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A systematic review of somatic intervention treatments in PTSD: Does Somatic Experiencing® (SE®) have the potential to be a suitable choice?

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Abstract

The psychophysiological substrate of Post-traumatic stress disorder (PTSD) is associated with deregulation of neural networks involving mind-body interaction and is the subject of considerable research. It has been managed using pharmacological treatment associated or not with complementary treatments. The aim of this study was to systematize the knowledge about the types and effectiveness of complementary treatments using somatic interventions in the PTSD setting. According to the revised literature, the complementary approaches are based on Somatic Experiencing®, meditation and brainspotting techniques, and are anchored in the search for regulating the underlying neural mechanisms. However, there is little scientific production on these treatments, despite the positive clinical impact of their results, particularly for Somatic Experiencing®, which has presented good results. For the authors, further controlled trials involving improvement of symptoms and their association with possible biological markers are necessary to corroborate the efficacy of this therapy.

Keywords: post-traumatic stress disorder; complementary treatments; somatic interventions; Somatic Experiencing®.

Resumo

Uma revisão sistemática de tratamentos de intervenção somática em PTSD: a Experiência Somática® tem o potencial para ser uma escolha adequada? O transtorno de estresse pós-traumático (TEPT),cujo substrato psicofisiológico é associado à desregulação de redes neurais que envolvem a interação mente-corpo, é objeto de muitas pesquisas e vem sendo manejado usando tratamento farmacológico associado ou não a tratamentos complementares.O objetivo desse estudo foi sistematizar o conhecimento sobre os tipos e eficácia de tratamentos complementares que utilizam intervenções somáticas no quadro do TEPT. Segundo a literatura revisada, as intervenções somáticas são baseadas em técnicas de experiência somática, meditação, brainspotting e estão ancoradas na busca da regulação dos mecanismos neurais subjacentes. Todavia, constatou-se baixa produção científica destes tratamentos, apesar do impacto clínico positivo de seus resultados, particularmente para experiência somática® que apresentou bons resultados. Para os autores, mais estudos controlados envolvendo melhora dos sintomas e sua associação a possíveis marcadores biológicos são necessários para corroborar a eficácia desta terapia.

Palavras-chave: transtorno de estresse pós-traumático; tratamentos complementares; intervenções somáticas; experiência somática®.

Resumen

Una revisión sistemática de tratamientos de intervención somática en el trastorno de estrés postraumático: ¿tiene la experiencia somática® el potencial de ser una opción adecuada? El trastorno de estrés postraumático (TEPT), cuyo sustrato psicofisiológico está asociado a la desregulación de redes neuronal que involucran la interacción mente-cuerpo, es objeto de muchas investigaciones y viene siendo manejado usando tratamiento farmacológico asociado o no a tratamientos complementarios. El objetivo de este estudio fue sistematizar el conocimiento sobre los tipos y la eficacia de los tratamientos complementarios que utilizan intervenciones somáticas en el trastorno de estrés postraumático. De acuerdo con la literatura revisada, las intervenciones somáticas se basan en técnicas de experiencia somática, meditación, braquines y están ancladas en la búsqueda de la regulación de los mecanismos neurales subyacentes. Sin embargo, se constató baja producción científica de estos tratamientos, a pesar del impacto clínico positivo de sus resultados, particularmente para la experiencia somática®, que presentó buenos resultados. Para los autores, más ensayos controlados involucran la mejora de los síntomas y su asociación a posibles marcadores biológicos son necesarios para corroborar la eficacia de esta terapia.

Palabras clave: trastorno de estrés postraumático, tratamientos complementarios, intervenciones somáticas; experiencia somática®.

Post-traumatic stress disorder (PTSD) has been extensively studied since the confirmation of its diagnosis in DSM-III in 1980. Research on PTSD broadened its diagnostic criteria after the DSM-IV and DSM-5 revisions in 1994 and 2013, respectively. PTSD is characterized by the development of symptoms after exposure to one or more traumatic events, and can be classified as developmental trauma directly related to the life history of an individual, or the shock trauma caused by an isolated threatening event easily encountered in one's everyday environment. PTSD has three classifications regarding its onset: acute onset, chronic onset, and late onset. Symptoms in the acute form of PTSD last less than 3 months. Chronic PTSD is characterized when symptoms last for a minimum of 3 and a maximum of 6 months, while symptoms in delayed-onset PTSD appear only after at least 6 months after the traumatic event (American Psychiatry Association [DSM-5], 2013).

Both drug and psychological treatments have been used after the 2013 revision of PTSD diagnosis (Reis, Motoki, & Neto, 2013). However, there are a number of little-known somatic intervention approaches that can mitigate PTSD symptoms (Barnes, Rigg, & Williams, 2013; Corrigan & Grand, 2013; Dahm, et al., 2015; Fuzikawa, 2015; Payne, Levine, & Crane-Godreau, 2015; Polusny et al., 2015; van der Kolk et al., 2014). Psychological vulnerability before any traumatic event is as important as the related trauma. Family history of child abuse, substance abuse, and traumatic exposure to war and urban violence are social factors which contribute to the development of PTSD. Considerable evidence also demonstrates that men and women respond differently to stressors in terms of behavioral outcomes by the activation of the Hypothalamic-Pituitary Adrenal (HPA) axis and the sympathetic nervous system (McEwen, Gray, & Nasca, 2015). This revision has the aims to present current scientific knowledge on the efficacy of as yet complementary treatments using somatic interventions to combat post-traumatic stress disorder and the respective impacts on the clinical evolution of PTSD. These studies provide updated information on the use of these complementary therapies applied to treat PTSD. Moreover, to characterize them in terms of the respective clinical picture and types of somatic approaches which aim at body awareness. The somatic techniques associate sensitive, cognitive, motor and affectional factors, recruiting the main brain areas involved with the neural circuitries of PTSD. The attention toward sensations enables better connection and understanding in the direction of interoceptive processes and their relationships with the external environment. These are usually experienced through muscular and breathing movements (Haase et al., 2015).

This review started with the hypothesis that the combined application of drug and psychological therapies is not a common practice, since most patients are prescribed drugs alone (Druss, 2010), indicating a predominance of these types of interventions over their psychological counterparts. As such, applying both therapies could be more efficient in patients who are exhibiting severe and persistent symptoms. In this context, somatic experience® emerges as an important tool to be explored in relation to increasing the use of mind-body approaches to balance the neural mechanisms involved in PTSD symptoms improvement.

Method

A systematic review was conducted between January 2010 and June 2018 in a number of databases, including Google Scholar, SciELO, Web of Science and Pubmed/Medline regarding the types and efficacy of treatments for post-traumatic stress disorder that use complementary conducts. The search was directed using the following keywords: post-traumatic stress disorder and treatments, psychotherapeutic treatments and PTSD, PTSD and complementary treatments for articles published between 2010 and 2018, as well as any updated data since the last revision found in the literature.

The review was performed by three researchers. The first and third authors were in charge of searching, analyzing and summarizing the articles. The third author guided and revised all the text. Articles in Portuguese, Spanish and English were included. Articles containing only conventional psychotherapeutic treatments such as those using Cognitive-behavioral therapy and Dynamic psychotherapy were excluded. There was no randomized data due to the small number of articles which met the criteria. The articles were similar at baseline regarding the most important prognostic indicators and the eligibility criteria. Thus, the number of eligible articles was insufficient to perform a meta-analysis.

Results

According to the articles analyzed and summarized in the present revision, somatic intervention approaches have seldom been used in clinical medicine

despite their important efficacy in treating war veterans and civilians diagnosed with PTSD. Psychological therapy studies are primarily conducted on men, despite the fact that PTSD is twice as prevalent in women. Moreover, evidence indicates that men and women respond differently to stressors in terms of behavioral outcomes, activation of the HPA axis and the sympathetic nervous system (Larsen, 2016).

Data on study selection, classification and criteria are presented in the flowchart (Figure 1).

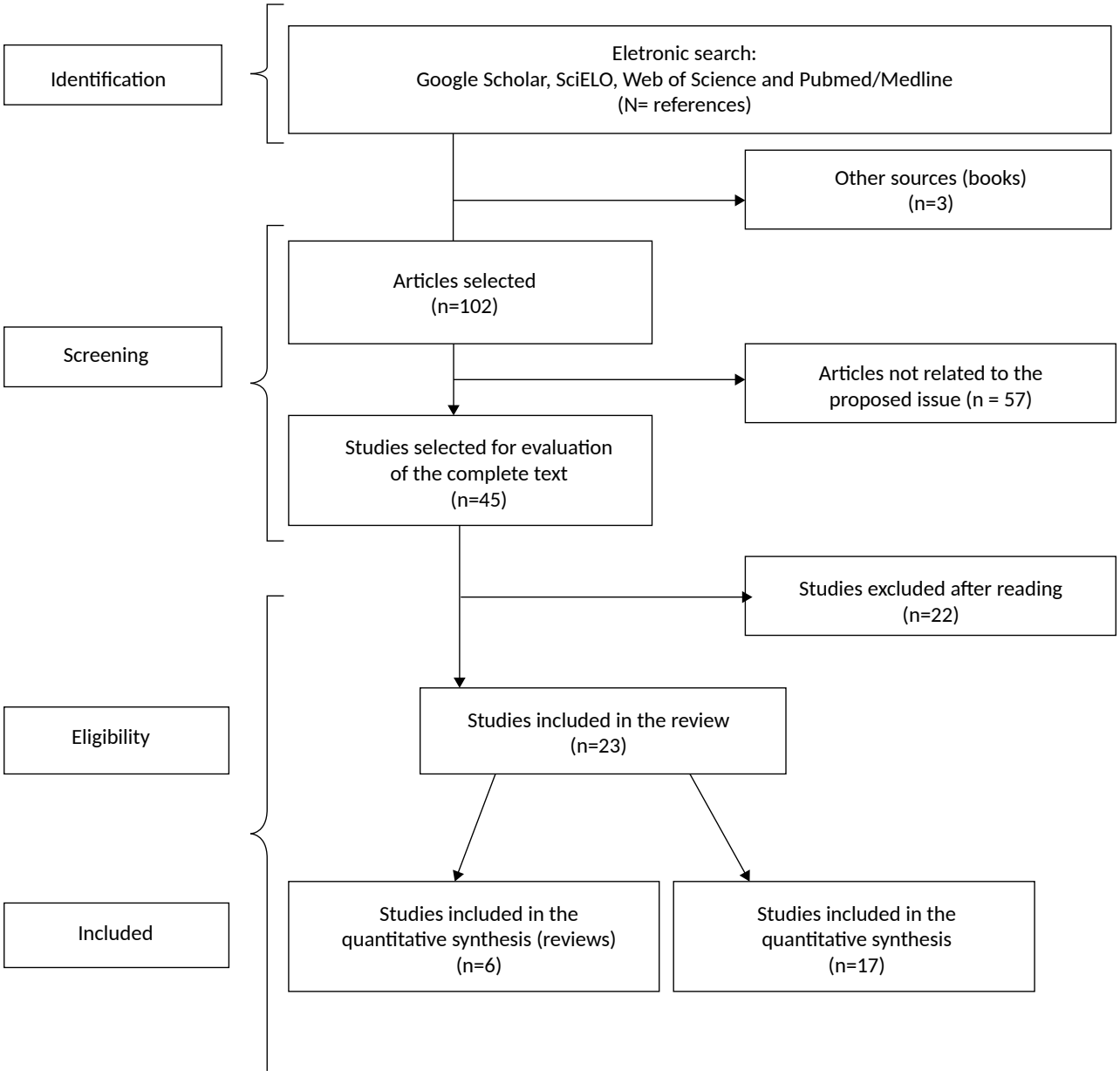

Figure 1. Flowchart: Study Selection. Registrations Identified between 2010 and 2018.

Six systematic reviews were found between 2012 and 2018, one in Portuguese and five in English. The first was conducted by Libby, Pilver and Desai (2012) and aimed at somatic intervention treatments for PTSD, suggesting the combined use of somatic and drug therapies. The second was by Reis et al. (2013) and limited to Brazilian studies, discussed the types of somatic interventions and the importance of providing more efficient treatment to patients with PTSD. As such, the authors underscore the need for both

somatic intervention and drug follow-up. This review demonstrated that 20% of follow-ups contained combined therapy, 25% somatic interventions and the remaining 55% were not specific. The review also highlights the scarcity of studies in Brazil.

The third review was by Fodor et al. (2014) and discussed the extent of research on the issue. Corroborating the previous article, it described the lack of studies in Brazil, accounting for only 1% of scientific production, and the fact that research is more concentrated in North America (50%) and Europe (20%).

The three other reviews showed that Yoga contributed to a significant overall reduction in PTSD symptoms by about 60%. The findings suggest that meditation and yoga are promising complementary approaches in treating PTSD among adults and warrant further study, although many studies are limited by methodological weaknesses. Recent publications have evidenced increasing rigor and treatment combination, with the results for mindfulness, yoga, and relaxation looking promising.

For instance, in the fourth revision, the efficacy of a yoga intervention employing yoga postures in a variety of traumatized populations (e.g., veterans, survivors of childhood abuse and interpersonal violence, and survivors of natural disasters) was examined in relation to improving PTSD symptomatology utilizing a validated PTSD assessment. Yoga could potentially be a viable alternative treatment for PTSD for several reasons such as benefits of behavioral and cognitive performance, causing a decrease of intrusive symptoms (Sciarrino, DeLucia, O'Brien, & McAdams, 2017).

In the fifth revision conducted by Gallegos, Crean, Pigeon and Heffner (2017), the effects of yoga on PTSD had a minor impact and were comparable to mindfulness and meditation approaches. These results indicate that somatic approaches to treating PTSD such as meditation or yoga had a moderate effect on the symptoms among veterans and non-veterans. These results indicate that both complementary therapies increase patient availability of options for other complementary treatments for PTSD. According to the authors, limitations of the revision include the small number of studies available to conduct some of the moderator analyses.

Finally, in the sixth review (Niles et al., 2018), the designated studies using mindfulness, yoga, and relaxation provide support for somatic treatments for PTSD. Mind-body interventions may give patients the opportunity to manage their emotional skills related to negative physical and emotional states for individuals with PTSD. In this review, a Pilot study using completer analyses was evaluated, in which the post treatment assessment indicated that those who performed yoga had significantly greater reductions in self-reported PTSD than the waitlist control, with a small to moderate effect size. Another study showed that significant and lasting benefits were noted following a short period of time in a small study which examined Sudarshan Kriya yoga, a breathing-based meditation. A study that examined relaxation in comparison to three other active treatments (prolonged exposure, cognitive restructuring, and the two combined) found large treatment effects on both self-reported and clinician-assessed PTSD for all four treatments.

Recommendations for designing future mind-body trials are offered by different authors such as randomized controlled trials (RCT) vs. uncontrolled trials. Another important contribution from these reviews shows that complementary therapies using somatic interventions are increasing in PTSD patients. Recent use estimates a range from 26% to 39% in PTSD populations.

The types and efficacy of somatic intervention treatments, sample characteristics, and pertinent observations regarding somatic interventions collected from the non-revision studies are shown in Table 1. With respect to treatments aimed at somatic interventions processes, six techniques were identified: Somatic Experiencing®, mindfulness, brainspotting, yoga, transcendental meditation and the use of mantras. All of these exhibited positive results with an average of between three and twenty sessions, and 44.1% to 90% improvement in PTSD symptoms.

Table 1. Types and Efficacy of Complementary Somatic Treatments.

Type of psychotherapy	Type of study	Sample characteristics: Sample number/ nationality/sex	Positive effect (s) on reducing symptoms	Reference (s)	Observations
Somatic Experiencing®	Case studies	1. Man (n=1) 4 sessions; 2.Woman (n=1) 15 sessions	90%	Payne, Levine, & Crane-Godreau, 2015. Bonzon, 2013	Body symptoms are understood as a nervous system survival response and it becomes coping strategies for patients. Therapy reduces medication.
	Randomized controlled outcome study	3.Men (n=31) Women (n=32) / 15 sessions	44.1% absence of symptoms of PTSD	Brom, Stokar, Lawi, Nuriel-Porat, Ziv, Lerner,... Ross, 2017	Further studies look at SE effectiveness on more specific groups such as military trauma, sexual assault, and complex trauma.
	Randomized Controlled Trial	4.Cohort of patients (n = 1045)	Reduction of the number of PTSD symptoms compared with TAU	Andersen, Lahav, Ellegaard, & Manniche, 2017	A brief additional SE intervention was found to have a significant effect on PTSD and fear of movement compared to TAU alone.
Mindfulness	Study group	1.Men (n=58) 9 sessions	49% during treatment, 53% 2 months later	Polusny, et al, 2015	Study conducted with control group (n=58).
	Comparing group mindfulness-based psychotherapy against group present-centered psychotherapy	2.Groups (n=4 of 20 men) 8 sessions	75%	Dahm, Meyer, Neff, Kimbrel,Gulliver, & Morissette, 2015	Study conducted with control group (n=17).
		3. Men (n=116) Veteran's Association participants	No difference between the treatment and control group	Lee & Hoge, 2017	Mindfulness may provide one modality that supports the relaxation component of PTSD treatment but should remain no more than adjunctive to established evidence-based treatments.
Brainspotting	Group study	1.Men and women (n= 22 men and women) /3 sessions 2. Total sample=76 (men and women)	90% Reduction of the number of PTSD symptoms	Fuzicawa, 2015.	Indicate brainspotting as promising new approach psychotherapy for trauma treatment
	Longitudinal study (with two comparison groups)	2.1. *EMDR (n=23) 2.2. **BSP(n=53) 3 sessions	Both, EMDR and BSP were successful in treating clients with traumatic experiences	Hildebrand, Grand, & Stemmler, 2017.	More research is needed to replicate the results and to evaluate effects in different samples e.g., clients with substance use disorders and comorbid
Yoga	Study group	1.Women (n=64)/ 10 sessions;	52%	van der Kolk et al., 2014.	Study on interpersonal violence in women
		2. Women (n=64)/ 12 sessions.	50%	Mitchell et all, 2014	Holistic treatment program for veterans
		3.Couples (n=149)/ 8 sessions	60%	Monk, Ogolsky, & Bruner, 2016.	Despite limitations, the results of the study offer a number of useful findings for both research and practice
	Qualitative Descriptive analysis	4.Women (n=31)/ 10 sessions	Some participants recognized a greater ability to tolerate trauma-related stimuli and verbally express themselves	West, Liang, & Spinazzola, 2017.	Study related to chronic childhood trauma
Transcendental meditation	Study group	Men (n=74) Regular meditation for one month	83.7%	Barnes, Rigg, & Williams, 2016.	Study performed with a control group. Therapy reduces medication use

continue...

Table 1. *Continuation*

Type of psychotherapy	Type of study	Sample characteristics: Sample number/ nationality/sex	Positive effect (s) on reducing symptoms	Reference (s)	Observations
Mantra	Randomized ClinicalTrial	Men (n=173) veterans diagnosed with military-related PTSD 1. The mantram group (N=89) 2. The comparison group (N=84) Both treatments were delivered individually in eight weekly 1-hour sessions.	Greater reductions in PTSD symptom severity and insomnia for veterans compared with present-centered therapy.	Bormann, Thorp, Smith, Glickman, Beck, Plumb, Zhao, ... Elwy, 2018.	Significantly greater improvements in CAPS**** score than the present-centered therapy.

Note. *EMDR- Eye movements desensibilization and reprocessing; **BSP – Brainspotting; *** (TAU) - Treatment-as-usual for patients with chronic low back pain. This treatment consisted of supervised exercises for low back pain delivered in 4–12 sessions and performed by physiotherapists in the Centre or in primary sector clinics according to the European guidelines for the management of chronic low back pain; **** CAPS - Clinician-Administered PTSD Sca

Somatic Experiencing® guides the patient's attention towards an interoceptive, synesthetic and proprioceptive experience. Three studies are available in the literature using SE® . According to Levine (2015), inwardly-directed attention, in addition to the use of synesthetic and interoceptive images, may resolve chronic and traumatic stress symptoms, thereby increasing an individual's resilience and well-being. Sensory experiencing has proven to be an effective approach to intervene in complex trauma (Rossi & Neto, 2013).

Two case studies, one using one man, and the other one woman, show that practicing SE® is an important complement for both cognitive and exposure therapies (Payne et al., 2015) and to reduce the use of medication (Bonzon, 2013), respectively (Table 1).

In the study by Brom et al. (2017), the enrolled participants presented a wide variety of traumatic events triggering PTSD in Israel, including vehicle accidents, assault cases, and terrorist attack cases of death or injury of a family member, cases of medical trauma, and combat and threat cases. The intervention was conducted during a period of ongoing collective trauma and unsafety due to political unrest in Israel, which included toward and ongoing terrorist attacks. The results presented in this study showed a large positive size effect with a large effect size for all cases (Table 1).

A brief additional SE® intervention was found to have a significant effect in patients who were under management of chronic low back pain that met the criteria for possible sub-clinical or clinical PTSD as measured by the Harvard Trauma Questionnaire part IV, between 18-65 years of age (Andersen, Lahav, Ellegard, & Manniche, 2017) (Table 1).

Three studies were found that used occidental meditation as mindfulness using groups of patients suggesting a reduction of PTSD symptoms (Dahm et al., 2015; Lee & Hoge, 2017; Polusny et al., 2015). One study conducted with Afghanistan veterans at nine weekly group sessions focused on their current life problems (Polusny et al., 2015), in which subjects were assessed before, during and after two months of treatment, and around 50% of PTSD symptoms were demonstrated to have been reduced.

In the second study, self-reports confirmed a 53% improvement in the severity of PTSD symptoms (Dahm et al., 2015). However, no differences between the treated and control groups were demonstrated in the third study (Lee & Hoge, 2017) (Table 1).

In relation to mindfulness, this technique involves awareness, attention and memory, and its practical proposal is to continuously identify one's own feelings, emotions and thoughts in an attempt to remove those regarding the trauma. In this respect, individuals concentrate on what they are doing or feeling and are aware of the evolution of their body and behaviors. This requires them to shift from a reactive mind and from automatic and unconscious responses to conscious ones (Vásquez-Dextre, 2016).

Only two articles were found on brainspotting (Fuzikawa, 2015; Hildebrand, Grand, & Stemmler, 2017), an approach created by the psychotherapist David Grand in 2011. The article describes its development, principles and clinical use, in addition to neurobiological

hypotheses and a preliminary clinical study. It was conducted with individuals diagnosed with PTSD in order to assess the efficacy of the technique, which seems to combine knowledge of Somatic Experiencing® and EMDR (eye movement desensitization and reprocessing). International publications describe the therapy as a rapid and effective strategy (Fuzikawa, 2015). However, there are no empirical studies on the efficacy of brainspotting, in addition to the aforementioned preliminary study since, as in SE®, these results are generally presented in books and at congresses (Hildebrand et al., 2017) (Table 1).

The body interventions of these new somatic approaches also use ancient techniques such as yoga, and have been used with a complementary treatment for post-traumatic stress disorder. It is known that trauma affects body physiology and that its memories are somatically stored. The authors concluded that yoga can improve the functioning of traumatized individuals, helping them tolerate physical and sensory experiences of fear and associated impotence. The studies provided insight into how participants felt the practice of yoga led to benefits in their lives on and off the yoga mat, such as the power to make choices and determine the direction of their lives; develop strong connections to others; accept and appreciate themselves and their life experiences; and cultivate a sense of calm and internal balance (Mitchell at al., 2014; Monk et al., 2016; van der Kolk et al., 2014; West, Liang, & Spinazzola, 2017).

One study developed by Barnes, Monto, Rigg and Williams (2016), showed that regular transcendental meditation decreased the need for psychotropic medications required for post-traumatic stress disorder (PTSD) management and increased psychological well-being and resilience. In a previous article (Barnes et al., 2013), the researchers referred to earlier studies including one in 1985 with Vietnam veterans, showing that soldiers who engaged in transcendental meditation instead of taking medication exhibited significantly reduced PTSD symptoms (Table 1).

The mantra therapy program study was effective in decreasing PTSD symptoms in war veterans, managing sleep disturbance as insomnia. However, the results of this study cannot be generalized because the sample size was limited to veterans who reported substance abuse (Bormann et al., 2018) (Table 1).

Discussion

Complementary treatments seem to have good potential to manage PTSD. Somatic intervention approaches share a common characteristic, namely the use of focused attention in cognitive and physiological processes to assess the pathological behavioral changes. This indicates mind-body interactions and also reinforces the importance of neurobiological investigations, highlighting their significant role in identifying PTSD as an organic disorder, in addition to psychopathological alterations. However, exploring the differences between techniques is necessary, since both Somatic Experiencing® and brainspotting address traumatic memories more directly.

Somatic Experiencing® offers an intervention pathway in non-completed neuromuscular patterns of traumatic responses by screening body feelings and anchoring images related to traumatic events, enabling patients to describe a stress pattern as if their bodies were about to do something. Thus, the traumatic responses gradually decline and are completed, as non-declarative memory becomes a declarative memory. On the other hand, stimulation of a brainspot makes it possible to observe whether there are traumatic experiences underlying the complaints or symptoms shared by the patient. To that end, associations with prior disturbing experiences which contributed to shaping their self-image are analyzed. As with Somatic Experiencing®, brainspotting ensures that the blocked orientation response in the nervous system due to a traumatic event is completely concluded.

The somatic approaches presented in this review showed a positive impact of the complementary treatments, associated or not with conventional pharmacological approaches, producing perceptible physiological, psychological and behavioral results. In some cases, the effects were better with SE® and brainspotting (between 80% and 90%), yoga (60%), as well as a combination of mindfulness and transcendental meditation (83,7%). Thus, both SE® and brainspotting techniques have the greater potential to be an important tool to help in the PTSD treatment.

It is important to mention that in the first article published in 2008 about Somatic Experiencing®, its efficacy was demonstrated in 150 victims of Tsunami with only three interventions (Parker, Ronald, & Selvam, 2008). The authors used three instruments to monitor their study (17-item Post-Tsunami Symptom Checklist and the

Impact of Events Scale–Revised–Abbreviated (IES–R–A), Subjective Units of Distress (SUD), before and after the treatment using SE®. Improvement in symptoms reached 75% (somewhat better) and 85% (completely well) at 4-week and 8-month follow-ups, respectively.

Regarding Somatic interventions, we were unable to analyze the use of Somatic Experience® or brainspotting in this review, or confirm how they are being applied, whether alone or associated with conventional treatments. Although 80% of the articles show a significant decline in PTSD symptoms with a combination of somatic interventions and medication, we found no studies where this interaction was satisfactorily explored, although they can decrease drug doses. Given the improvement in symptoms with the use of SE® and brainspotting, these should be thoroughly investigated in news studies, as well the combination of somatic approaches and medication to treat PTSD. This is indicated in order to broaden the choice of treatment or combined therapies, and in the latter case, review the types of drugs and their respective doses.

Another important finding of this systematic review is related to intervention programs used by the United States Defense Department for returning war veterans and their families. These programs are often in the form of a retreat, and are used to avoid the development of PTSD or diagnosis or treat it when necessary. Combined therapies programs open a range of opportunities for using somatic interventions and measuring instruments to monitor the progress of each patient and tailor treatments to individual patients (Libby et al., 2012). The intervention programs for war veterans deserve attention, and can serve as models to provide new treatment facilities within communities and university hospitals. These include the formation of therapeutic groups with well-defined goals, couples counseling and relaxation activities.

PTSD can be characterized by two extremes of emotional dysregulation as hyperarousal and hypoarousal. The complexity of these symptoms appears to be represented in the neural network related to the emotional motor system underlying PTSD involving the insula, the medial prefrontal cortex, the anterior rostral cingulate cortex and the amygdala (Payne et al., 2015; Yehuda et al., 2015). For this reason, it is known that the response to PTSD treatment differs substantially between patients. However, the implementation of complementary interventions used in the therapeutic process has proved to be successful through significant evidence, thus broadening scientific research and mainly contributing to the debate of clinical practice. Nevertheless, much more empirical studies are required to establish their efficacy.

As aforementioned, the body-brain connection is valued by somatic interventions. The techniques presented in this article provide an array of opportunities for empirical studies with men and women. However, it is important to underscore that studies on women with PTSD are scarce, even though they are twice as likely to develop this disorder (Yehuda et al., 2015). Thus, new investigations are needed to confirm the efficacy of these treatments and the neurobiological and physiopathological mechanisms and interactions associated with each, including sex differences. It has become increasingly evident that the exclusive use of medication is not enough to improve the symptoms of individuals diagnosed with PTSD.

The frequent use of medication cannot disregard the fact that individuals are shaped by their life experiences and social history, with somatic and psychological components acting in conjunction: psychological, biological and social expressions should be considered together when selecting a treatment. With respect to intervention programs, we recommend coordinated and comprehensive strategies for complementary interventions using somatic intervention treatments in order to significantly expand their combined use. For instance, SE® and brainspotting that direct the somatic intervention to the cause of the symptoms of the traumatic event. In a broader sense, the focus of SE® is directed to the deeper levels and regulators of the autonomic nervous system (SNA), motor emotional system (EMS), reticular activation system (RAS) and limbic system, the so-called nuclear response network (CRN) by Payne et al. (2015). Thus, the possibilities involved in active and structured attention focused on the interoceptive and proprioceptive experience performed in the SE® sessions point to the need for more research to better understand the dysregulation of the neural networks involved in PTSD, as well as their physiological correlates. According to Taylor and Saint-Laurent (2017), SE® also has the potential to be used in groups, especially for collective trauma. Although gender differences in acute PTSD cases show higher prevalence in women, the use of somatic therapies may be sufficient for both men and women. Moreover, increasing research using the specific somatic experience approach deserves much broader implementation, as it has the potential to benefit those affected by PTSD. Additionally, the investigation of possible biological markers associated to SE® interventions also seems to be important, as demonstrated in relation to other neuropsychiatric disorders.

Limitations

Somatic intervention approaches have the potential to be very helpful to patients, either isolated or when combined with complementary drug treatment, but must be conducted in a safe and scientifically rigorous manner. However, in the case of Somatic Experiencing® regarding the actual context where the number of publications is still small and limited to specific clinical conditions or case studies presented at SE® seminars and training, and therefore the current results should be analyzed with caution. In fact, most of the analyzed articles had a small sample size without a control group, and did not report follow-ups. Thus, a stronger investment based on clinical trials, including controlled and/or randomized clinical trials, is needed to measure the efficacy of SE® in short- and long-term prospects, and using specific groups related to traumatic events.

Conflict of interest

The authors declare that there is no financial involvement that could lead to a conflict of interest.

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