Chapter 4
What Trauma Does to My Body: Post-Traumatic Stress Disorder and Physical Activity

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ABSTRACT

Traumatic experiences, either as a result of catastrophic or daily events, can greatly and negatively interfere with a person's normal life. PTSD shows a unique feature of having a simultaneous presence of arousal and numbing responses, which leads to persistent and complex symptoms, usually explored and processed through common therapies such as cognitive behavioral therapies or trauma focused therapies, among others. However, these therapies, although showing great improvements, show low success in long-term for the treatment of PTSD symptomatology and patients frequently discontinue treatment. This chapter compiles scientific literature that supports and shows evidence that the introduction of body-oriented therapies as adjunct treatment supports positive results in the treatment of PTSD symptoms as it directly intervenes with the natural neurobiological body responses to trauma. Physical activity positively interferes with Brain-Derived neurotrophic factors levels, reshapes disturbed stress responses due to trauma, and supports patients to start adequate psychotherapy treatment.

INTRODUCTION

An adult may struggle with constant flashbacks of being bullied at school at the age twelve. A health-care professional feels the unpleasant touch sensation of a patient who has inappropriately touched their body, months after the incident occurs. A person can move to a different country, and recognize other people's similarities with those who have caused them emotional and/or physical pain. It is common that patients facing the word "trauma" for the first time in therapy feel uncomfortable and even concerned about the future limitations of having this condition. Some might even not agree, since the situation they were exposed to seemed so distant and insignificant after explained outload, or because the threatening situation didn't happen to them but to someone they know. It is important to recognize that although a

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traumatic event is considered time-based, feeling limited from living a normal life in the long-term, due to the traumatic event, can lead to post-traumatic stress disorder.

Post-traumatic stress disorder (PTSD), is very commonly perceived has something far away from the common reality, and is usually associated to war zones and sexual abuse. In fact, PSTD might appear in different contexts and from different situations, independent of gender, race, and socioeconomic status (Parker, 2018), and everyday traumas are as important as the catastrophic events (Cvetkovich, 2003). From a parent that loses their child, to disaster survivors, jurors, medical patients and professionals, road accident survivors, homeless population, elderly people, epidemic and pandemic survivors, people exposed to inter-family violence victims/survivors, racial and political disparities, and domestic violence, along with caregivers, youths in residential care, and even as a result of insecure attachment and/or neglect during childhood (Oppizzi et al., 2018; *Neuroscience Research Australia (NeuRA) Foundation*, 2021). According to the Neuroscience Research Australia Foundation (NeuRA) (*Neuroscience Research Australia (NeuRA) Foundation*, 2021), PTSD has a worldwide prevalence in the general population of around 3.9%, which can represent a total of 313.767.148 people in the world, with a lifetime prevalence estimated between 5% and 10% within the general population (S Rosenbaum et al., 2015).

Every diagnosis of PTSD comes from the occurrence of a traumatic event, whatever it is, from which the person keeps re-experiencing distressing memories or images of the traumatic event. It is accompanied by prolonged negative changes in affective state or mood, and the person seems unable to recover from and continue to live a normal life. The responses that come out of these traumatic events are defined in four components: negative thoughts, avoidance or numbing, re-experience, and hyperarousal (Oppizzi et al., 2018). These four defining components of PTSD involve reactions to intense fear, such as: negative affect, relieve of the traumatic situations through flashbacks, nightmares, and intrusive memories, intense psychological suffering, avoidance to potential external and internal triggers, easy trigger with negative cognitive and mood changes, and alterations in the person's reactivity to events, as explained by the same authors. PTSD shows a unique feature of having a simultaneous presence of arousal and numbing responses (Dunleavy & Slowik, 2012) and the imbalance between stressors and available resources leads to high prevalence of depression, anxiety disorders, sleep disorders, substance abuse disorder, social and relational dysfunction, dissociative-personality disorder, suicide attempts, problems with cognitive performance, fatigue, lack of motivation, dissociation, and inability to stay focused and present, due to hypervigilance (Andrea et al., 2011; Dunleavy & Slowik, 2012; Ekblom & Bjorkman, 2022; Langmuir et al., 2012; Ley et al., 2018; Mastropieri et al., 2015; Rosenbaum et al., 2022; Stevens & McLeod, 2018). PTSD can be attributed to disturbances in cognitive systems, including alterations in attention, perception, judgment, and memory (Bomyea et al., 2017). Gender wise, it is known that women have four times more propensity to develop PTSD after a traumatic event, compared to men, and there are different expressions of symptoms, intensity and frequency, being more intense and with greater longevity for women (Levine et al., 2015).

PTSD, MEMORY, AND BODY

Scientific research has shown that traumatic events are stored as procedural memory, which involve responses that are unconscious, resistant and easily triggered by internal and external cues (Langmuir et al., 2012). The same authors explain that overall, the symptoms are accompanied with physiological responses - a common pathway used by the brain to directly communicate its functional needs of sur-