	.15	.18*		
GPA in last semester	-.177	-.469	.115	.15	-.11		
Step 2						.24***	.15***
Constant	2.224	1.173	3.274	.530			
Gender ^a	.17	-.109	.453	.14	.11		
GPA in last semester	-.11	-.380	.164	.14	-.07		
Commitment	-.02	-.085	.040	.03	-.07		
Control	-	-.079	-.195	.03	-.42***		
Challenge	.14***						
Challenge	-.03	-.090	.025	.03	-.10		
Step 3						.32***	.08*
Constant	2.324	1.298	3.351	.518	.000		
Gender ^a	-.005	-.293	.293	.15	.05		
GPA in last semester	-.04	-.310	.225	.13	-.02		
Commitment	-.01	-.069	.053	.03	-.39		
Control	-	-.068	-.185	.03	-.05***		
Challenge	.13***						
Challenge	-.02	-.076	.043	.03	-.17		
Affective intelligence	-.05	-.010	.106	.03	-.09		
Desire to achieve	-.03	-.107	.049	.04	-.18		
Resilience	-.05	-.104	.008	.03	-.08		
Attentional control	-.02	-.089	.041	.03	-.14		
Self-belief	-.05	-.117	.023	.03	-.00		
Step 4						.43***	.11
Constant	2.408	1.302	3.514	.56			
Gender ^a	.00	-.311	.322	.16	.00		
GPA in last semester	-.07	-.354	.219	.14	-.04		
Commitment	-.02	-.085	.051	.03	-.05		

Table 3 - Interaction Effect of Subscales of Mental Toughness and Hardiness in Predicting Physical and Emotional Exhaustion of Athletic Burnout in University Athletes

Variables	B	95% CI for B		SE B	β	R ²	ΔR^2
		LL	UL				
Control	-.15***	-.082	-.215	.03	-.46***		
Challenge	-.002	-.061	.065	.03	-.00		
Affective intelligence	.05	-.016	.110	.03	-.16		
Desire to achieve	-.02	-.101	.066	.04	-.05		
Resilience	-.05	-.113	.006	.03	-.20		
Attentional control	-.004	-.067	.075	.04	-.01		
Self-belief	-.05	-.135	.024	.04	-.17		
Affective intelligence X Commitment	-.03*	-.062	-.005	.01	-.28*		
Desire to achieve X Commitment	.00	-.038	.045	.02	.024		
Resilience X Commitment	.02	-.004	.052	.01	.23		
Attentional control X Commitment	-.02	-.056	.007	.02	-.24		
Self-belief X Commitment	.03	-.007	.066	.02	.25		
Affective intelligence X Control	.00	-.027	.037	.02	.04		
Desire to achieve X Control	-.03	-.078	.011	.02	-.21		
Resilience X Control	.00	-.026	.036	.02	.05		
Attentional control X Control	.03	-.003	.057	.01	.22		
Self-belief X Control	-.02	-.050	.007	.01	-.18		
Affective intelligence X Challenge	.01	-.020	.042	.01	.10		
Desire to achieve X Challenge	.01	-.026	.057	.02	.12		
Resilience X Challenge	.00	-.025	.026	.01	.006		
Attentional control X Challenge	-.02	-.048	.011	.01	-.16		
Self-belief X Challenge	-.00	-.032	.026	.01	-.03		

⁰ = men, 1 = women. * $p < .05$. ** $p < .001$

Table 3 showed that overall variance explained by the model of physical/ emotional exhaustion of athletic burnout was 43% with $F(26, 89) = 2.62$, $p < .001$. The results showed significant interaction effect of affective intelligence and commitment ($\beta = -.28$, $p < .05$) subscales of mental toughness and hardiness respectively, in predicting physical and emotional exhaustion, however non-significant interaction effects were reported in term of other interaction terms. Further it was also found that only control subscale of hardiness significantly negatively predicted physical and emotional exhaustion ($\beta = -.42$, $p < .001$) in university athletes, however none of the subscale of mental toughness predicted it.

For further information of significant interaction, simple slope analysis was run using two ways unstandardized with simple slopes (Dawson, 2013), to calculate regression weights for affective intelligence and commitment. Its graphical representation is given in figure 1.

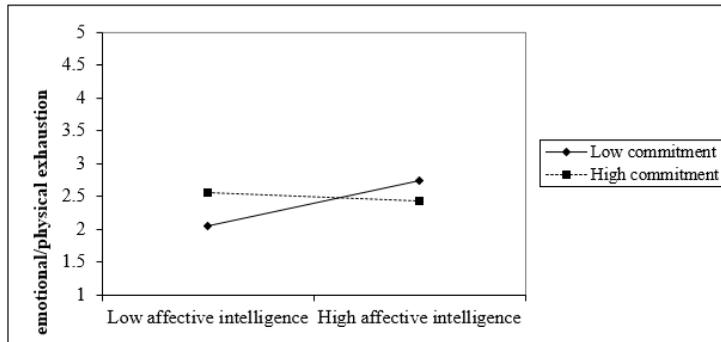


Figure 1 shows that athletes with high affective intelligence and low levels of commitment have more physical and emotional exhaustion in athletes as compared to those with high affective intelligence and high levels of commitment.

Table 4 - Interaction Effect of Subscales of Mental Toughness and Hardiness in Predicting Reduced Sense of Accomplishment of Athletic Burnout in University Athletes

Variables	B	95% CI for B		SE B	β	R ²	ΔR^2
		LL	UL				
Step 1							
Constant	2.107	1.061	3.153	.53		.14**	.14**
Gender ^a	.42**	.143	.693	.14	.26**		
GPA in last semester	-.23	-.531	.019	.14	-.14		
Step 2							
Constant	2.403	1.399	3.407	.51		.27***	.12**
Gender ^a	.31*	.038	.575	.13	.19*		
GPA in last semester	-.22	-.478	.042	.13	-.14		
Commitment	-.05	-.110	.009	.03	-.16		
Control	-.10***	-.046	-.158	.03	-.32***		
Challenge	-.05	-.105	.004	.03	-.16		
Step 3							
Constant	2.493	1.575	3.411	.46		.43***	.16**
Gender ^a	.06	-.205	.319	.13	.04		*
GPA in last semester	-.10	-.343	.136	.12	-.07		

Table 4 - Interaction Effect of Subscales of Mental Toughness and Hardiness in Predicting Reduced Sense of Accomplishment of Athletic Burnout in University Athletes

Variables	B	95% CI for B		SE B	β	R ²	ΔR^2
		LL	UL				
Commitment	-.03	-.088	.021	.03	-.10		
Control	-	-.052	-.157	.03	-		
	.10***				.33***		

Challenge	-.01	-.061	.046	.03	-.02
Affective intelligence	.003	-.048	.055	.03	.01
Desire to achieve	-.04	-.105	.034	.03	-.11
Resilience	-.01	-.064	.035	.02	-.06
Attentional control	.00	-.057	.059	.03	.00
Self-belief	-	-.186	-.061	.03	-
	.12***				.39***
Step 4					
Constant	2.48	1.515	3.453	.49	.54***
Gender ^a	.17	-.110	.444	.14	.10
GPA in last semester	-.15	-.398	.103	.13	-.09
Commitment	-.008	-.068	.052	.03	-.02
Control	-	-.020	-.136	.03	-.25**
	.08***				
Challenge	-.01	-.067	.044	.03	-.04
Affective intelligence	-.01	-.062	.049	.03	-.02
Desire to achieve	-.05	-.124	.022	.04	-.15
Resilience	-.02	-.077	.027	.03	-.09
Attentional control	.01	-.047	.077	.03	.05
Self-belief	-.10**	-.175	-.036	.03	-.34**
Affective intelligence X Commitment	-.02	-.044	.006	.01	-.16
Desire to achieve X Commitment	.00	-.030	.043	.02	.05
Resilience X Commitment	.02*	.000	.049	.01	.24*
Attentional control X Commitment	-.03	-.055	.000	.01	-.27
Self-belief X Commitment	.01	-.017	.047	.02	.13
Affective intelligence X Control	.02	-.010	.047	.01	.15
Desire to achieve X Control	-.02	-.063	.015	.02	-.15
Resilience X Control	.01	-.012	.042	.01	.13
Attentional control X Control	-.01	-.033	.020	.01	-.05
Self-belief X Control	-.00	-.030	.020	.01	-.04
Affective intelligence X Challenge	-.01	-.038	.016	.01	-.09
Desire to achieve X Challenge	-.03	-.062	.010	.02	-.22
Resilience X Challenge	-.00	-.025	.020	.01	-.03
Attentional control X Challenge	.01	-.013	.038	.01	.12
Self-belief X Challenge	.01	-.012	.039	.01	.11

^a0 = men, 1 = women. **p* < .05. ***p* < .001

Table 4 showed that overall variance explained by the model of reduced sense of accomplishment of athletic burnout was 54% with $F(26, 89) = 4.05, p < .001$. The results showed significant interaction effect of resilience and commitment ($\beta = .24, p < .05$) subscales of mental toughness and hardiness respectively, in predicting reduced sense of accomplishment, however non-significant interaction effects were reported in term of other interaction terms. Further it was also found that only control subscale of hardiness ($\beta = -.32, p < .001$) and self-belief subscale of mental toughness ($\beta = -.39, p < .001$) significantly negatively predicted reduced sense of

accomplishment in university athletes, however none of the other subscales predicted it.

Further, Simple slope analysis was run using two ways unstandardized with simple slopes (Dawson, 2013) to calculate regression weights for reduced sense of accomplishment and commitment. Its graphical representation is given in figure 2.

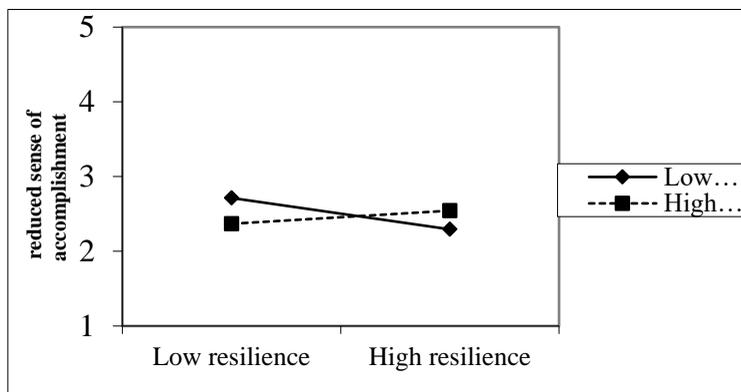


Figure 2. Interaction Plots for Reduced Sense of Accomplishment

Figure 2 shows that athletes with low resilience and with low levels of commitment have a more reduced sense of accomplishment as compared to those with high resilience and with high level of commitment.

Table 5 - Interaction effect of Subscales of Mental Toughness and Hardiness in Predicting Sports Devaluation of Athletic Burnout in University Athletes

Variables	B	95% CI for B		SE B	β	R ²	ΔR^2
		LL	UL				
Step 1							
Constant	2.220	1.07	3.367	.58		.13**	.13**
Gender ^a	.29	-.015	.587	.15	.17		
GPA in last semester	-.34*	-	-.039	.15	-.19*		
		.642					
Step 2							
Constant	2.395	1.28	3.504	.56		.24**	.11**
Gender ^a	.17	-.128	.465	.15	.09		
GPA in last semester	-.27	-.561	.013	.14	-.16		
Commitment	-.02	-	.047	.03	-.05		
		.085					
Control	-.12***	-	-.181	.03	-.35***		
		.058					
Challenge	-.02	-	.084	.03	-.07		
		.037					

Step 3						.35**	.11**
Constant	2.533	1.467	3.598	.54			
Gender ^a	-.05	-.353	.255	.15	-.03		
GPA in last semester	-.19	-.465	.090	.14	-.11		
Commitment	-.000	-.063	.064	.03	.00		
Control	-.11**	-.049	-.171	-.03	-.32**		
Challenge	-.06	-.006	.118	-.03	-.17		
Affective intelligence	-.05	-.010	.110	.03	-.16		
Desire to achieve	-.08	-.157	.005	.04	-.21		
Resilience	-.01	-.070	.045	.03	-.04		
Attentional control	-.02	-.092	.042	.03	-.08		
Self-belief	-.08*	-.153	-.009	.04	-.24*		
Step 4						.43***	.08
Constant	2.315	1.144	3.486	2.315	2.315		
Gender ^a	.003	-.331	.338	.00	.00		
GPA in last semester	-.12	-.426	.181	-.12	-.12		
Commitment	-.01	-.083	.061	-.01	-.01		
Control	-.10**	-.032	-.172	.10	-.10**		
Challenge	-.07*	-.004	-.137	.07	-.07*		
Affective intelligence	-.04	-.030	.104	.04	-.04		
Desire to achieve	-.06	-.152	.025	-.06	-.06		
Resilience	-.02	-.080	.046	-.02	-.02		
Attentional control	-.02	-.093	.057	-.02	-.02		
Self-belief	-.08	-.162	.006	-.08	-.08		
Affective intelligence X Commitment	-.02	-.047	.013	-.02	-.02		
Desire to achieve X Commitment	.01	-.037	.051	.01	.00		
Resilience X Commitment	.01	-.019	.039	.01	.01		
Attentional control X Commitment	-.02	-.056	.012	-.02	-.02		

Table 6 - Interaction effect of Subscales of Mental Toughness and Hardiness in Predicting Sports Devaluation of Athletic Burnout in University Athletes

Variables	B	95% CI for B		SE B	β	R ²	ΔR ²
		LL	UL				
Self-belief X Commitment	.02	-.022	.055	.02	.01		
Affective intelligence X Control	-.05**	.017	.085	.05	-.05**		
Desire to achieve X Control	-.06*	-.103	-.008	-.06	-.06*		
Resilience X Control	-.00	-.035	.031	-.00	-.00		

Attentional control X Control	.02	-	.055	.02	.02
		.009			
Self-belief X Control	-.02	-	.014	-.02	-.02
		.046			
Affective intelligence X Challenge	-.004	-	.028	-.00	-.00
		.037			
Desire to achieve X Challenge	.01	-	.050	.00	.00
		.038			
Resilience X Challenge	.00	-	.033	.00	.00
		.022			
Attentional control X Challenge	-.00	-	.027	-.00	-.00
		.035			
Self-belief X Challenge	-.00	-	.028	-.00	-.00
		.034			

^a0 = men, 1 = women. * $p < .05$. ** $p < .001$

Table 6 showed that the overall variance explained by the model of sports devaluation of athletic burnout was 43% with $F(26, 89) = 2.61, p < .001$. The results showed a significant interaction effect of affective intelligence and control ($\beta = -.05, p < .01$), and desire to achieve and control ($\beta = -.06, p < .05$) subscales of mental toughness and hardiness respectively, in predicting sports devaluation, however, non-significant interaction effects were reported in term of other interaction terms. Further, it was also found that only the control subscale of hardiness ($\beta = -.35, p < .001$) and self-belief subscale of mental toughness ($\beta = -.24, p < .05$) significantly negatively predicted a reduced sense of accomplishment in university athletes, however, none of the other subscales predicted it.

The graphical representation of simple slope analysis for these interaction effects are given in Figures 3 and 4.

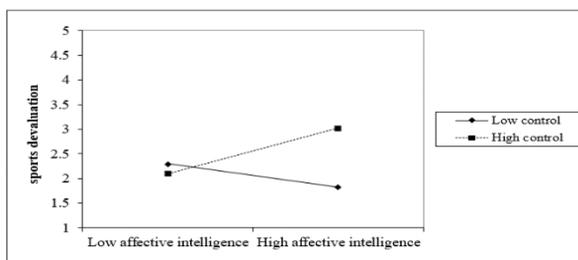


Figure 3. Interaction Plots for Sports Devaluation

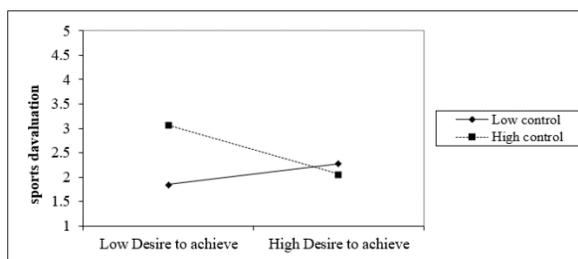


Figure 4. Interaction Plots for Sports Devaluation

Figure 3 indicates that athletes with high affective intelligence and with high level of control have more trend towards sports devaluation as compared to those with high affective intelligence and with low level of control. Figure 4 indicated that athletes with low desire to achieve and with high level of control have more sports devaluation as compared to those with low desire to achieve and low level of control.

Discussion

The first hypothesis of the study was that mental toughness and hardiness would be negatively correlated with athletic burnout in university athletes. Findings proposed that mental toughness was positively related to hardiness and negatively related to athletic burnout in university athletes. Further, athletic burnout and its subscales of physical and emotional exhaustion, reduced sense of accomplishment, and sports devaluation were negatively related to the control subscale of hardiness. The moderation analysis revealed that hardiness played a limited role in moderating the relationship between mental toughness and burnout. However, specific interaction effects were observed for the commitment and control components of hardiness. The results indicate that athletes who possess greater resilience and control over their situations tend to experience fewer burnout symptoms, which is consistent with Maddi's (2006) earlier research. These findings align with previous studies (Frank & Baker, 2014; Jiao, 2014; Visram, 2012), which concluded that mental toughness, which includes traits such as emotional control, self-confidence, and resilience, helps athletes manage stress and pressure. Athletes with higher mental toughness levels were found to experience less burnout, as they could handle the demands of their sport more effectively. Further, it was found that mental toughness positively modifies cognitive appraisal of stressful situations, reducing the risk of emotional and physical exhaustion (Visram, 2012). Another reason also explained that mentally tough individuals maintain a balance between the demands placed on athletes and the resources available to cope. Long-term occurrences of imbalances between the demands and resources can result in burnout (Frank & Baker, 2014).

The results of the present study indicated that the control subscale of hardiness is negatively linked with athletic burnout. This aligns with previous research (Hebdrix et al., 2000; Wayada & Valerie, 1996; Bawa, 2010), which also found that greater control, as part of hardiness, is linked to lower levels of burnout in athletes. The reason might be that hardiness has a positive health influence on stressful situations or experiences. Hardy individuals tend to have lower levels of stress and seem to

thrive on stressful situations or challenges, possibly because they have learned to cope effectively with stressors. Another explanation might be that hardy athletes tend to believe that they have some control over their work situations, and they are likely to view problems as challenging rather than threatening. Goal-setting strategies can also be used to increase one's level of hardiness which results in a decrease in athletic burnout (Hebdrix et al., 2000). Coaches who are higher in personality hardiness are less susceptible to burnout (Bawa, 2010).

The findings proposed that mental toughness was found to be positively related to hardiness in university athletes. These findings are consistent with earlier research (Golby & Sheared, 2004; Thompson, 2017), which emphasizes that mental toughness and hardiness are critical for coping with competitive pressures, supporting this idea that athletes who embrace challenges perform better in high-stress environments which results in reduced burnout. Another explanation could be that mentally tough athletes are more able to view potentially difficult situations and opportunities for personal and professional growth and not as a threat, so the athletes are more able to cope with highly stressful content and maintain high levels of competitive performance (Jones et al., 2002).

Another hypothesis of the present study was that hardiness would moderate the relationship between mental toughness and athletic burnout. The results highlighted that hardiness played a limited role in moderating the relationship between mental toughness and burnout, indicating that commitment moderates the relationship between affective intelligence and physical/emotional exhaustion which means that when athletes have high affective intelligence but have less commitment, then there is more physical and emotional exhaustion. This finding is consistent with (Sheared, 2009; Gucciardi, 2020) discusses how mental toughness can influence athletes' susceptibility to burnout, highlighting the importance of psychological attributes, such as commitment and emotional regulation, in moderating this relationship, which highlights that commitment plays a role in reducing emotional exhaustion, especially in athletes with high affective intelligence. Furthermore, Choi et al., (2020) explained that athletes who are deeply committed to their sport are more likely to avoid burnout due to their emotional engagement. Conversely, athletes with low commitment are more prone to emotional and physical exhaustion, consistent with the findings of the present study.

Another finding proposed that commitment moderates the relationship between resilience and reduced sense of accomplishment which means that athletes with low resilience and low commitment will suffer from reduced sense of accomplishment. The reason might be that when an athlete cannot adapt to stressful situations and does not have a flexible personality; along with he is not committed or fully involved in his practice and training of sports then he will suffer from a reduced sense of accomplishment because he will not be able to perform well in sports and will not achieve his goal and will not be satisfied with his performance (Kolehmainen & Sinha, 2014; Aquilina, 2013).

One more finding of the present study proposed that control subscale of hardiness moderates the relationship between affective intelligence and sports devaluation which shows that athletes with high affective intelligence and high control tend towards sports devaluation. It might be the reason that when athletes have full control over all situations, and they effectively handle the events then they consider that is not worth important for them and the significance of sports becomes lessened in their point of view (Gucciardi, 2020). Furthermore, when athletes are unable to maintain control in stressful situations, but they have internal motivation to do something worthwhile but they do not get chances to show their spirit or effort then they divert their positive energy into negative way and devalue the sports. Another finding proposed that control moderates the relationship between the desire to achieve and sports devaluation which means that athletes with a low desire to achieve and a low level of control will tend to have more sports devaluation. The reason might be that athletes will value sports only when they have a desire to achieve something. It is a common observation that if someone has no interest in some work or has no desire to achieve a goal, then that person will not value that work and they have no desire and charm to achieve something which results in sports devaluation. One explanation could be that athletes who want to work hard but do not get enough results will tend towards a low desire to achieve and low control over things which leads them to devalue the sports (Golby et al., 2003).

Conclusion

It was concluded that mental toughness and hardiness are both negatively related to athletic burnout in university athletes. Further, mental toughness was also found to be positively related to hardiness. The moderation analysis revealed that hardiness played a limited role in moderating the relationship between mental

toughness and burnout. However, specific interaction effects were observed for the commitment and control components of hardiness. The results also indicated that commitment plays a moderating role in the relationship between affective intelligence and physical/emotional exhaustion, while commitment also moderated the relationship between resilience and reduced sense of accomplishment in university athletes. Moreover, the control subscale of hardiness plays a moderating role in the relationship between affective intelligence and sports devaluation as well as in the relationship between desire to achieve and sports devaluation in university athletes.

Limitations and Suggestions

Findings are limited to only athletes of one public sector university in Lahore, for future research, the athletes from different universities of all provinces should be taken as a sample. This study must be held at least at the national sports level. Future research on athletes from both public and private sectors should also be included and a comparative study between the public and private sector can also be done. A key limitation of this study is the relatively small sample size, which may limit the power of moderation effects. Future research should consider a larger, more diverse sample across multiple universities to enhance generalizability. Furthermore, it is suggested to consider sample demographics (age, sport type, university level) to discuss the results. It is further suggested to conduct qualitative studies or longitudinal designs to track burnout progression among athletes.

Implications of the study

This study is helpful to know that university athletes suffer from athletic burnout so training programs can be conducted to enhance mental toughness and to produce outstanding performance. It would be a great opportunity to develop any mental toughness training program for university athletes to give them the opportunity to cope with the stressors and avoid burnout. This study will help the university sports department in managing athlete's problems and issues. The results of the study will be shared with people of other disciplines through publication so that people can get beneficial knowledge. The present research will clarify the role of mental toughness and hardiness in athlete's burnout levels.

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