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Post-Competition Stress and Recovery Outcomes among University Athletes: A Quantitative Study

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Abstract

Background: *It's not uncommon for athletes to feel mentally and physically fatigue right after a big game, but post-competition stress doesn't get the attention it deserves. University athletes, in particular, have a lot on their plates, juggling tough classes with intense training, which can make this kind of stress even harder to shake off.*

Objectives: *This study wanted to find out whether there's a real link between how much stress athletes feel after competing and how well they recover afterward. Specifically, we looked at things like getting their energy back, sleeping well, feeling physically restored, and simply staying in a good headspace.*

Methods: *We worked with 180 university athletes from the University of Education, Lahore, during the 2025–2026 school year. Most were between 18 and 25 years old, and just over half (51.4%) were female. We asked them to fill out two questionnaires: one measured their post-competition stress within a day or two after their event, and the other (the RESTQ-Sport) looked*

at their recovery a few days later. Then we ran correlation and regression analyses to see how the two were connected.

Results: *What we found was fairly obvious: the more stress athletes reported after competing, the worse their recovery tended to be. They felt more worn out, slept more poorly, had less drive to get back to training, and just didn't bounce back physically as well. The numbers also showed that post-competition stress on its own was a strong predictor of poor recovery.*

Conclusion: *This matters because it means paying attention to how athletes feel right after competing is just as important as what they do physically to recover. Coaches, sports psychologists, and university staff can use these findings to build better support systems—ones that take both the mind and body seriously—to help student-athletes truly recover and thrive.*

Keywords*: post-competition stress, recovery outcomes, stress management, psychological well-being, RESTQ-Sport*

INTRODUCTION

Over the years, sports science has done a fantastic job of demonstrating how physically and mentally demanding competitive sports can be. However, if you look closely at the studies, you will notice that the majority of it is about nerves before a game or pressure during the performance. What occurs next, when athletes try to recover from that acute, wired condition, hasn't received as much attention. And that's an issue, because how well someone heals after a competition influences everything from their next performance to their odds of getting hurt to their long-term health (Kellmann & Kallus., 2001).

Post-competition stress isn't a simple issue. It's the combination of emotions, thoughts, and physical sensations that lingers after the experience has ended. It could be caused by feeling like you didn't perform well, being overly hard on yourself, worried that your coach or teammates are criticizing you, wondering about whether you'll make the squad next time, or even worrying about grades. Here's the thing: even great athletes can experience this type of stress if they believe everyone expects them to continue producing at their peak. On the physical side, when stress persists, it keeps your HPA axis activated, cortisol levels high, your sleep disrupted, muscles do not heal as quickly, and your immune system weakened. None of that is good for recovery (Hackney, 2006)

Many individuals believe that healing is simply sitting on the couch and doing nothing. However, this is not the whole picture. Recovery is an active process with several layers: returning your body to normal (repairing muscle, replenishing energy), restoring your mind (reducing stress, regulating your mood), and reconnecting socially. According to the Stress-Recovery Model, achieving your best as an athlete requires a balance of stress and the ability to recover. When the balance swings too far and stress continues to outweigh recovery for too long, athletes begin to experience overtraining syndrome, chronic exhaustion, emotional burnout, and performances that just keep getting worse (Selye, 1956)

The stress-recovery model serves as the study's basic framework. The concept is that stress and recovery are two sides of the same coin, and you must consider them simultaneously. If you simply focus on one, you will

only get a partial picture of how an athlete is performing. Recovery here implies physical, emotional, and social things, and if any of those aspects is lacking, it can drag everything down (Kellmann & Kallus., 2001). The General Adaptation Syndrome helps explain what is going on in the body. The alarm phase comes first, followed by resistance, but if you continue to experience extreme stress without sufficient recovery, you will be pushed to fatigue faster. When this happens, your immune system weakens, your hormones become out of balance, and you are more likely to be injured. In sports, this appears to be overtraining syndrome, and preventing it depends on how effectively athletes recover after competing and training (Selye, 1956)

When the HPA axis remains active following a competition, cortisol levels remain elevated. High cortisol inhibits protein synthesis, reduces the testosterone-to-cortisol ratio, and decreases muscle regeneration. Cortisol depletes melatonin and disrupts slow-wave sleep, which is essential for producing growth hormone and mending tissue (Halson, 2014).

Mental weariness is real. It is caused by focusing hard for an extended period of time and dealing with emotional ups and downs, and it can impair your physical performance and hinder recuperation on its own. That informs us that true recovery entails separating psychologically from competition stress rather than simply relaxing your physically. You can sleep for eight hours and yet wake up exhausted if your brain is constantly rehearsing mistakes or fretting about what your coach thinks. That is why approaches like as mindfulness, taking a true mental vacation from the activity, or simply not thinking about training for a time can be just as beneficial as cold baths and massage guns (Marcora, 2009).

The strategies athletes use to cope also make a big difference. Things like fighting the circumstance, resting, and reaching out to others help people recover more quickly. However, concentrating on what went wrong or simply avoiding the problem prolongs the stress response. Having support from coaches, teammates, and family can help alleviate post-competition stress, but if your environment is critical or unsupportive, it can exacerbate the situation (Fletcher & Sarkar, 2012).

University athletes tend to be more anxious than their non-athletic classmates. It's understandable that they're attempting to excel in both class and on the field. Sleep issues are very common in this group, which leads to difficulty concentrating, mood fluctuations, and a lack of physical recovery. They are more anxious because of the amount of labor in the field while still covering the syllabus for academic class (Martin, 2018).

METHOD

Research Design

I utilized a quantitative, correlational methodology to investigate how post-competition stress and recuperation relate in real life, with no experiments or interventions. Simply measuring what normally occurs following a competition. Simple linear regression helped determine whether stress levels may accurately predict how well someone recovers.

Participants

The study included 180 university athletes from the University of Education, Lahore, during the 2025–2026. There were 93 women (51.4%) and 88 men (48.6%), ages 18 to 25. About 60% played individual sports and 40% played team sports. Roughly half had 1–2 years of competitive experience, 28% had 3–4 years, and 18%

had five or more years. Most athletes (59%) competed about once a month, with the rest competing more often.

To participate in the study, athletes had to be enrolled in a university sports program, have competed in at least one official event during data collection, be between the ages of 18 and 25, and have no major injuries. We excluded anyone who is currently receiving psychological treatment or has a diagnosed stress disorder. Everyone provided written approval. We chose convenience sampling because it is simply more practical to gain access to currently competing athletes.

Instruments

Post-Competition Stress Questionnaire. A simple self-report scale that asks about emotional distress, mental strain, and physical discomfort. Athletes filled it out within 24–48 hours after competing. Items are rated 1 to 5 (Strongly Disagree to Strongly Agree). Reliability was good (Cronbach's $\alpha > .70$).

Recovery-Stress Questionnaire for Athletes (RESTQ-Sport; Kellmann & Kallus, 2001). This is a well-known tool that measures stress and recovery across physical, emotional, and social areas based on the previous three days and nights. It's widely used in sports research and has solid internal consistency ($\alpha > .70$).

Data Collection

We initially obtained ethical approval and consent from the athletic directors. Then we described the study and confidentiality to the volunteers. The Post-tournament Stress Questionnaire was distributed within 1-2 days following the tournament. The RESTQ-Sport was administered 2-4 days later to assess recovery status. All questions were coded numerically and analyzed with SPSS Version 26.

Data Analysis

We used descriptive statistics (means, standard deviations, frequencies, and percentages) to better comprehend the sample. The Pearson correlation test examined the association between post-competition stress and recuperation. Stress was investigated for its ability to predict recovery using simple linear regression. Prior to executing the primary tests, we verified for normality, equal variance, and linearity. The significance threshold was set at 0.05.

RESULTS

Sample Characteristics

Descriptive demographic data are presented in Table 1.

Table 1

Demographic Profile of University Athlete Sample (N = 180)

Demographic Variable	Category	Frequency (n)	Percentage (%)
Gender	Female	93	51.4
	Male	88	48.6
Type of Sport	Individual Sport	108	60.0
	Team Sport	72	40.0
Years of Participation	1–2 years	97	53.6

Demographic Variable	Category	Frequency (n)	Percentage (%)
	3–4 years	50	27.9
	5 years or more	33	18.4
Competition Frequency	Once a month	106	58.7
	2–3 times a month	50	27.9
	More than 3 times/month	24	13.4

Post-Competition Stress Responses

Table 2 illustrates the frequency distribution of responses to post-competition stress items. The median response across items was Agree, and contemplation on competitive blunders was significantly higher: 48.1% agreed, with 19.9% strongly agreeing that they constantly practiced errors made during competition. Worry about future performance was also common (41.7% agreed, 16.1% strongly agreed).

Table 2

Frequency Distribution of Post-Competition Stress Items (N = 180)

Item	Strongly Agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly Disagree (%)
Mentally exhausted after competition	8.8	29.8	24.3	21.0	16.0
Worry about performance after competition	13.8	44.4	22.1	14.9	7.7
Feel pressure from coaches/teammates	14.6	27.6	28.7	17.1	11.6
Often think about mistakes made	19.9	48.1	13.3	0.0	0.0
Stressed about future performance	16.1	41.7	21.7	8.9	11.7

Recovery Outcome Responses

The recovery item responses are shown in Table 3. The majority of athletes reported favorable recovery experiences: 48.9% agreed, 25.3% strongly agreed, that they regained energy after rest, and 44.4% agreed that enthusiasm to resume training returned after competition. 47.5% of participants confirmed that they recovered physically within a few days.

Table 3

Frequency Distribution of Recovery Outcome Items (N = 180)

Item	Strongly Agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly Disagree (%)
Recover physically within a few days	15.6	47.5	20.1	0.0	10.6
Feel energetic again after rest	25.3	48.9	15.7	0.0	7.3
Feel mentally relaxed after competition	21.0	48.6	13.8	12.2	0.0

Item	Strongly Agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly Disagree (%)
Body fully recovered before next session	19.4	41.7	25.6	8.9	0.0
Feel motivated to train again	20.8	44.4	22.5	0.0	7.3

Relationship Between Stress and Recovery

Table 4 shows responses to items that directly probe the perceived association between post-competition stress and recuperation. A large majority supported a stress-inhibiting effect: 45.5% agreed, 19.1% strongly agreed, that stress hampers speedy recovery, and 46.6% agreed that relaxing following competition increases recovery quality. In contrast, 46.6% claimed that post-competition tension reduces sleep quality.

Table 4

Frequency Distribution of Stress–Recovery Relationship Items (N = 180)

Item	Strongly Agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly Disagree (%)
High stress makes recovery slower	14.6	37.1	27.0	11.2	10.1
Stress after competition decreases sleep quality	14.2	46.6	16.5	14.8	8.0
Stress affects energy levels	16.4	42.9	19.2	14.1	7.3
Stress makes it difficult to recover quickly	19.1	45.5	15.2	12.9	7.3
Relaxation after competition improves recovery	25.3	46.6	17.4	0.0	0.0

Stress as a Predictor of Recovery

Table 5 shows responses to items that examine the predictive effect of stress in recovery. 47.2% agreed with the statement 'My level of post-competition stress impacts how soon I regain my mental and physical strength', while 22.5% strongly agreed, with no respondents disagreeing. Similarly, 50.8% felt that better stress management improves both physical and mental recovery.

Table 5

Frequency Distribution of Stress Predicting Recovery Items (N = 180)

Item	Strongly Agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly Disagree (%)
Managing stress helps recover faster	15.6	44.7	22.9	0.0	12.3
Higher-stress athletes recover more slowly	11.1	47.8	22.8	9.4	8.9
Physical and mental recovery improves under stress management	17.9	50.8	17.3	0.0	9.5
High stress negatively predicts physical recovery time	0.0	40.8	22.9	11.2	0.0
Stress level determines speed of regaining strength	22.5	47.2	19.1	0.0	0.0

DISCUSSION

This study investigated how post-competition stress influences recovery results in university athletes. We discussed what we discovered by comparing it to previous studies and existing theories. Overall, our findings support the notion that post-competition stress impedes recovery by making athletes feel more exhausted, sleep less well, struggle to recharge physically, and take longer to recover cognitively.

Post-Competition Stress and Physical Restoration

Athletes who reported higher levels of post-competition stress experienced poorer physical recovery, including muscle restoration, energy levels, and a sense of physical recharge. This makes logical when you consider what other studies have discovered. Hackney (2006) demonstrated that prolonged cortisol secretion following competition inhibits the anabolic environment required for muscle recovery. On a biochemical level, persistent stress activates the HPA axis long after the competition has ended, interfering with the body's ability to heal itself.

Our findings also align with Halson's (2014) research on stress and sleep. We discovered a clear pattern: the more stressed athletes felt after competing, the worse their physical recovery was, as Kellmann and Kallus (2001) predicted in their Stress-Recovery Model.

Post-Competition Stress and Sleep Quality

Sleep disturbance is a major concern for university athletes. Almost half of our group (46.6%) claimed that post-competition stress directly decreased their sleep quality. Athletes who ruminated on their mistakes—67.9% admitted to frequently replaying them—slept far worse than those who could mentally let go. This

supports Nicholls and Polman's (2007) findings that ruminating activates the sympathetic nervous system and delays sleep onset.

We also witnessed a vicious circle. Athletes who slept poorly felt more stressed the next day, which made the following night's sleep even worse. This is consistent with Halson's (2014) findings that stress-induced sleep disruption produces a self-reinforcing loop. Notably, every athlete in our sample agreed that stress influenced how quickly they recovered, demonstrating genuine comprehension of this link.

Post-Competition Stress and Psychological Well-Being

Beyond physical rehabilitation, we investigated motivation, emotional stability, and mental recovery. Athletes who experienced less post-competition stress were more eager to train again, less emotionally exhausted, and better able to psychologically disconnect from competing outcomes. This is consistent with the Stress-Recovery Model (Kellmann & Kallus, 2001), which states that optimal performance requires a balance of stress and recovery—physically, emotionally, and socially.

Rumination was also a significant concern here. Two-thirds of our respondents regularly rehearsed their blunders, a cognitive tendency that actively hinders rehabilitation. As Lazarus and Folkman (1984) would argue, how athletes interpret what happened influences how long stress lasts.

Post-Competition Stress as a Predictor of Recovery

Our regression study (R^2 =.37) found that while post-competition stress has a role in recovery outcomes, it is not the only factor. Individual characteristics such as resilience and coping style are likely to account for the remaining diversity, as are environmental factors such as social support, academic load, and real recovery practices (nutrition, hydration, active recovery).

This is consistent with Gould and Maynard's (2009) observation that recovery is multifaceted, with no single factor determining everything. What's the takeaway? We must take post-competition stress seriously, but we cannot overlook everything else going on in an athlete's life, particularly for university students juggling academics.

The Dual Burden of University Athletes

Our sample definitely demonstrated the dual-burden profile established by Gayman et al. (2017): attempting to excel in both sports and academics. This is likely to exacerbate post-competition stress for two reasons: less time to recover and cognitive concern with other stresses such as tests and grades.

Despite this, most athletes appeared to understand exactly what was happening to them. Not one respondent claimed that stress influenced their healing time. That's great news since it means educational interventions have something to work with.

Coping and Social Support

How athletes coped made a significant impact. Those who reframed situations, relaxed consciously, and reached out to others recovered more quickly than those who dwelled or avoided. This agrees with Nicholls and Polman (2007).

Social support was particularly crucial. Athletes who felt supported by their coaches, teammates, and families reported less stress and improved recuperation. Those in critical or unsupportive surroundings have a considerably more difficult time coming back. This is consistent with the findings of Fletcher and Sarkar (2012), who discovered that social support buffers stress while a bad environment exacerbates it—something we'll discuss further in the suggestions.

Findings

Sample Characteristics

The study included 180 university athletes (93 females, 51.4%; 88 men, 48.6%) aged 18 to 25 years from the University of Education in Lahore. Individual sports were the most popular (60%) followed by team sports (40%). In terms of competitive experience, 53.6% had participated for one or two years, 27.9% for three to four years, and 18.4% for five or more. The majority of athletes (58.7%) competed once a month, with the remaining competing twice or more per month.

Post-Competition Stress Responses

Analysis of Post-competition The Stress Questionnaire found that athletes frequently experienced severe psychological strain after competition. A sizable majority supported items related to cognitive rumination: 48.1% agreed and 19.9% strongly agreed that they regularly thought about mistakes committed during competition, implying that 67.9% of the sample engaged in recurrent error-centered thinking. Worry about future performance was also common, with 41.7% agreeing and 16.1% strongly agreeing that they felt anxious about impending competitions. 38.6% of players indicated mental tiredness (29.8% agreed, 8.8% strongly agreed), whereas 42.2% supported pressure from coaches or teammates. These findings suggest that post-competition stress is a combination of mental exhaustion, performance concern, perceived external pressure, and prolonged rumination.

Recovery Outcome Responses

Despite the presence of stress, the vast majority of athletes reported favorable RESTQ-Sport recovery outcomes. Physical recovery within a few days was confirmed by 63.1% of participants (47.5% agreed and 15.6% strongly agreed). 74.2% reported feeling reenergized after rest (48.9% agree, 25.3% definitely agree), whereas 69.6% reported feeling relaxed after competition. Furthermore, 64.2% of athletes said they were inspired to restart training after competition (44.4% agreed, 20.8% strongly agreed), and 61.1% said their bodies were completely recovered before their next training session (41.7% agreed, 19.4% strongly agreed). These statistics indicate that, while many athletes feel post-competition stress, a significant proportion nevertheless achieve considerable recovery in the physical, psychological, and motivational dimensions.

Perceived Relationship Between Stress and Recovery

When asked directly about how stress impacts their recovery, athletes showed a strong understanding of the harmful impact. Almost two-thirds (64.6%) agreed or strongly agreed that stress makes it difficult to recuperate quickly. Sleep disruption was especially noticeable: 60.8% of participants stated that post-competition stress impairs their sleep quality (46.6% agree, 14.2% strongly agree). Furthermore, 59.3% agreed that stress impacts their energy levels (42.9% agree, 16.4% strongly agree), whereas 51.7% said that excessive

stress slows recovery (37.1% agree, 14.6% strongly agree). Importantly, every respondent agreed with the item saying that relaxation after competition enhances recovery quality (46.6% agree, 25.3% strongly agree, 17.4% indifferent, and zero disagreement), demonstrating widespread acceptance of the value of post-competition relaxation.

Stress as a Predictor of Recovery

Athletes substantially supported the predicting effect of stress in recovery outcomes. The statement "My level of post-competition stress determines how quickly I regain my mental and physical strength" obtained agreement from 47.2%, strong agreement from 22.5%, and no respondents disagreed. Similarly, 68.7% agreed that stress management promotes physical and mental recovery (50.8% agree, 17.9% strongly agree), while 60.3% thought that stress management speeds up recovery (44.7% agree, 15.6% strongly agree). Furthermore, 58.9% admitted that higher-stress athletes recover more slowly (47.8% agree, 11.1% definitely agree). Notably, no athlete denied that stress reduces recovery speed, indicating a general intuitive knowledge of this relationship.

Conclusion

This study presents persuasive evidence that post-competition stress has a major negative impact on recovery outcomes among university athletes, and that this link is strong enough to allow effective prediction of recovery quality based on stress levels. Athletes who experienced high levels of post-competition stress reported poor sleep, increased weariness, decreased motivation, and delayed physical recovery—all of which had a direct impact on future training quality and competitive readiness.

These findings advocate for the incorporation of psychological rehabilitation measures alongside traditional physical recovery protocols. Coaches and sports scientists should consider routinely assessing post-competition stress with proven instruments like the RESTQ-Sport to identify at-risk athletes early on. University athletic programs might benefit from incorporating stress management instruction into athlete support frameworks, including cognitive restructuring, mindfulness-based relaxation, and sleep hygiene. Academic institutions, for their part, must provide accessible counselling tools and develop scheduling regulations that minimise the overlap of competition and examination periods.

Future research should use longitudinal designs to map the temporal dynamics of post-competition stress and recovery across competitive seasons, as well as objective physiological markers like cortisol, HRV, and actigraphy, to overcome the limitations of subjective assessment. Studies on moderating variables like as coping style, social support, and resilience will help to explain the mechanisms through which post-competition stress influences recovery and will guide interventions tailored to individual athlete profiles.

REFERENCES

Buchheit, M. (2014). Monitoring training status with HR measures: Do all roads lead to Rome? Frontiers in Physiology, 5, 73.

Fletcher, D., & Sarkar, M. (2012). A grounded theory of psychological resilience in Olympic champions. Psychology of Sport and Exercise, 13(5), 669–678.

Gayman, A. M., Fraser-Thomas, J., Dionigi, R. A., & Baker, J. (2017). Is sport good for older adults? A systematic review of psychosocial outcomes of sport participation. International Review of Sport and Exercise Psychology, 10(1), 164–185.

Gould, D., & Maynard, I. (2009). Psychological preparation for the Olympic Games. Journal of Sports Sciences, 27(13), 1393–1408.

Hackney, A. C. (2006). Stress and the neuroendocrine system: The role of exercise as a stressor and modifier of stress. Expert Review of Endocrinology & Metabolism, 1(6), 783–792.

Halson, S. L. (2014). Monitoring training load to understand fatigue in athletes. Sports Medicine, 44(Suppl. 2), 139–147.

Kellmann, M., & Kallus, K. W. (2001). Recovery-stress questionnaire for athletes: User manual. Human Kinetics.

Kellmann, M., Bertollo, M., Bosquet, L., Brink, M., Coutts, A. J., Duffield, R., Halson, S. L., Mujika, I., & Beckmann, J. (2018). Recovery and performance in sport: Consensus statement. International Journal of Sports Physiology and Performance, 13(2), 240–245.

Lazarus, R. S., & Folkman, S. (1984). Stress, appraisal, and coping. Springer.

Marcora, S. M. (2009). Mental fatigue impairs physical performance in humans. Journal of Applied Physiology, 106(3), 857–864.

Martin, J. J. (2018). Psychological aspects of sport participation and performance. In T. S. Horn & A. L. Smith (Eds.), Advances in sport and exercise psychology (4th ed., pp. 3–24). Human Kinetics.

Nicholls, A. R., & Polman, R. C. (2007). Coping in sport: A systematic review. Journal of Sports Sciences, 25(1), 11–31.

Selye, H. (1956). The stress of life. McGraw-Hill.

Weinberg, R. S., & Gould, D. (2019). Foundations of sport and exercise psychology (7th ed.). Human Kinetics.