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The Importance of Trauma-Informed Care: A Call to Action for Physical Therapist Practice, Education, Research, and Advocacy

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PERSPECTIVE

The Importance of Trauma-Informed Care: A Call to Action for Physical Therapist Practice, Education, Research, and Advocacy

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Abstract: Trauma exposure is associated with a host of biopsychosocial effects, including premature mortality, compromised physical/mental health, substance misuse, and addiction; 90% of American adults report at least one significant lifetime traumatic incident. Disparate trauma exposure among people with physical disabilities, lower socioeconomic status, rural residence, and/or racial/ethnic minority status creates a strong rationale supporting trauma-informed care (TIC) in promoting health equity. Although physical therapist (PT) practice, education, and research do not routinely integrate TIC, public health needs and the opportunity to advance health equity compel greater professional involvement in addressing trauma and its impact on overall wellness. This perspective describes (1) the biopsychosocial impact of trauma; (2) screening and assessment of trauma exposure and its impact; (3) TIC in physical therapy practice; (4) the impact of unaddressed trauma; and 5) TIC in physical therapy education, research, and advocacy. Physical therapy professionals should apply this information to address the gap in trauma-informed care for individuals, families, groups, and communities.

Summary Box

• The high prevalence of trauma exposure constitutes a strong need for physical therapy involvement in trauma-informed care. This paper provides important perspectives regarding challenges to physical and mental wellness due to the physiological, psychological, and social effects of trauma. New knowledge for physical therapists and the advancement of trauma-informed care includes how to recognize and respond to signs and symptoms of trauma using universal trauma precautions and individually tailored treatment strategies, and the integration of trauma-informed care in physical therapy education, research, and advocacy.

Keywords: Trauma-informed care, trauma-informed physiotherapy, trauma-informed physical therapy, physiotherapy in mental health

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Introduction

Trauma is an event, series of events, or circumstances experienced by an individual as physically or emotionally harmful or life threatening; it can have lasting adverse effects on mental, physical, social, emotional, and/or spiritual well-being.[1] Examples of trauma include, but are not limited to, experiencing or observing physical, sexual, and emotional abuse; intimate partner/domestic violence; childhood neglect; having a family member with a mental health or substance use disorder; experiencing or witnessing violence in the community and/or during military service; poverty and systemic discrimination; natural disasters; medical trauma (direct or family-related); refugee trauma, and/or acts of terrorism.[1-2] Although children and adults experience many of the same types of trauma, adults may be more likely to exhibit the effects of repeated lifetime trauma and/or complex trauma.[3]

The World Mental Health Survey, which included 68,894 respondents across twenty-four countries, estimates a 70.5% prevalence of exposure to traumatic events. More than 30% of respondents reported exposure to four or more traumatic events.[4] Similarly, epidemiological data show a 90% prevalence of at least one traumatic exposure among American adults, while 30% report six or more lifetime traumatic events.[5] Exposure to traumatic events poses a significant threat to both mental and physical health. Sequelae include anxiety, depression, substance misuse, suicide, self-injury, an increased likelihood of post-traumatic stress disorder (PTSD),[3] and a host of physiological associations that include autoimmune disease (HR 1.36, 95% confidence interval 1.33, 1.40),[6] and chronic pain.[7]

While there is a growing acknowledgment in physical therapy of the impact of trauma throughout the lifespan[8], the increasing prevalence of traumatic events requires education and implementation of trauma-informed care (TIC). This perspective describes (1) the biopsychosocial impact of trauma; (2) screening and assessment of trauma exposure; (3) TIC and the impact of unaddressed trauma in physical therapy practice; and 4) TIC in physical therapy education, research, and advocacy. Physical therapists (PTs) can apply this information to address translational knowledge gaps by being cognizant of the widespread impact of trauma; recognizing its signs and symptoms; and responding with policies, procedures, and practices to resist re-traumatization for individuals, families, groups, and communities. (Table 1)

Table 1. Rs of Trauma-Informed Care

Realize	Realize the widespread impacts of trauma and understand potential paths to recovery.
Recognize	Know the signs and symptoms of trauma and recognize that these signs and symptoms may present differently in individuals and groups.
Respond	Respond by fully integrating knowledge about trauma into policies, procedures, and practices.
Resist Retraumatization	To resist retraumatizing people that have been affected by trauma, be aware of how your language and the environment you create may act as a potential trigger.

Biopsychosocial Effects of Trauma Exposure

Trauma exposure is associated with a host of biopsychosocial effects, including premature mortality, compromised physical/mental health, substance misuse, and addiction. Physiological responses to trauma exposure include chronic systemic inflammation linked with greater risks of metabolic disease, cardiovascular disease, and type 2 diabetes.[9] Long-term effects of trauma contribute to persistent physiological arousal and autonomic dysregulation, as well as reduction in physical activity, to avoid responses reminiscent of acute stress, such as increased heart and respiratory rates.[10] The Centers for Disease Control-Kaiser Permanente adverse childhood experiences (ACE) study increased public awareness of the associations between early trauma and lifetime health effects.[11] When comparing people with the highest versus lowest levels of reported ACEs, researchers found a 20-year reduction in life expectancy.[12] Subsequent studies found that people with multiple ACEs have a greater prevalence of modifiable health risks when compared with the general population, resulting in higher rates of obesity, ischemic heart disease, stroke, liver disease, lung cancer, COPD, autoimmune disorders[13], depression, addiction, and premature mortality.[14] In addition, people who report trauma exposure are 2.7 times more likely to exhibit a functional somatic syndrome (95% confidence interval 2.27 – 3.10).[10] Functional somatic syndrome encompasses a host of possible diagnoses such as chronic pain, fibromyalgia, chronic fatigue syndrome, and temporomandibular joint dysfunction.[10] Functional somatic issues can lead to sleep disturbances, social isolation, diminished quality of life, and a greater risk of disability.[10]

The most prominent psychological condition associated with trauma exposure is post-traumatic stress disorder (PTSD).[1] However, not all signs and symptoms following trauma are pathological. Although effects vary among individuals, most trauma survivors show acute emotional and psychological reactions that may

include fatigue, confusion, numbness, sadness, anxiety, dissociation, and blunted affect.[1] In particular, PTs and rehabilitation professionals should be attentive towards delayed, persistent, and/or severe reactions, such as unrelieved emotional and/or mental distress; disruptive intrusive memories despite a safe environment; sleep problems; nightmares; avoidance of situations, sensations, or activities reminiscent of the traumatic event; and/or dissociation.[1] Possible signs of dissociation include a fixed or distant visual "glaze," sudden absence of emotion, lack of verbal communication, and incongruent verbal or physical responses.[1] PTs and rehabilitation professionals must also be observant of triggers, or stimuli that induce memories and reactions associated with the trauma. Trauma survivors are often aware of these triggers, although some triggers may be subconscious.[1] Triggers are different from flashbacks, which is where a trauma survivor re-experiences the trauma event as though it were happening again. Typically, flashbacks are brief occurrences, but they can cause lasting emotional and/or psychological after-effects.[1] Epidemiological research estimates the global prevalence of PTSD at 5-10% of the population.[15] However, these data under-represent the true scope of the problem due to variations in symptoms, recognition, and diagnostic criteria.[15]

Major catastrophic events can cause collective societal trauma where effects extend beyond individuals to affect families, groups, and/or communities (Figure 1).[16] The Holocaust[16], the terrorist attacks of September 11, 2001[17], and the COVID-19 pandemic are examples of collective trauma.[18] When catastrophe disrupts a shared sense of safety, meaning, and/or cultural identity, members of the affected group may continually recall the event to gain a better understanding of the experience.[19-20] Although some aspects of this social discourse can assist in positive adaptation, adverse individual and communal psychological effects are also possible.[18] Additionally, collective trauma can become encoded within group memories, resulting in intergenerational and transgenerational trauma.[16] Consequences of generational trauma include an increased risk of PTSD among children of people with PTSD.[16] Although childhood exposure to overt, conscious and subconscious PTSD-related parental behaviors may explain some of this association, environmental and physiological effects are also possible.[16] For example, research demonstrates that offspring of Holocaust survivors and Vietnam veterans had an increased tendency towards anxiety, worry, catastrophization, nightmares, dysphoria, hypervigilance, and disruptions in interpersonal relationships, sometimes referred to as "secondary traumatization."[16] Epigenetic mechanisms that contribute to transgenerational trauma include DNA methylation and oxidative damage that may influence gene

expression, leading to phenotypic changes in children.[16] Social learning theory, attachment theory, and family dynamics may also mediate the incidence and experience of collective trauma.[16]

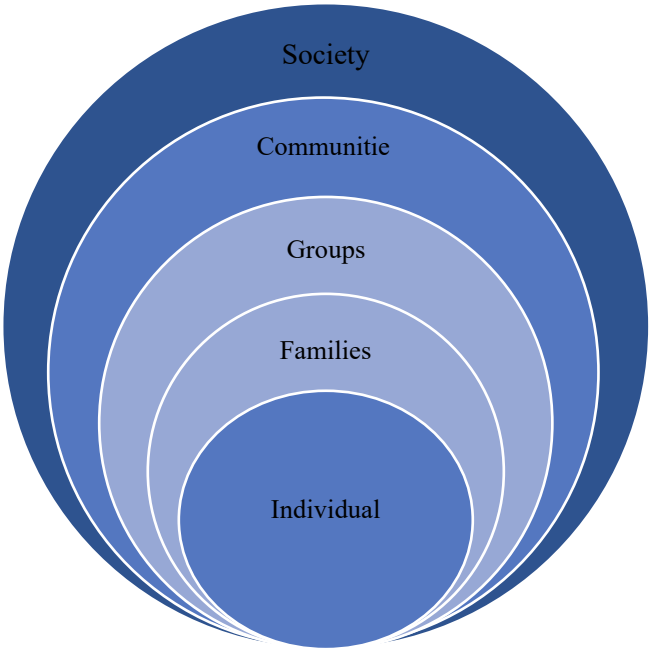

Figure 1. Levels of Trauma Experience

Screening and Assessment of Trauma Exposure and Its Impact

Based on the high prevalence of lifetime trauma exposure, PTs must have ways to evaluate and manage associated psychological distress. The Commission on Accreditation of Physical Therapy Education Standards and Required Elements require that physical therapist programs prepare students to complete examination and screening to inform patient and client management across the spectrum of comprehensive physiological, psychosocial, and mental health.[21] Furthermore, the American Physical Therapy Association, House of Delegates, affirms the role of PTs in addressing mental well-being, stating "it is within the professional scope of physical therapy practice to screen for and address behavioral and mental health conditions in patients, clients, and populations."[22] Likewise, the International Organization of Physical Therapy in Mental Health reflects the scope of PTs' professional responsibilities in applying best scientific and clinical evidence in addressing psychosocial, as well as biological, wellness.[23] Therefore, screening and

assessment of trauma exposure and its potential impact is an essential component of direct patient care.[24] The Guide to Physical Therapist Practice 4.0 provides an overview of risk factors, indications, and methods of assessing cognitive and mental function and patient needs, as well as examples of tests, measures, and tools PTs can use to ensure that they integrate the presence and severity of mental health conditions into the comprehensive plan of care.[25]

Many survivors find it difficult to recount the nature of traumatic exposures, particularly in the early stages of the therapeutic relationship. Therefore, it may be more appropriate for PTs to approach this topic by asking about signs and symptoms associated with trauma rather than details about the traumatic event.[26] Questions may include whether patients are experiencing sleep impairments, difficulty concentrating, agitation, self-isolation, mood changes, anxiety, fear, or depression. During the physical exam, PTs should also be sensitive towards symptoms of sympathetic nervous system arousal that can occur in trauma survivors; these include sensitivity to sound and tactile stimuli, exaggerated startle reactions, and muscle tension.[26] PTs can also use standardized assessment measures (Table 2) to screen for PTSD. Posttraumatic Stress Disorder Primary Care (PTSD-PCL-5) is a screening tool designed to identify individuals with probable PTSD in primary care settings (Table 3). If an individual indicates an experience of past trauma, the PTSD-PC-5 poses five yes/no questions. A cut-point of four likely indicates a PTSD diagnosis and warrants referral to a mental health provider for further evaluation.[27] The PTSD Checklist (PCL) is another valid questionnaire that has been administered in physical therapy settings and is sensitive to quantifying post-treatment changes in trauma symptoms.[27] The gold standard in trauma diagnosis is the Clinician-administered PTSD Scale (CAPS-5). The CAPS-5 is a structured interview that PTs can use to identify past month signs and symptoms of PTSD, lifetime signs and symptoms of PTSD, and PTSD symptoms over the past week.[28] A version for children and adolescents ages seven and above (CAPS-CA-5) is also available.[29]

Table 2. Screening Tools for Posttraumatic Stress Symptoms

Questionnaire	Description
Primary Care PTSD Screen for DSM-5 (PC-PTSD-5)	A 5-item screen designed to identify individuals with probable PTSD in primary care settings. The first question assesses lifetime exposure to traumatic events. If a respondent denies exposure, the PC-PTSD-5 is complete with a score of 0. However, if a respondent indicates that they have had any lifetime exposure to trauma, the respondent is instructed to respond to 5 additional yes/no questions about how that trauma exposure has affected them over the past month. Because the PC-PTSD-5 was designed to identify respondents with probable PTSD, those screening positive require further assessment, preferably with a structured interview such as the Clinician-administered PTSD Scale (CAPS-5).
Clinician-administered PTSD Scale (CAPS-5)	The gold standard in PTSD assessment. A 30-item questionnaire, corresponding to the *DSM-5* diagnosis for PTSD**.** The CAPS-5 is a structured interview that can be used to assess PTSD symptoms over the past week, past month, and lifetime symptoms of PTSD. CAPS-5 asks questions relevant to assessing the dissociative subtype of PTSD (depersonalization and derealization), but no longer includes other associated symptoms (e.g., gaps in awareness).
PTSD Checklist for DSM-5 (PCL-5)	The PCL-5 is a 20-item self-report checklist of PTSD symptoms based on the DSM-5 criteria. Respondents rate each item from 0 ("not at all") to 4 ("extremely") to indicate the degree to which they have been bothered by that particular symptom over the past month (or past week if using the PCL-5 weekly). The PCL-5 is a self-report measure that can be completed by patients in a waiting room prior to a session or by participants as part of a research study. It takes approximately 5-10 minutes to complete.
(CAPS-CA-5)	A 30-item clinician-administered PTSD scale based upon *DSM-5* criteria for children and adolescents ages 7 and above. It is a modified version of the adult CAPS-5 that includes age-appropriate items and picture response options.
The Adverse Childhood Experiences (ACEs) Questionnaire (Felitti et al., 1998)	A 10-item measure used to measure childhood trauma. The questionnaire assesses 10 types of childhood trauma measured in the ACE Study. Five are personal: physical abuse, verbal abuse, sexual abuse, physical neglect, and emotional neglect. Five are related to other family members: a parent who is an alcoholic, a mother who is a victim of domestic violence, a family member in jail, a family member diagnosed with a mental illness, and the disappearance of a parent through divorce, death or abandonment.

Table 3. PTSD-PC-5 Tool

Sometimes things happen to people that are unusually or especially frightening, horrible, or traumatic. For example: • a serious accident or fire • a physical or sexual assault or abuse • an earthquake or flood • a war • seeing someone be killed or seriously injured • having a loved one die through homicide or suicide. Have you ever experienced this kind of event? YES / NO If no, screen total = 0. Please stop here. If yes, please answer the questions below.
In the past month, have you… 1. Had nightmares about the event(s) or thought about the event(s) when you did not want to? YES / NO 2. Tried hard not to think about the event(s) or went out of your way to avoid situations that reminded you of the event(s)? YES / NO 3. Been constantly on guard, watchful, or easily startled? YES / NO 4. Felt numb or detached from people, activities, or your surroundings? YES / NO 5. Felt guilty or unable to stop blaming yourself or others for the event(s) or any problems the event(s) may have caused? YES / NO
Scoring Preliminary results from validation studies suggest that a cut-point of 3 on the PC-PTSD-5 (e.g., respondent answers "yes" to any 3 of 5 questions about how the traumatic event(s) have affected them over the past month) is optimally sensitive to probable PTSD. Optimizing sensitivity minimizes false negative screen results. Using a cut-point of 4 is considered optimally efficient.

Due to multiple geographical, socioeconomic, and cultural health inequities, PTs must be aware of variations in the prevalence and distribution of trauma exposure and associated risks to physical and mental wellbeing. Health inequities are more than dissimilarities in health outcomes among different segments of the population. Instead, inequities reflect avoidable differences in risks, rates, and severity of illness, injury, disability, diminished quality of life, and reduced life expectancy. Geographical and socioeconomic

inequities often intersect. For example, rural communities experience disparate trauma exposure and consequences, particularly among people with lower incomes. Many primary and secondary trauma exposures are higher within rural and lower income communities. This includes physical and sexual violence, accidents, unexpected mortality within one's family and/or social network, employment instability, housing instability, and witnessing trauma.[30] Within the United States, rural suicide rates are nearly double the rates of death by suicide in urban locations.[31] In addition, more veterans reside in rural locations (nearly 25% more than other geographical locations),[31] and more rural children reside in poverty.[31] Higher rates of substance misuse in rural communities exacerbate childhood trauma exposure due to disruptions of the family unit, childhood abuse and neglect, truancy, lack of educational opportunities, unmet developmental needs, lack of appropriate role models, and higher rates of interpersonal violence.[31] Genetic and epigenetic factors associated with generational patterns of substance use disorder, along with higher rates of ACEs, make it more likely that children will develop addiction themselves.[31] Children who grow up in homes affected by substance misuse, who witness abuse and domestic violence, and/or live with family members who have mental health challenges are twelve times more likely to attempt suicide, seven times more likely to misuse alcohol, and ten times more likely to use illicit drugs in adulthood.[31]

Cultural inequities in trauma exposure and its consequences share factors with intergenerational and transgenerational trauma. Across generations, social disadvantages due to racism, stigma, and financial stressors contribute to differences in health status and protective resources among immigrant, refugee, indigenous, and sexual minority groups.[20] These disadvantages increase vulnerability to mental health challenges, such as PTSD, chronic grief, suicide, depression, and substance use.[20] PTs can work with disadvantaged individuals and communities to address societal risks and build capacity and resilience using health promotion strategies.[20] The World Health Organization's health equity priorities highlight the need to create proportionate opportunities throughout the lifespan by reducing unequal risk exposures and structural barriers through policies, systems, and services that enhance accessibility to tailored, quality services. To advance these goals, the physical therapy profession can implement the World Health Organization Health Equity Policy Tool.[32] This tool provides a broader perspective of how social determinants influence health disparities.

Trauma-Informed Care (TIC) in Physical Therapy Practice

TIC refers to best practices across healthcare settings to ensure that people who have experienced traumatic events have access to quality care.[33] Since many traumatic events involve the physical body,[33] TIC is of particular relevance during hands-on PT interventions. There are two major categories of foundational TIC principles: (1) "universal trauma precautions" and (2) trauma-specific care.[33] Even patients without trauma can experience anxiety and discomfort when seeking healthcare.[33] Therefore, universal trauma precautions should be widely implemented, even when a patient's trauma history is unknown. Although survivorship may heighten the need for TIC, universal trauma precautions recognize that all patients can benefit from responsive, compassionate communication and treatment. Many patients, particularly those with a trauma history, report feeling a lack of control in healthcare settings. Lack of control and bodily autonomy can trigger anxiety, flashbacks, and other physical and psychological symptoms of trauma.[33] Widespread use of trauma-informed techniques engenders trust and rapport.[33]

Within the current healthcare environment, most providers do not routinely screen for a history of trauma, heightening the need for universal trauma precautions in physical therapy practice.[14] For example, only 18-19% of female survivors of childhood sexual abuse (CSA), report being screened by a healthcare provide, although 96.5% stated they would like this to be a component of evaluation.[14] Even within level I and II trauma centers, only 7% of providers routinely screen for signs and symptoms of PTSD.[14] Barriers to screening and TIC include lack of specialized provider training, provider discomfort in assessing and responding to disclosure of trauma or abuse,[14] and possible difficulty connecting triggering circumstances with the original trauma. Within PT practice, examples of triggering stimuli might include tightening the blood pressure cuff around the person's arm to monitor vitals, asking patients to disrobe to allow access to the treatment site, and having patients lay prone or supine while the physical therapist remains standing next to the treatment table. Physical contact and cardiorespiratory arousal during therapeutic exercise can also potentially trigger somatic and psychological reactions, and impede patient engagement in the plan of care.[14,34] Many aspects of healthcare encounters involve vulnerability, loss of personal privacy, and fear of judgment.[35] Collaborative, patient-centered TIC can modulate these threats and triggers.[14]

The Substance Abuse and Mental Heart Services Administration (SAMHSA) outlines 6 core principles for TIC: 1) safety, 2) trustworthiness and transparency; 3) peer support and mutual self-help; 4) collaboration

and mutuality; 5) empowerment, voice, and choice; and 6) recognition of cultural, historical, and gender issues that may interact with other risks and trauma-related experiences.[1] (Table 4) To promote patient-centered, responsive communication, PTs need to create a safe space for trauma disclosure by treating patients with dignity and respect.[35] This may involve private areas for sensitive communication, examination, and interventions, as well as consistent implementation of shared decision-making to empower voice and choice.[35] Even within a supportive environment, some trauma survivors may still be unwilling or unable to disclose.[33,35] A universal approach to TIC ensures sensitivity and responsiveness across diverse individuals and reduces stigma. Important aspects of TIC encompass compassionate communication within an environment that minimizes noise and distractions. Although there is a need for additional training and education in TIC, PTs already possess expertise that complements a trauma-informed approach. PTs regularly engage in active listening and other facets of patient-centered communication that cultivate close rapport, strong therapeutic alliance, and a gentle invitation to disclose and discuss trauma history. By explaining options using use a calm tone of voice and simplified terminology, PTs can facilitate collaborative treatment planning and promote autonomy.[33] This personalized, biopsychosocial approach helps restore patients' trust in situations where there has been a prior history of negative healthcare interactions.[33]

Table 4. Six Principles of Trauma-Informed Care

Safety	Ensuring that both the physical and emotional safety of individuals is prioritized to foster a secure environment.
Trustworthiness and transparency	Operations and decisions should be conducted with transparency to build and maintain trust among staff, clients, and family members of those receiving services.
Peer Support	Peer support plays a vital role in establishing safety and hope, and is integral in the healing process and recovery.
Decision-Making	There should be true partnership and leveling of power differences between staff and clients, recognizing that healing happens in relationships and in the meaningful sharing of power and decision-making.
Empowerment, Voice, and Choice	Individuals' strengths are recognized and built upon, fostering an environment where clients feel validated and affirmed in their ability to make decisions about their treatment.
Cultural, Historical, and Gender Issues	The organization actively moves past cultural stereotypes and biases, offers access to gender-responsive services, leverages the healing value of traditional cultural connections, and recognizes and addresses historical trauma.

Adapted from SAMHSA's Concept of Trauma and Guidance for a Trauma-Informed Approach

The Impact of Unaddressed Trauma in Physical Therapy Practice

When PTs are unable to recognize and address the effects of trauma, it can interfere with differential diagnosis, patient engagement, and optimal treatment outcomes. Unrecognized, unaddressed trauma symptoms threaten mental wellness and increase risk of substance misuse.[33] Although all providers should be aware of signs and symptoms of trauma, PTs have an advantage due to repeated, extended contact with patients that enhances recognition of behaviors that are unusual for that particular individual.

Trauma can heighten autonomic nervous system (ANS) reactivity, thereby exerting an excitatory influence on all bodily systems.[12] TIC enables PTs to be mindful of emotional, cognitive, behavioral, and physical symptoms of ANS reactivity; these may include changes in muscle tension, breathing, facial color, and expressions.[12] PTs can incorporate neuroeducation to enable trauma survivors to learn and recognize symptoms and implement effective self-regulation during episodes of aberrant physiological, psychological, and emotional responses. Over time, self-regulation can promote increased neuroplasticity by creating new patterns that create a sense of calm and balance.[12]

During each clinical encounter, PTs can incorporate TIC principles by routinely asking patients what makes them most comfortable. Patients may feel less anxious if the PT provides a brief overview of the types of physical contact and what parts of the body will be involved before beginning an exam or intervention. Allowing time for patients to ask questions also allays fears and anxiety by promoting a greater sense of control. When possible, PTs can provide choices to patients about how to provide access to the treatment site. For example, some people may be more comfortable wearing their clothing rather than a gown. In addition, PTs can provide options for patient positioning, especially if laying supine is triggering. Since triggers can vary, it may be helpful for the PT to ask whether the patient is concerned about any particular aspects of treatment. These steps provide an opportunity for shared decision-making and alterations in the plan of care. The PT and patient should also work together to plan how the patient will communicate if they experience distress, and how the PT should respond.[33]

Exercise and physical activity,[37] and sensory, body, and movement awareness are key physical therapy interventions that complement TIC.[37-38] Authors of a systematic review and meta-analysis on the effects of therapeutic movement on trauma-associated mental health challenges identified aerobic fitness, such as walking, running, swimming, and cycling, and mindful movement (e.g., yoga), as well as resistance training,

as helpful interventions.[38] In trauma survivors, therapeutic movement in trauma survivors improved depressive symptoms, sleep disturbances, dissociation, and quality of life.[38] Yoga also enhanced self-regulation and self-care.[39] Additionally, exercise and physical activity reduce risks of cardiovascular and metabolic disease in trauma survivors.[38] However, there is a need for further studies regarding mechanisms and effect sizes for specific exercise and movement-based interventions.[38]

Manual therapy and interpersonal touch can improve physiological and emotional regulation in people who have experienced trauma by promoting appropriate responses to anxiety, stress, and depression.[40] Moderate pressure soft tissue mobilization may activate parasympathetic nervous system responses, stimulate oxytocin release, and suppress cortisol activity, although further investigation is warranted.[40] PTs can also integrate mindfulness-based interventions such as acceptance and commitment therapy (ACT)[41] to facilitate present moment awareness and non-judgmental acceptance of thoughts and emotions.[42] Since trauma exposure is associated with adverse behaviors such as low physical activity, poor nutritional intake, and high rates of tobacco and other substance use, PTs should also integrate health-promoting interventions to address holistic physical and mental well-being.[43]

Organizations can support PTs and other health professionals in the delivery of TIC by providing adequate time, space, and resources to address the complex needs of trauma survivors.[33] In an anonymous survey, clinicians at a regional trauma center reported that time constraints were one of the largest barriers to TIC.[44] Additional barriers included inadequate knowledge and training, along with the absence of standardized trauma-informed procedures and protocols. Providers also reported concerns that they might advertently upset or possibly re-traumatize vulnerable patients.[44] Indeed, organizations and individual practitioners must be sensitive toward protecting vulnerable populations against well-meaning but harmful patient interactions. Trauma survivors may feel re-victimized if healthcare providers pay excessive attention to their negative experiences and adverse consequences without also acknowledging manageability of trauma symptoms and positive coping. Strength-based questions about survivorship and growth can enhance patients' self-efficacy. If providers do not address empowerment and resilience, survivors may not return for treatment because of discomfort and poor outcome expectations.[12] When discussing trauma, providers should emphasize resilience factors, including personal characteristics, family or social support, and community resources.[12] A well-designed organizational approach to TIC should also involve an interprofessional, patient-centered team and a network and directory of community resources for referral.[35]

Trauma-Informed Care in Physical Therapy Education, Research, and Advocacy

To better prepare physical therapists to support people with trauma, educational curriculum must include mental health and psychologically based techniques.[44] Although TIC may not specifically be incorporated in many physical therapy entry-level programs, PTs currently employ various mental health interventions to manage chronic conditions.[50] According to SAMHSA, trauma-informed programs, organizations, and systems need to recognize the broad impact of trauma, as well as a variety of paths to recovery.[1, 35] All PTs should be able to recognize signs and symptoms of trauma in patients/clients, families, caregivers, and colleagues so that they can respond appropriately and actively resist re-traumatization.[1] As part of foundational sciences, student PTs (SPTs) should learn physiological responses to both acute and chronic stress, including activation of the hypothalamic-pituitary axis (HPA). When activated, the HPA stimulates the hypothalamus to release pro-inflammatory cytokines that trigger corticotrophin-releasing hormone (CRH). In turn, CRH stimulates the pituitary gland to secrete adrenocorticotrophin-releasing hormone (ACHT) setting off a cascade of cortisol, norepinephrine, and epinephrine release from the adrenal cortex. Multiple physiological effects of this pathway of events include hepatic release of glucose stores, increased heart rate, respiratory rate, and blood pressure. Ordinarily, a negative feedback loop limits activation of the HPA to periods of acute stress. However, chronic stress can disrupt this feedback, resulting in neuroendocrine and immune system dysfunction that may include immunosuppression as well as an increased risk of autoimmune disorders.[45] Disruptions are physiological responses and the HPA can lead to epigenetic changes in the brain. These changes can create potential inheritance in children (aka – generational stress). The most vulnerable regions of the brain appear to be the hippocampus, the prefrontal cortex, and the amygdala, contributing to impaired learning and acquisition of new memories, emotional dysregulation, and diminished impulse control. Children and adolescents are particularly vulnerable to these alterations due to immature stages of brain and physiological development.[45] Therefore, SPTs and experienced clinicians need to have knowledge and experience in screening for ACEs and other traumatic exposures while indicating the relevance of this history in terms of an individual's current state of health. Further suggestions for TIC training include simulated experiences, interprofessional collaboration with mental health providers, and opportunities for community engagement.[49]

PT education should also cover relationships between trauma, health inequities, and social determinants of health.[46] To advance health equity, instructional methods should include culturally competent

communication.[49] The prevalence of trauma exposure dictates that all PTs learn how to recognize acute signs and symptoms of trauma, and how to assist someone who is reacting to a traumatic experience.[35] In addition, PTs need to learn how to be sensitive and aware of the possible effects of their own personal and professional trauma, including the benefits of trauma-informed self-care.[35] Trauma-informed self-care can reduce burnout, secondary traumatic stress, compassion fatigue,[41] and professional attrition.[12] One skill that enhances practitioner resilience, as well the ability to recognize and address effects of trauma, is ACT. ACT is a mindfulness-based approach where an individual cultivates an awareness of their current situation, and its impact on sensations, thoughts, and emotions. Through this mindful awareness, individuals can intentionally select appropriate behaviors based on their core values rather than a stress or trauma-associated reaction, thereby promoting resilience and positive coping.[41]

During entry-level PT education, faculty can employ trauma-informed practices such as content warnings when discussing sensitive topics within student coursework. These strategies model appropriate steps in TIC by creating a safe environment, promoting choice, and shared decision-making. Faculty can augment these strategies by being sensitive toward potentially triggering situations, such as requirements for physical contact and interacting with other genders when practicing lab skills.[35] Peer support and faculty mentorship can assist in creating an open dialogue with support for trauma-related experiences,[35] providing an academic background that translates into clinical practice.

Since trauma-informed physical therapy practice and education remains in its early stages, collaborative research is needed to provide evidence-based strategies to reduce the adverse impact of trauma on the physical and mental well-being of survivors. Just as TIC involves a patient-centered approach, for maximum benefit, PTs and other scientists should invite trauma survivors to participate in research to generate appropriate questions, determine the best methodology for gathering data, and disseminate findings to key stakeholders.[33] Using cross-sectional methods, physical therapy researchers can gather data on patient satisfaction, retention, and engagement to determine whether TIC improves outcomes compared with traditional assessment and treatment.[33] As experts in non-invasive health promotion interventions, PTs should also research best approaches to mitigating physiological and behavioral risks among trauma survivors.[33] Additionally, as essential members of the interprofessional, patient-centered care team, PTs should take a leadership role in research pertaining to best approaches to collaboration, referral, and communication, to ensure continuity of TIC across specialties and settings.[33]

To support social justice, research is also needed to identify the most effective and cost-efficient methods for preventing and addressing trauma. Evidence that that empirically demonstrates the impact of social reform on reducing community vulnerability to trauma and its adverse effects while promoting access to care and available resources can strengthen advocacy.[49] In addition, researchers can expand studies on the effects of ACEs to incorporate participants who are more diverse by including members of marginalized groups. Community-based participatory research methods would enhance inclusivity.[46]

Regarding advocacy, PTs, physical therapist assistants, and students must become involved in promoting changes in public policy and allocation of resources, particularly in light of the intersectionality among trauma, health inequities, social determinants of health, and social justice. Examples of steps the physical therapy profession can take include advocating for the prevention and mitigation of substance misuse through public education, early intervention, and expanded access to treatment.[46] We must also be aware of inequities in legal drug enforcement based on socioeconomic and or racial/minority status. Changing from a no-tolerance approach to one that is oriented towards harm reduction and recovery may have an intergenerational effect by reducing the risk of childhood trauma, family disruption, housing instability, financial hardship, and foster placement as part of the consequences of drug-related legal issues. Each of these factors elevates childhood exposure to violence, abuse, and other forms of trauma.[46] Advocacy also promotes public awareness of the impact of trauma and resources that promote resilience through individual and collective empowerment.

Recommendations/Conclusion

TIC is an important strategy for promoting mental and physical health equity[48] within PT practice, education, research, and advocacy. Given the high prevalence of trauma, PTs must be equipped with the knowledge and skills to recognize and respond to the full scope of trauma's expressions and its significant impact on mental and physical well-being. To accomplish these goals, physical therapy education, practice, research, and advocacy must integrate TIC principles. In practice, universal trauma precautions are essential, as well as trauma-specific interventions tailored to individuals with known trauma histories. Educational curricula should encompass trauma's biopsychosocial effects and TIC strategies, ensuring PTs are adept in behavior change techniques.[51] Furthermore, research into TIC's efficacy and advocacy for policy

changes that address social determinants of health are pivotal. Collectively, these measures will enhance care delivery, ensure the well-being of trauma survivors, and foster health equity.

Diversity, Equity, Inclusion Statement

In developing this perspective on trauma-informed care in physical therapy, we recognize that trauma is a universal experience that does not discriminate; however, its impact can be profoundly influenced by one's background, including race, gender, sexual orientation, age, socioeconomic status, disability, and other marginalized identities. Our approach to trauma-informed care is built on the understanding that diverse experiences and identities shape the health outcomes of individuals.

Conflict of interests

The authors report no conflicts.

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