REVIEW ARTICLE

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The Psychophysiological Impact of Emotional Suppression in Individuals with Trauma Histories

Feruza Ruzimova[1], Xulkar Kasimova[2], Saginova Aygerim Sisenbayevna[3], Niginabonu Khajiqurbonova[4], Maksadbek Babajanov[5], Saparbayeva Asaloy[6]

[1]*Department of Pedagogy and Psychology, Urgench State University, Urgench, Uzbekistan.*
[2]*Mamun University, Khiva, Uzbekistan.*
[3]*Department of Medicine, Urgench Mamun University, Urgench, Uzbekistan.*
[4]*Department of Clinical Subjects, Tashkent State Medical University, Tashkent, Uzbekistan.*
[5]*Department of Psychological Sciences, Mamun University, Khiva, Uzbekistan.*
[6]*Department of Psychology, Mamun University, Khiva, Uzbekistan.*

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Abstract

Background: Emotional suppression, defined as the deliberate restraint of emotional expression, is frequently utilized by people with post-traumatic stress disorder (PTSD). While it may offer momentary relief, its persistent application is connected to negative long-term psychological and health outcomes. Examining this process through a psychophysiological lens is crucial for understanding the biological mechanisms involved.
Objective: This review consolidates contemporary research on the psychophysiological features and repercussions of chronic emotional suppression in trauma-exposed groups, with particular attention to autonomic nervous system, neuroendocrine, and central nervous system activity.
Methods: A narrative synthesis of literature published between 2000 and 2025 was performed, sourcing articles from PubMed, PsycINFO, and Web of Science. Key search terms encompassed "emotional suppression," "trauma," "PTSD," "psychophysiology," and related physiological metrics.
Results: Robust evidence demonstrates that emotional suppression in trauma patients correlates with heightened and rigid sympathetic arousal (e.g., reduced heart rate variability), dysregulated HPA axis function, and a neural pattern of excessive prefrontal effort paired with sustained limbic reactivity. These physiological markers are associated with increased PTSD symptom severity and contribute to greater allostatic load and physical health comorbidities.
Conclusion: Emotional suppression constitutes a biologically costly form of regulation that intensifies physiological stress responses and may perpetuate trauma-related pathology. Clinical interventions should prioritize helping patients replace suppression with more adaptive, antecedent-focused emotion regulation strategies to foster comprehensive resilience.

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Correspondence:
Feruza Ruzimova
E-mail: FeruzaRuzimova@click.uz

Introduction

The sequelae of psychological trauma present a major test of human adaptive capacity. Although many exhibit resilience, a substantial proportion develop chronic conditions, most notably PTSD [1]. Current models of PTSD etiology emphasize significant impairments in emotion regulation—the strategies employed to manage the intensity and expression of emotional states [2, 3]. Within this regulatory spectrum, emotional suppression occupies a clinically important but contradictory position [4]. Frequently adopted by survivors to cope with intense feelings, it promises immediate control. Yet, psychological studies consistently classify it as maladaptive, associating it with aggravated PTSD symptoms, social impairment, and less favorable treatment results [5, 6].

A complete understanding of suppression's harmful role in trauma recovery requires moving beyond cognitive and behavioral effects to consider its somatic implications. The act of suppressing emotion is a psychobiological process that directly taxes the body's stress-response apparatus [7]. This review argues from a psychophysiological standpoint that the habitual inhibition of emotional expression serves as a persistent, low-level biological stressor. It activates neurobiological pathways in a manner that sustains the very hyperarousal and threat vigilance it aims to reduce. We amalgamate evidence illustrating how suppression compromises autonomic equilibrium, disrupts the HPA axis, and signifies inefficient neural functioning in brains affected by trauma. This physiological strain ultimately elevates allostatic load, fueling the comorbid physical illnesses—including cardiovascular and immune disorders—disproportionately prevalent among trauma survivors [8, 9]. By integrating autonomic, neuroendocrine, and neuroimaging research, this review seeks to clarify the mechanisms through which a common coping tactic evolves into a central perpetuating factor in post-traumatic pathology, thereby identifying key targets for embodied, biobehavioral treatment.

Methods

A narrative review approach was used to synthesize cross-disciplinary knowledge. Searches were performed in PubMed, PsycINFO, and Web of Science for articles published from January 2000 to March 2025. Principal search terms and combinations included: "emotional suppression" OR "expressive inhibition" AND "trauma" OR "PTSD" AND "psychophysiology" OR "autonomic" OR "heart rate variability" OR "cortisol" OR "fMRI." The reference lists of obtained articles were also examined for additional pertinent studies.

Inclusion criteria were: (1) empirical studies or meta-analyses examining emotional suppression or related constructs in traumatized adults or those with PTSD; (2) studies incorporating at least one objective psychophysiological measure; (3) English-language articles in peer-reviewed journals. Foundational theoretical papers and reviews on emotion regulation were also included. Over 90 articles were initially identified, with 40 selected for detailed synthesis based on methodological quality and direct relevance to the psychophysiological thesis.

Results

Autonomic Nervous System Dysregulation

Individuals with trauma histories who habitually suppress emotions exhibit autonomic inflexibility and elevated sympathetic activation. During laboratory-based trauma reminders or negative emotion tasks, suppression is reliably associated with increased heart rate and blood pressure relative to non-suppressors or those using strategies like reappraisal [10, 11]. Notably, studies find reduced heart rate variability (HRV), particularly high-frequency HRV—an important indicator of parasympathetic (vagal) cardiac influence [12, 13]. This low HRV during suppression signifies physiological rigidity and impaired regulatory capacity, a key feature of PTSD [14]. Research on electrodermal activity supports this, showing higher skin conductance levels during suppression attempts, reflecting greater sympathetic nervous system engagement [15]. This pattern suggests suppression prevents the natural resolution of an emotional response, maintaining the body in a state of preparatory arousal [16].

Neuroendocrine and Allostatic Load Consequences

The influence of suppression extends to the HPA axis. While PTSD is often linked to hypocortisolism at baseline, the *process* of suppression can trigger acute cortisol rises [17, 18]. More importantly, chronic suppression is involved in disrupting diurnal cortisol rhythms, such as flattened slopes, which is predictive of poorer PTSD treatment outcomes [19]. This dysregulation contributes to **allostatic load**—the cumulative physiological damage from chronic stress [20]. Research connects habitual suppression to elevated inflammatory markers and impaired immune function in trauma survivors, creating a pathway from psychological strategy to heightened physical disease risk [21, 22].

Central Nervous System Correlates

Neuroimaging studies reveal the neural inefficiency of suppression. Effective suppression typically involves increased activity in prefrontal control regions (e.g.,

dorsolateral prefrontal cortex) and decreased activity in emotion-generative areas like the amygdala [23]. However, in PTSD, this pattern is frequently disrupted. Trauma patients demonstrate hyperactive amygdala responses to threat and reduced medial prefrontal cortex (mPFC) activation, which is vital for fear extinction and emotion modulation [24, 25]. When these individuals attempt suppression, neuroimaging suggests they expend greater prefrontal effort to achieve weaker amygdala downregulation, resulting in a high cognitive cost for minimal emotional relief [26, 27]. This neural struggle may explain the profound exhaustion reported by those who frequently suppress.

Clinical and Behavioral Correlates

Psychophysiological findings align directly with clinical presentation. Greater reliance on suppression predicts higher PTSD symptom severity, especially for hyperarousal and avoidance clusters [28, 29]. It interferes with exposure therapy, as suppressing fear during trauma memory activation hinders emotional processing and habituation [30]. Socially, suppression's dampening of nonverbal cues impairs communication and reduces social support seeking—a critical resilience factor [31]. This establishes a vicious cycle: suppression → increased physiological stress and social isolation → worsened PTSD → greater dependence on suppression.

Discussion

This review compiles substantial evidence that emotional suppression in trauma patients is not merely a cognitive tendency but a biologically ingrained, maladaptive process with clear psychophysiological signatures. The aggregated data strongly support a model in which suppression acts as a chronic internal stressor, keeping the organism in a prolonged state of defensive readiness. The convergent findings—sympathetic overactivity, vagal withdrawal, HPA axis disturbance, and inefficient top-down neural control—depict a coherent picture of a body under constant, self-imposed duress [32, 33].

This model aligns with established theoretical frameworks. The Allostatic Load Model offers a macro-level explanation for how sustained neuroendocrine and cardiovascular activation from chronic suppression accelerates physiological deterioration, raising the risk for systemic disease [34, 35]. Simultaneously, Polyvagal Theory provides a mechanistic view, proposing that the effortful inhibition of emotional expression may hinder the ventral vagal complex—the neural foundation for social engagement and calm—thereby reinforcing a defensive autonomic state dominated by sympathetic drive [36, 37].

The clinical implications are significant. First, this supports the use of physiological biomarkers like ambulatory HRV for assessment and monitoring, offering objective indicators of a patient's suppressive habits and associated autonomic burden [38]. Second, it underscores the imperative to integrate body-focused and bottom-up interventions into standard trauma care. Purely cognitive therapies risk encouraging further suppression if underlying physiological dysregulation is not addressed. Interventions such as Heart Rate Variability Biofeedback directly train the autonomic nervous system to enhance parasympathetic tone and restore flexibility, reducing the core arousal that fuels suppression [39, 40]. Similarly, somatic experiencing, sensorimotor psychotherapy, and mindfulness-based interventions enhance interoceptive awareness and cultivate acceptance of bodily sensations [41, 42]. These approaches facilitate a *shift from suppression to somatic awareness*, allowing emotional states to be processed through the body rather than cognitively restrained, which is crucial for resolving truncated defensive responses held somatically after trauma [43].

Context is important. Suppression is not inherently pathological; as part of a flexible regulatory toolkit, it can be situationally adaptive [44]. The pathology emerges from its rigidity and pervasiveness—when it becomes the automatic, default response for a trauma survivor with already sensitized physiological systems. Furthermore, the suppression-physiology relationship is likely bidirectional and complex. Pre-existing biological vulnerabilities, potentially stemming from early adversity, may predispose individuals to rely on suppression as a necessary, albeit costly, method for managing overwhelming arousal [45, 46].

Limitations exist in the field. Most cited studies are cross-sectional or lab-based, which, while valuable for establishing mechanisms, cannot definitively prove causality or capture naturalistic dynamics [47]. Future research should prioritize longitudinal studies tracking psychophysiological changes from pre- to post-trauma or throughout therapy. Additionally, the predominant focus on suppressing high-arousal negative emotions overlooks the potential role of suppressing positive emotions in conditions like anhedonia [48]. Methodologically, combining Ecological Momentary Assessment (EMA) with wearable sensors is a promising frontier for examining real-time links between suppression and physiology in daily life [49]. Finally, more randomized trials are needed to test whether interventions aimed at reducing suppression lead to normalization of the psychophysiological profiles described here and whether this mediates clinical improvement [50].

Conclusion

From a psychophysiological viewpoint, emotional suppression in trauma patients is a biologically taxing regulatory effort. This strategy, intended to control the internal experience of trauma, inadvertently sustains a state of physiological distress that reinforces core PTSD symptoms and compromises long-term physical health. This embodied understanding necessitates that effective trauma therapy move beyond purely verbal and cognitive domains. It must actively help repair the mind-body connection, assisting patients in developing a compassionate awareness of their physiological states and fostering regulation strategies that promote, rather than deplete, autonomic coherence and resilience. Recovery from trauma, therefore, may depend not only on processing past events but also on learning to inhabit the present body with greater acceptance and flexibility.

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The authors contributed to the data analysis. Drafting, revising and approving the article, responsible for all aspects of this work.

Conflict of Interest

None

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