



Psychological Predictors of Injury in Novice Marathon Runners

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INTRODUCTION

- The popularity of distance running and race participation has increased over the past ten years.
 - 80% increase in race finishers since 2000.¹
- 79% of long distance runners are injured annually.²
- The most common running injuries are medial tibia stress syndrome, Achilles tendonopathy, plantar fasciitis, and patellofemoral syndrome.^{3,4}
- The Stress and Athletic Injury Model⁵ identifies three key psychological factors thought to contribute to an athlete's risk of developing an injury (see Figure 1) – personality factors, history of life stressors, and coping resources. The interaction of these variables can produce a maladaptive stress response, which increases an athlete's risk of developing an injury.
- Personality
 - High levels of perfectionism can create anxiety, fatigue, and stress which have negative implications for distance runners.^{6,7}
 - The ideal mood state for competition includes low tension, low fatigue, and high vigor.⁸
 - Wiese-Bjornstal et al.⁹ found mood state to be a significant predictor of acute injury.
- Stressors
 - Life stress and major changes in an athlete's life increase the risk of both illness and injury development.¹⁰
 - "Total life change" and "negative life change" are significant predictors of injury.¹⁰
- The current body of literature lacks development in addressing the psychological factors that predict the development of:
 - Chronic, microtraumatic injuries
 - In a population of novice marathon runners
- Therefore, the purpose of this study is to address some of the limitations in the current literature.

PURPOSE

- The primary purpose of this study is:
 - To determine if psychological factors predict injury development in a population of novice marathon runners.

RESEARCH QUESTIONS

- Do novice marathon runners who score higher on measures of perfectionism have more days of running impacted by injury?
- Do novice marathon runners with different motives for running a marathon have more days of running impacted by injury?
- Do novice marathon runners with higher levels of life stress have more days of running impacted by injury?
- Do novice marathon runners with more mood disturbance differ in the number of days injured while training than those with less mood disturbance?

PARTICIPANTS

- 117 novice marathon runners
 - 39 males, 78 females
- Enrolled in PE 1262: Marathon Training at the University of Minnesota
- Primarily University of Minnesota undergraduate students

Males

39 (33.3%)
 VO₂ max = 53.05
 Body Fat % = 21.33
 BMI = 22.49
 Marathon time: 4:10:37

Females

78 (66.7%)
 VO₂ max = 51.55
 Body Fat % = 22.69
 BMI = 22.93
 Marathon time: 4:25:05

PRELIMINARY RESULTS

Number of Days Impacted By:	Range	Std. Deviation
Injury	0 - 57	7.43 (SD = 11.82)
Illness	0 - 38	4.10 (SD = 5.94)
Pain	0 - 57	7.80 (SD = 11.52)
Fatigue	0 - 50	3.96 (SD = 8.13)

- No significant gender differences were found for number of days impacted by injury (males=7.70, SD=13.72 ; females = 7.84, SD=10.44).
- There was a significant difference ($p=0.043$) for number of training days impacted by fatigue between males and females (females = 4.60, SD= 6.58 ; males = 2.07, SD = 3.56).
- There were no significant changes in Athletic Identity, Life Stress, or Mood State over the course of training. Physical activity enjoyment decreased in March and April.

IMPLICATIONS

- In a regular training program, novice marathon runners experience about a week of training impacted by both injury and pain.
- Identifying psychological antecedents to running-related injuries can highlight risk factors in injury development and help with prevention strategies.
- Further analysis into psychological factors needs to be explored.

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PROCEDURE & MEASURES

- Participants enrolled in PE 1262: Marathon Training at the University of Minnesota were contacted for informed consent.
- All measures were completed at both pre- and post-testing.
- The following measures were completed monthly:
 - Athletic Identity Measurement Scale¹¹
 - Inventory of College Student Life Stress¹²
 - Physical Activity Enjoyment Scale¹³
 - Motivation of Marathoners¹⁴
- Each week, the Profile of Mood State¹⁵ was administered.
- Participants also kept a daily training log. For each completed run, participants could indicate if their training was altered by injury, illness, pain, or fatigue. A 'Comments' section allowed participants to specify details if needed.

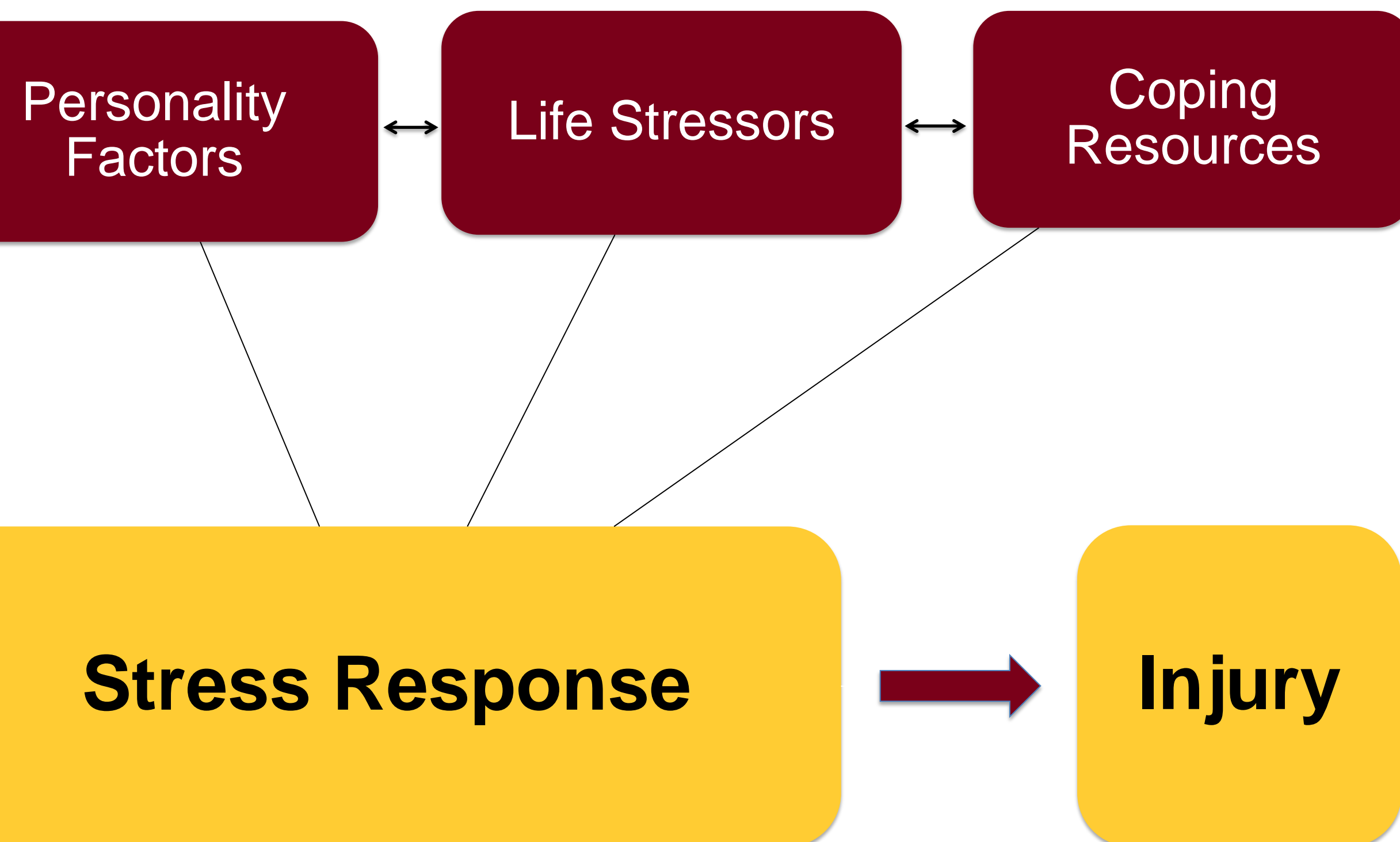


FIGURE 1. THE STRESS AND ATHLETIC INJURY MODEL

(Adapted from Williams & Anderson, 1998)⁵