

From Emotion to Motion:

How Performing Arts Foster Injury Prevention Through Emotional Regulation

Written by Chaya Meyerson

In high-pressure environments where precision, control, and peak physical performance are expected, injury is often accepted as an inevitable part of training. Dancers, athletes, and performers push their bodies to the limit, frequently attributing injuries to overuse, fatigue, or technical error. However, this mindset overlooks a critical underlying factor: the mind's powerful influence on the body. Emerging research suggests that many injuries are not solely the result of physical strain but are deeply connected to the psychological processes, particularly stress and emotional dysregulation. When individuals experience heightened stress or anxiety, their cognitive functions, such as attention, decision-making, and spatial awareness, become compromised. This leads to impaired coordination and an increased likelihood of error. These disruptions can manifest physically as misaligned movements, delayed reactions, or poor technique, all of which significantly elevate the risk of injury.

Stress itself is not inherently harmful. In fact, it serves an adaptive purpose by preparing the body to respond to challenges. However, when stress becomes chronic, its effects on both the brain and body become increasingly detrimental. Prolonged activation of physiological systems, such as the autonomic nervous system and the hypothalamic-pituitary-adrenal (HPA) axis, can impair cognitive functioning, disrupt motor control, and contribute to physical exhaustion. As a result, the traditional separation between mind and body, called the Cartesian dualism, becomes inadequate and potentially harmful. Instead, it becomes essential to recognise that emotional states directly shape physical outcomes ([Van Winden D et al., 2020](#)).

To better understand why improvement in emotional regulation is crucial for athletes, it is necessary to understand how stress and anxiety affect the body. Every person experiences stress in their own way; however, research shows that stress typically occurs in three stages. The first is the initial alarm stage, during which the body responds to a perceived threat by releasing

adrenaline and activating the “fight-or-flight” response to prepare the body for immediate action. Although this response is intense, the body is generally capable of tolerating short-term stress while maintaining normal survival functions. The second stage is the resistance stage, in which the body attempts to adapt and cope with the stressor. The autonomic nervous system, central neurotransmitter systems and the hypothalamic-pituitary-adrenal (HPA) axis are all systems that help return the body to function while undergoing stress or strain. However, when stress becomes prolonged, the body can not regulate itself. The body eventually enters the third stage, the exhaustion stage, characterised by depletion of physiological resources and a reduced ability to maintain homeostasis (Zafar et al., 2021).

Beyond its physical effects, stress profoundly influences cognitive functioning, including perception, introspection, learning, attention, and decision-making. These cognitive processes are primarily mediated by brain regions such as the hippocampus and prefrontal cortex. The effects of stress on cognition vary depending on its duration, intensity, origin, and magnitude (Zafar et al., 2021). While short-term stress may sometimes enhance alertness and adaptation, chronic exposure is particularly harmful. The reasons it can become harmful are its association with impaired memory, reduced cognitive performance, and structural changes within the brain. Prolonged exposure to stress and anxiety may induce pathological changes in the brain, potentially contributing to developmental, cognitive, and mood disorders (Zafar et al., 2021).

These cognitive impairments have particularly serious implications for athletes for whom both mental focus and physical precision are essential. When athletes become overwhelmed by stress or can’t process their emotional stimuli, their ability to sustain attention, maintain spatial awareness, and execute precise motor movements may become significantly compromised. This cognitive interference can manifest in errors such as misjudging distance, losing balance, or

improperly timing movements. Beyond these immediate effects, prolonged emotional strain may create a persistent state of mental fatigue, ultimately increasing susceptibility to injury in athletes.

Research has shown that moderate levels of depression, anxiety, and chronic stress can have effects on cardiovascular health that are nearly as severe as disorders such as schizophrenia or bipolar disorder. One of the body's primary responses to stress involves the hormone cortisol, a steroid hormone produced in the adrenal cortex that stimulates the breakdown and release of stored energy through catabolism. Cortisol plays a major role in the body's "fight-or-flight" response, helping provide the energy needed during situations such as intense exercise or danger. However, when cortisol levels remain elevated for prolonged periods, excess glucose can accumulate in the bloodstream, contributing to negative health effects. When stress is perceived, the hypothalamus signals the pituitary gland, which releases hormones into the bloodstream that stimulate the adrenal glands to produce stress hormones such as cortisol and adrenaline. Chronic psychological trauma has been shown to dysregulate the HPA axis, further supporting the connection between mental and physical health. This relationship challenges the concept of Cartesian dualism, proposed by René Descartes, which argued that the mind and body function separately rather than as interconnected systems (Kendrick, 2021).

Given the significant cognitive and physical consequences of prolonged stress, the ability to effectively regulate stress becomes essential for athletes. Emotional regulation strategies can help reduce stress, improve mental resilience, and support both performance and overall well-being. Emotional regulation involves the ability to recognise, interpret, and manage one's emotional responses. This includes maintaining awareness of internal states, controlling stress and anxiety, and sustaining attention under pressure.

One key concept in this relationship is interoception. The main role of interoception is the sensory system that allows you to feel and interpret internal physical signals, such as your heartbeat, breathing, hunger, thirst, and the need to use the restroom. However, it has a lesser-known yet massive role in mental health and emotional awareness due to the connection between the physical sensations and emotions (Seabury et al., 2023). Some everyday examples of this are how to interpret your body's signals as emotions. For example, experiencing stomach tightening, breath becoming shallow, and palms getting sweaty could be an indication of anxiety and nervousness. Another example is shoulders slumping, limbs feeling unusually heavy, and feeling a tightness in the throat, which can indicate sadness or that you are overwhelmed. Learning how to listen to your body's signals and regulate your emotions is crucial for maintaining healthy levels of stress.

Interoceptive awareness also allows individuals to detect subtle changes in muscle tension, fatigue, and pain. This awareness is crucial for injury prevention, as it enables individuals to adjust their movements before damage occurs. For example, a dancer who senses early signs of muscle strain can modify their technique or reduce intensity, thereby avoiding a more serious injury.

New research shows that emotional regulation plays a crucial role in injury prevention by influencing cognitive clarity, bodily awareness, and movement precision. Elite athletes and performers are seen to have a high sense of proprioception, but a rather low sense of interoception, which has two main roles in the body (Seabury et al., 2023).

Research suggests that emotionally attuned individuals are more likely to notice physical discomfort and respond appropriately as opposed to those who are emotionally dysregulated and

may have higher stress levels, ignore or misinterpret their body's pain signalling, both of which increase their risk of injury (Smith et al., 2024). Furthermore, emotional states directly affect physiological processes such as heart rate, muscle activation, and hormonal responses. Chronic stress can lead to prolonged muscle tension and fatigue, while acute anxiety can trigger sudden, uncoordinated movements. These physiological changes disrupt the body's natural balance and increase the likelihood of injury (Smith et al., 2024)

At higher levels of performance, these challenges become even more pronounced. While elite athletes often demonstrate superior technical skill, their ability to remain mentally present under intense pressure is not always greater than that of lower-level athletes. In fact, research indicates that athletes competing at the international level may exhibit lower mind-body state mindfulness, as the capacity to stay fully engaged and aware during physical activity is lower compared to those at a lower level. This may reflect the increased psychological demands, expectations, and stress associated with elite competition. As a result, even highly skilled athletes can become more susceptible to distraction, leading to lapses in concentration, impaired coordination, and a heightened risk of injury. These findings further reinforce the critical role of emotional regulation and mindfulness in maintaining both performance quality and physical safety, particularly in high-pressure environments (Rogowska, 2024).

Dance, theatre, and other movement-based practices create a unique environment in which individuals must continuously integrate emotional expression with physical control. As previously mentioned, the Movin' & Groovin' for Wellness (MGW) program demonstrates through its dance improvement and drumming therapy that participants significantly enhance their mental health, creativity, and social connectedness. Participants in the experimental group showed notable reductions in depression and stress over time and maintained more stable mental

health compared to the control group, with improvements supported by moderate to large effect sizes. After the 10-week program, the students were evaluated and shown to have significant improvements in mental health, quality of life, and creativity, while the control group of the experiment experienced significant declines in mental health and quality of life over the same 10-week period (Agres and Chen, 2025). In addition, gains were observed in both physical and psychological well-being, alongside increased creative expression and stronger interpersonal relationships. This is because engaging in music and dance promotes physiological benefits such as reduced cortisol and increased endorphins, which help alleviate stress and improve mood. Together, they form room for students to have greater creative expression and social connection, which appear to act as key mechanisms driving improvements in mental health. Furthermore, participants reported applying skills learned during the program, such as using music for mood regulation, beyond the sessions, indicating lasting benefits (Agres and Chen, 2025).

The connection between performing arts training and injury prevention becomes clear when considering the combined effects of emotional regulation, interoception, and physical conditioning. Dance and movement-based practice improve interoceptive awareness, muscle control, and postural alignment, all of which are essential for safe movement.

A study completed on the Australian physical literacy framework is a lifelong journey of acquiring the skills, knowledge, and behaviours needed to engage in movement and physical activity, formed by the Australian Sports Commission. It focuses on holistic development rather than just athletic ability. Their framework argues that the performing arts, such as acting, dance, and circus, should be more fully integrated into physical literacy, which involves physical, cognitive, social, and psychological development. These movement-based arts support all four domains by combining physical activity with creativity, emotional expression, and social

interaction, while also promoting the transfer of skills to other areas of life. The author suggests that incorporating artistic practices into physical literacy programs and research could provide a more holistic understanding of human movement and development (Barnett, 2020).

Improved interoceptive awareness allows performers to detect early signs of fatigue or strain, enabling them to adjust their movements before injuries occur. Enhanced muscle control ensures that movements are executed with precision, reducing the likelihood of misalignment or excessive force. Proper postural alignment further supports efficient movement patterns, minimising stress on joints and muscles. These physical improvements directly reduce the risk of overuse injuries, misaligned movements, and delayed responses to pain. At the same time, emotional regulation contributes to better focus, reduced panic, and smoother coordination. Emotionally regulated performers are less likely to engage in sudden, uncontrolled movements or risky behaviours. Additionally, emotional regulation helps mitigate fatigue-related injuries. When individuals are stressed or emotionally overwhelmed, they are more likely to experience mental fatigue, which can impair decision-making and reaction time. By maintaining emotional balance, performers can sustain their focus and performance quality over longer periods.

The integration of these factors creates a comprehensive injury prevention framework:

Performing arts training → emotional regulation → body awareness → safer movement → lower injury risk.

This model highlights the interconnected nature of psychological and physical processes in determining injury outcomes. Studies have shown that dance interventions lead to reduced anxiety, improved emotional control, and increased psychological resilience (Koch, 2019). These benefits are particularly significant in high-pressure environments, where the ability to remain

calm and focused is essential. Through repeated practice, performers learn to regulate their emotions not just cognitively but physically, embedding these skills into their movement patterns. This concept of embodied emotional regulation is central to understanding the benefits of performing arts training. Unlike traditional approaches to emotional regulation, which often focus on cognitive strategies such as reframing or suppression, performing arts emphasise the integration of emotional and physical processes. As a result, emotional regulation becomes an automatic embodied skill rather than a deliberate effort.

Furthermore, theatre-based activities have been shown to enhance emotional awareness, contributing to improved self-regulation (theatrical activities in primary school). These skills are transferable to other contexts, including sports and everyday life, making performing arts training a valuable tool for overall well-being (Jiang et al.).

Research published in BMC Public Health indicates that individuals who engage in structured movement-based programs demonstrate better stress management and lower rates of injury-related behaviours. The study also suggests that by incorporating mental health screenings into athletic programs, schools can better recognise signs of psychological distress at an earlier stage. At the same time, balanced training programs that include proper recovery may help reduce burnout among student athletes. Mindfulness strategies and peer support networks can also provide students with additional tools to manage both academic and athletic demands (Ma and Mumtaz).

In education settings, incorporating performing arts into the curriculum could provide students with valuable tools for emotional regulation and body awareness. The previously-listed skills not only enhance performance but also promote overall well-being and reduce the risk of

injury in both artistic and athletic contexts by reducing their stress and anxiety levels and allowing for greater interoceptive accuracy.

For athletic and dance training programs, integrating emotional regulation strategies into warm-up and conditioning routines and rehabilitation programs can significantly improve outcomes. Techniques such as mindfulness, breath control, and movement-based awareness exercises can help performers develop greater control over their emotional and physical states.

Furthermore, there is a need for more longitudinal studies and controlled trials that examine the relationship between emotional regulation and injury rates over time. Such research would provide a deeper understanding of how these factors interact and inform the development of more effective training programs.

Performing arts training offers far more than artistic development; it provides a powerful framework for enhancing emotional regulation and preventing physical injuries. By fostering awareness of internal states, improving stress management, and promoting precise movement control, performing arts equip individuals with the skills necessary to navigate physically demanding environments safely.

The evidence presented in this paper demonstrates that emotional regulation is a critical factor in injury prevention. Performers who can manage their emotions effectively experience lower levels of stress, which then leads to improved coordination and great body awareness, all of which contribute to reduced injury risk. At the same time, performing arts training itself serves as an effective means of developing these skills, creating a positive feedback loop that enhances both mental and physical performance.

As such, performing arts should be recognised not only as a form of expression but also as a valuable tool for mental health and injury prevention. By integrating emotional regulation into training programs and educational curricula, it is possible to create a safer, more resilient performer. Ultimately, the performing arts are not just expressive; they are protective.

Work Cited

1. van Winden, Diana et al. "Limited Coping Skills, Young Age, and High BMI Are Risk Factors for Injuries in Contemporary Dance: A 1-Year Prospective Study." *Frontiers in Psychology*, Vol. 11 1452. 10 Jul. 2020, doi:10.3389/fpsyg.2020.01452
2. MacDonald, R & Wilson, G 2014, 'Musical improvisation and health: A review', *Psychology of Well-Being*, vol. 4, 20. <https://doi.org/10.1186/s13612-014-0020-9>
3. Agres, Kat R, and Yifan Chen. "The impact of performing arts on mental health, social connection, and creativity in university students: a Randomised Controlled Trial." *BMC public health* vol. 25,1 1628. 2 May. 2025, doi:10.1186/s12889-025-22552-3
4. Zafar, Muhammad Shahid, et al. "Impact of Stress on Human Body: A Review." *European Journal of Medical and Health Sciences*, vol. 3, no. 3, May 2021, doi:10.24018/ejmed.2021.3.3.821.
5. Seabury, Tom et al. "Interoceptive differences in elite sprint and long-distance runners: A multidimensional investigation." *PloS one* vol. 18,1 e0278067. 25 Jan. 2023, doi:10.1371/journal.pone.0278067
6. Smith, Ryan et al. "Improvements in mindfulness, interoceptive and emotional awareness, emotion regulation, and interpersonal emotion management following completion of an online emotional skills training program." *Emotion (Washington, D.C.)* vol. 24,2 (2024): 431-450. doi:10.1037/emo0001237

7. Rogowska, Aleksandra M., and Rafał Tataruch. "The Relationship between Mindfulness and Athletes' Mental Skills May Be Explained by Emotion Regulation and Self-Regulation." *BMC Sports Science, Medicine and Rehabilitation*, vol. 16, no. 1, 2024, article 68. Springer, <https://doi.org/10.1186/s13102-024-00863-z>
8. Koch, Sabine C et al. "Effects of Dance Movement Therapy and Dance on Health-Related Psychological Outcomes. A Meta-Analysis Update." *Frontiers in Psychology*, Vol. 10 1806. 20 Aug. 2019, doi:10.3389/fpsyg.2019.01806
9. Barnett, Lisa M et al. "Art Meets Sport: What Can Actor Training Bring to Physical Literacy Programs?" *International Journal of Environmental Research and public health* vol. 17,12 4497. 23 Jun. 2020, doi:10.3390/ijerph17124497
10. Jiang, Lulu et al. "Effectiveness of Drama-Based Intervention in Improving Mental Health and Well-Being: A Systematic Review and Meta-Analysis during the COVID-19 Pandemic and Post-Pandemic Period." *Healthcare (Basel, Switzerland)* vol. 11,6 839. 13 Mar. 2023, doi:10.3390/healthcare11060839
11. Ma, Yuxin, and Somna Mumtaz. "The long-term mental health benefits of exercise training for physical education students: a comprehensive review of neurobiological, psychological, and social effects." *Frontiers in psychiatry* vol. 16 1678367. 16 Sep. 2025, doi:10.3389/fpsyg.2025.1678367
12. Kendrick, M. (2021). *The clot thickens: The enduring mystery of heart disease*. Columbus Publishing Ltd.