Torture, 2024, 34(1), 113-127
https://doi.org/10.7146/torture.v34i1.138985 *Scientific article*

Physical therapy for survivors of torture: A scoping review

Justine McCuen Dee[1], Nancy Gell[2], Constance van Eeghen[3] and Benjamin Littenberg[4]

1 P.T., Ph.D. Department of Physical Therapy. Jefferson College of Rehabilitation Sciences. Thomas Jefferson University. Vermont. US.
2 P.T., Ph.D., M.P.H. Department of Rehabilitation and Movement Science. University of Vermont. US.
3 Dr.PH, M.H.S.A., M.B.A. Clinical and Translational Science. Larner College of Medicine. University of Vermont. US.
4 MD. Clinical and Translational Science. Larner College of Medicine. University of Vermont. US.

Key points of interest:

- Physical therapy is recommended for holistic care of survivors of torture.
- A trauma-informed physical therapy approach, coordinated with pain management, body-awareness & empowerment interventions may address the complex needs of survivors of torture.

Abstract

Background: Torture can result in impaired functional mobility, reduced quality of life, and persistent pain. Physical therapy (PT) is recommended for holistic care of survivors of torture (SOT), however there are limited evidenced-based guidelines. We conducted a scoping review to identify and describe the approach and gaps in knowledge around the PT treatment of SOT. *Methods*: We adhered to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews. Nine databases were searched. Eligible sources involved PT treatment for SOT. Interventions were categorized into themes based on recommendations from the Physiotherapy and Refugees Education Project: 1) trauma-informed care, 2) body-awareness & empowerment, 3) pain management. *Results:* The final analysis included 15 sources. Eight sources included all three themes; three of these eight sources were research studies examining outcomes following the PT intervention. While outcomes of these studies were significant for improvement among the PT groups, results must be taken cautiously due to methodological limitations of the trials. Studies assessing treatment that included only one theme resulted in no differences between the control and intervention groups. *Conclusions:* We describe the scope of the literature regarding PT for SOT. A trauma-informed PT approach, coordinated with pain management, and body-awareness & empowerment interventions may address the complex needs of survivors. However, rigorous studies of this three-themed approach are lacking. As SOT seek medical services, healthcare providers must be prepared to care for these vulnerable people. Physical therapists are encouraged to utilize a holistic approach, and to examine outcomes of this approach for SOT.

Keywords: torture, trauma, physical therapy, physiotherapy, pain

Introduction

During 2022, an estimated 100 million individuals were forcibly displaced from their homes due to war, political conflict, violence, human rights violations, or fear of persecution. (UNHRC, 2022) In addition to experiencing trauma from forced migration, some of these displaced individuals are survivors of torture (SOT). The prevalence of torture in refugees, asylees and displaced persons is challenging to capture. Reports range from 1% to 76%, and vary among ethnic and racial groups. (Rabin & Willard, 2014; Sigvardsdotter et al., 2016) Torture involves infliction of severe mental and physical pain, committed by officials of the state or under the guise of the state to obtain information or confessions from, intimidate or coerce, discriminate, or punish, individuals or their relations. (UN General Assembly, 1984; UNHCR, 2022) One of the intents of torture is to destroy the dignity of the individual, thus the effects can last long after physical wounds have healed. (Rabin & Willard, 2014; UNHCR, 2022)

Pain can persist, from injuries directly related to the torture event, or from changes in nervous system functioning, termed nociplastic pain. (Fitzcharles et al., 2021) These adverse central nervous system changes, including hyperalgesia and decreased pain inhibition, contribute to persistent pain. (IASP, 2014; Tsur et al., 2020) Survivors of torture can present with low back pain, fibromyalgia, headaches, depression, anxiety, and post-traumatic stress disorder. (Amris & Williams, 2015a; Carinci et al., 2010; Longstreth et al., 2022) Symptoms can be categorized via chronic pain diagnostic classifications, and range from chronic primary pain experienced in the musculoskeletal system and coinciding with emotional distress and functional disability, to chronic widespread pain, or chronic primary headache or orofacial pain. (Perrot et al., 2019) The variability of pain presentation adds to the complexity of caring for SOT. Traumatic brain injuries are common, contributing to adverse cognitive, emotional, and behavioral changes. (Berthold et al., 2020; Doherty et al., 2016; McPherson, 2019) Successful interventions to help SOT must encompass mental, physical, spiritual, and legal means. (Amris & Williams, 2015b; Berthold et al., 2020; McKinney, 2011) As mental health and somatic symptoms are intricately linked, an interprofessional biopsychosocial (BPS) approach is warranted. (Cohen et al., 2021; Edwards et al., 2016) Physical therapists are an important part of the health care team to address somatic symptoms and improve function and quality of life for SOT. (Amris & Prip, 2000; Cohen et al., 2021; Keshk et al., 2021) However, there are limited evidenced-based PT guidelines to help direct care. (Alme et al., 2021) While there is evidence for treatment of individuals with musculoskeletal pain, few studies have examined PT for SOT, who require a trauma-informed approach. (George et al., 2021; Main & George, 2011)

Trauma-informed care fosters trust, stability, safety, and recognizes the individual's trauma experience. (HealTorture, 2024) The Center for Victims of Torture (CVT) describe trauma-informed group PT with promising provisional results, notably improved survivor coping and reduced pain intensity, but they found no improvements in disability or social participation levels, and the authors note study design limitations. (Gueron et al., 2020) A Cochrane systematic literature review found insufficient evidence to support or refute any intervention to treat persistent pain in SOT. (Baird et al., 2017) We completed this scoping review to provide a comprehensive appraisal of the literature, with the aim of understanding and describing the breadth of interventions, and gaps in PT treatment for SOT. We posed the following research questions:

1. What are the recommendations for the physical therapy treatment of SOT?
2. What are the criteria needed to identify and evaluate identified sources of evidence?

Methods

We adhered to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR). (Tricco et al., 2018) We sought to identify all sources of evidence describing PT treatment for SOT. After a Medical Subject Heading (MeSH) analysis of key words, the primary author (JD) and a medical librarian conducted a comprehensive search of multiple databases. Medline (OVID), CINAHL (EBSCOhost), Web of Science (Core Collection), Google Scholar, Global Health (CAB Direct), Ethnic Diversity Source (EBSCOhost), Lilacs, OECD, and Trip Pro were searched from inception up to January 2023. We used search terms related to torture ("torture" or "survivor"), chronic pain, and physical therapy or physiotherapy. See appendix for the full version of the Medline primary search (Appendix). The search was not restricted by language, study design or other filters. Three additional sources that came to light during review of our work were added.

We identified and removed duplicate sources. The remaining titles and abstracts were screened to determine eligibility. Sources of evidence were deemed eligible if they included PT recommendations for treatment of pain or disability for SOT. Articles were excluded if they did not describe the PT intervention. Variables of interest included specific models or approaches (example: BPS, trauma-informed, interprofessional), specific interventions, mode of intervention (individual or group), and dosage in terms of frequency and duration. Addi-

tionally, we sought to identify potential evidence gaps and the generalizability of source information; these variables included method of study, population, sample size, outcomes, country of authorship, and country of origin of the SOT. Eligible sources were reviewed by the primary author and data were extracted to an excel spreadsheet.

Extracted data included author, authors' respective country, source title, source of evidence (example: expert opinion, observational study, randomized controlled trial), year of publication, survivors' respective country of origin, and PT description, including if present, PT dosage (frequency, duration, and intensity), mode of delivery (individual or group) and whether mono- or interprofessional care was provided. Data extracted from research studies include outcome measures and results.

Data were synthesized in table form. To organize the data, we categorized the PT interventions into themes based on recommendations from the Physiotherapy and Refugees Education Project (PREP). (Alme et al., 2021) The PREP has defined essential patient management competencies necessary for working with clients who are SOT. We used three of the PREP competencies to inform our themes. These include trauma-informed care, body-awareness & empowerment, and pain management. (Alme et al., 2021) Trauma-informed care is a model of care to improve psychological and physical health while controlling for risk factors that might harm a survivor of torture. Body-awareness & empowerment acknowledges how torture can alter an individual's self-image and perception of physical sensations. (Alme et al., 2021) Body-awareness & empowerment issues can create fear of movement and altered movement patterns. The pain management theme captures interventions physical therapists use to address somatic symptoms experienced by the SOT. We categorized the PT interventions into these themes based on the source-reported treatment approach and expected effect.

Results

Our search identified 112 sources of evidence. After deduplication, 32 sources remained for screening; 12 sources were removed as they did not include PT, leaving 20 sources retrieved for full text review. Upon review, five sources were excluded: a systematic literature review of three sources already identified and included (n=1), sources having no description of the PT intervention (n=3), and one source not specific to SOT. (Figure 1). Fifteen sources were included in the final analysis.

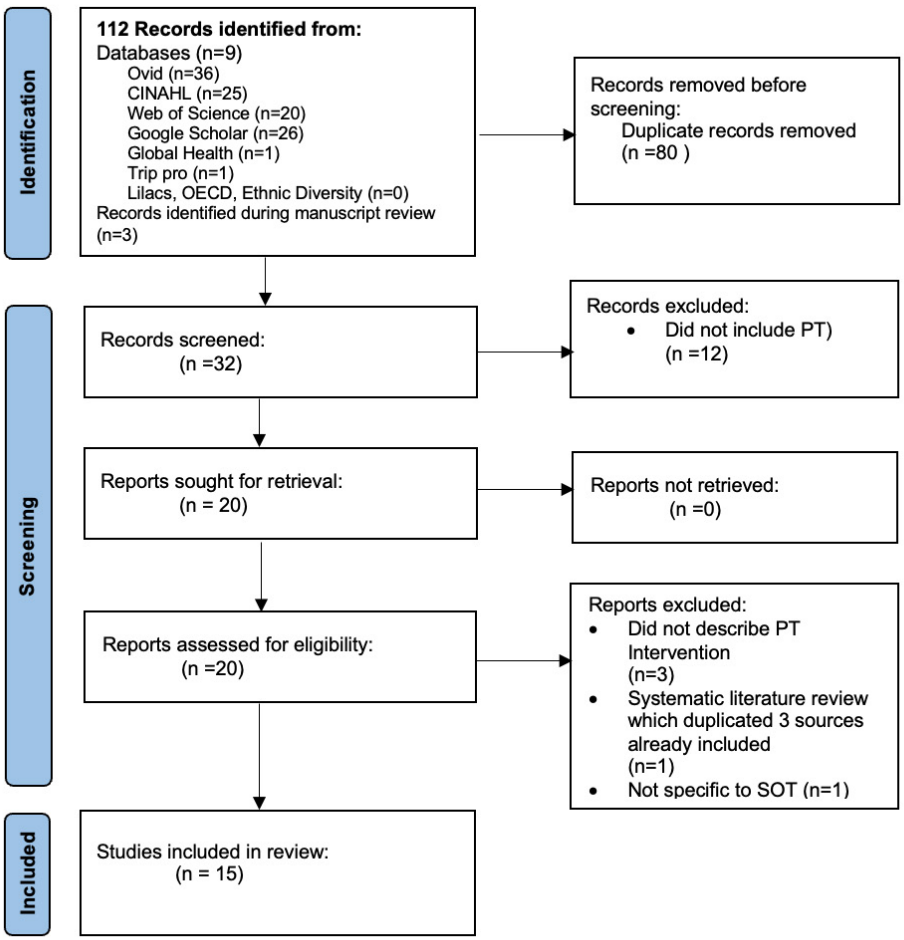
Source authors were predominantly from Europe (53%). (Dibaj et al., 2017; Karrer, 2022; Liedl et al., 2011; Negron, 2018; Nielsen, 2014; Nordbrandt et al., 2020; Sjölund et al., 2009; Wang et al., 2016) The remaining six sources were written by researchers from Asia, Africa, North America, and a global group. (Alme et al., 2021; Gamble et al., 2020; Gueron et al., 2020; Gueron & Ruiter, 2020; Kim & Yu, 2015; Singh et al., 2019) The SOT were from the following regions and countries: the Balkans (Southeast Europe), Cameroon, Democratic Republic of the Congo, India, Iran, Iraq, Jordan, Kosovo, Morocco, South Korea, Sri Lanka, Sudan, Syria, Turkey, the Caucasus region, the Middle East, and Central Africa. Six authors did not specify the survivor country of origin.

Of the fifteen sources included in the final analysis, ten were research studies consisting of randomized controlled trials, observational studies, a survey, and a case series. The remaining sources (n=5) were expert opinion (review or perspective papers) recommending PT for treatment of chronic pain in SOT. Focus of the sources varied, from review or analysis of a specific approach (trauma informed or biopsychosocial) to the PT treatment of a specific condition such as post-traumatic stress disorder (PTSD), or to the review of a specific PT intervention. Sources had variability in the explicitness of their descriptions of the PT and for their recommendations of mode, frequency, duration, and whether the PT was delivered through group or individual sessions. Sources had variability in use of the identified themes (Table 1). One study was retracted in 2013 for data mishandling and financial irregularities, however according to the authors, the data quality, analyses, and clinical conclusions were not affected. (Liedl et al., 2011) This study was retained in a 2017 Cochrane systematic literature review with the acknowledgement of the retraction not impacting the clinical results so we also retained this source. (Baird et al., 2017)

Intervention Summary

All sources recommended multimodal PT with a variety of interventions. Overall, there were 19 different types of interventions utilized or described in the 15 analysed sources (Table 2). Eleven sources fully described the PT interventions while four gave partial explanations (Table 1). We found complete descriptions of a specific model of care characterized by eight sources as either a trauma informed (Alme et al., 2021; Gamble et al., 2020; Gueron et al., 2020; Singh et al., 2019; Sjölund et al., 2009) or a biopsychosocial approach. (Karrer, 2022; Karrer et al., 2020; Nielsen, 2014) These sources recommended and defined culturally sensitive, trauma-informed practices in addition to pain neuroscience education, principles of graded activity, and exercise to restore function. Interventions to reduce stress, improve body awareness, sleep hygiene, symptom control, self-efficacy, and behavior change principles were also included. Five of the eight sources illustrating the trauma-informed and biopsychosocial approaches were descriptive and not scientifically tested. Both Gueron, and Karrer reported pre-post outcomes of their biopsychosocial models, and Gam-

Figure 1. *PRISMA flow diagram*



ble conducted a randomized controlled pilot study. (Gamble et al., 2020; Gueron et al., 2020; Karrer et al., 2020). These models of care fit into our trauma-informed care theme.

The multimodal interventions included in the sources targeted a variety of somatic elements (Table 2). Physical exercises were predominant and recommended by all sources. Recommendations ranged from general strengthening to region specific strengthening, aerobic, and aquatic exercise. Balance and body-awareness exercises were physical interventions recommended by several sources. Four sources utilized Basic Body Awareness Therapy (BBAT) which is described as a movement approach aimed at addressing movement habits and enhancing awareness of movement.(IATBBAT, 2018) The goal of BBAT is to increase ease of movement, balance and stability, as well as increase the sense of centering. Centering is a technique that uses mindful strategies to focus on what is happening in the moment, reduce anxiety, and manage stress. (Mindtools, 2023) Other interventions recommended were pain education (n=7 sources), sleep hygiene (n=5 sources), manual therapy (n=4 sources), self-efficacy (n=3 sources), and mental imagery (n=1 source). Pain education teaches individuals about the differences between acute and chronic pain, nervous system changes that perpetuate pain symptoms, as well as the association of stress and fear of movement with pain symptoms. (Hoegh, 2022; Wijma et al., 2016) Poor sleep has a direct correlation with chronic pain symptoms, therefore identifying and addressing sleep issues is an important component of pain care. (Duo et al., 2023; Siengsukon et al., 2017) Self-efficacy is an individual's belief that they can carry out certain tasks or behaviors; low self-efficacy is correlated with disability, pain intensity, and is a

Table 1: Sources of evidence grouped by theme

Author/ Year	Title	Source	Subjects/ Country	Treatment	Identified Themes	Frequency	Outcomes/*Results*
Alme et al., 2021	*Collaborative effort to increase the physiotherapists competence in rehabilitation of SOT**	Expert opinion	N/A	Did not specify group vs individual PT described: Yes. Competencies for PT's: 1) trauma sensitive care 2) BA* & empowerment 3) advocacy 4) pain management 5) self-care for the PT	Trauma BA Pain	Not described	N/A
Gamble et al., 2020	*The effects of a combined psychotherapy and physiotherapy group treatment program for survivors of torture incarcerated in an adult prison in Kurdistan, Iraq*	RCT* waitlist controlled pilot study	N=30 male Iraq	Group + 1 individual session PT described: Yes. Trauma informed approach; goal setting; relaxation, mindfulness, breathing, BA, low/mod/high intensity exercise, stretching/strengthening, circuit training. Education on PNE*, coping skills, sleep hygiene. Psychotherapy + PT	Trauma BA Pain	10 weekly group sessions	N=27 analyzed (16 wait list; 11 intervention) Central Sensitization Inventory PSFS Pittsburg Sleep Quality Index General Self Efficacy Scale Statistically significant within and between group change for all measures
Gueron et al., 2020	*Group physiotherapy with survivors of torture in urban and camp settings in Jordan and Kenya*	Observational Secondary analysis, Compared outcomes of SOT vs refugees without torture	N=1183 SOT Center for Victims of Torture in Nairobi, Kakuma, Jordan	Individual assessment then group PT described: Yes. Trauma informed approach; body mechanics, BA, pelvic floor exercises, focus on independence and empowerment; interoceptive awareness exercise, postural exercise, stretching, strengthening, aerobic exercise, sleep hygiene, control of symptoms, PNE. Psychology + PT	Trauma BA Pain	1x/week 10 weeks	DRI* Part A Functional ability DRI Part B: body functions and physicality DTI Part C: social participation DRI Part D: coping and outlook. 96% of participants improved in at least 1 of the 4 measures. Significant improvement only in Part B and D for SOT compared to those without torture experience

Author/ Year	Title	Source	Subjects/ Country	Treatment	Identified Themes	Frequency	Outcomes/*Results*
Karrer et al., 2020	*Acceptability of a physiotherapeutic pain school treatment in trauma-affected populations in the Middle Eastern & Northern African region*	Survey + Observational pre-post treatment	N=38 adults from Morocco, Iraq, Syria, Sudan, or not reported	Individual or group PT described: Yes BPS*, trauma informed approach; BBAT* inspired exercises, BA, behavior change planning, Education: PNE, stress, sleep hygiene, pacing, daily activity.	Trauma BA Pain	60 minutes x 10 sessions individual Or 90 minutes (w/ mid-point break) if group	BPI* Body awareness scale experience Self-rated health ***Significant pre-post change in pain severity, pain interference, BA, self-rated health, # of painful body areas and all measures of Body awareness scale except for experience of breathing*** (Survey results from physiotherapists not reported in this scoping review)
Karrer et al., 2022	*The DIGNITY physiotherapy pain school for trauma-affected populations*	Expert opinion Special report	DIGNITY Institute SOT	Individual or group PT described: Yes BPS, trauma-informed approach BBAT inspired exercises, BA, behavior change planning, breathing exercises Education: PNE, stress, sleep hygiene, pacing, daily activity, Referral as needed to other disciplines	Trauma BA Pain	90-minutes 1x/week; 10 sessions	N/A
Nielsen, 2014	*Interventions for physiotherapists working with torture survivors with special focus on chronic pain, PTSD*, and sleep disturbance*	Expert opinion Special report	DIGNITY Institute SOT	Individual PT described: Yes BPS, trauma informed approach: address PTSD, BBAT, BA, grounding, breathing / relaxation, mental imagery, strengthening, stabilizing, endurance, exercise, Education: Pain, daily living, sleep hygiene, massage Recommends interprofessional: MD, psychology, PT, social work	Trauma BA Pain	Short- or long-term care	N/A

Author/ Year	Title	Source	Subjects/ Country	Treatment	Identified Themes	Frequency	Outcomes/*Results*
Singh et al., 2019	*The role of physiotherapy in direct assistance to victims of torture: a holistic approach to healing and well being*	Descriptive	N= 81 children, 378 adults SOT from Manipur, India	Individual and group PT described: Partially. Trauma informed care: exercise (not specified), stretching, dance, MT*, modalities, pain education. Multidisciplinary Humane to Humane Transcultural Centre for Torture Victims	Trauma BA Pain	Did not specify	N/A
Sjölund et al., 2009	*Rehabilitating torture survivors*	Expert opinion	SOT	Did not specify individual or group PT described: Partially. Trauma, ICF* approach. PT goals to increase BA, physical activity/function, pain management, decrease pain behavior, enhance self-efficacy. Interprofessional	Trauma BA Pain	Did not specify	N/A
Dibaj et al., 2017	*An evaluation of combined narrative exposure therapy and physiotherapy for comorbid PTSD and chronic pain in torture survivors*	Case series A-B *case series* design, onset of PT added at 3 time points (after NET* visit 3,6,9) 3 & 6 month follow up	N=6 Middle East, West Africa, the Caucasus	Individual PT described: Partially. Hydrotherapy, sitting exercises; general exercise- not described, pain management strategies (not described) Psychology + PT	BA Pain	60 minutes x 10 sessions	CAPS* PTSD Scale*: 2/6 reduced symptoms, 2/6 marked improvement, 2/6 unremitting symptoms.* HRSD*: *4/6 decreased, 2/6 no change.* BPI: *2/6 improved, 2/6 worsened, 2/6 missing data.* NPR*: *2/6 improved, 2/6 worsened, 2/6 missing data*
Gueron & Ruiter, 2020	*International survey of the utilisation of physiotherapy in treatment centers for survivors of torture*	Survey	N=87 centers (42 from Global North & 45 Global South)	Individual + group PT described; Yes. Treatment centers for SOT Medical, psych, counseling, PT, OT	BA Pain	N/A	Most frequently used PT modalities: exercise (85%), MT (75%), massage (70%) or group exercises/ activities (65%)

Author/ Year	Title	Source	Subjects/ Country	Treatment	Identified Themes	Frequency	Outcomes/*Results*
Liedl et al., 2011	*Physical Activity within a CBT* Intervention Improves Coping with Pain in Traumatized Refugees: Results of a Randomized Controlled Design*	RCT (Three arm trial) CBT + BF*, CBT+ BF + exercise/PT, waitlist	N= 36 SOT Balkans, Turkey, other	Individual PT described: Yes. PT instructed HEP*: 20 min/day: stretching (neck, back, and shoulders), endurance training, muscle strength, some PNE at initial session. Psychology (CBT+ BF) + independent PT HEP	BA Pain	20 minutes daily PT exercise x 10 weeks	PTSD scale Hopkins Symptom Checklist- anxiety Verbal pain rating Pain Coping: Cognitive Pain Coping: Behavioral ***Significant between group effect for CBT+ PT vs CBT for cognitive coping.*** ***No difference in pain intensity between groups***
Negron, 2018	*Supporting asylum seekers and refugees who suffer chronic pain: an experience*	Observational Single arm pre-post treatment	N=192 SOT Sri Lanka, Iran, Eritrea, Iraq, DRC*, Cameroon	Individual PT described: Yes passive ROM*, stretching, isometrics; health information & PNE, MT, HEP (self-massage techniques; essential oils, breathing and stretching exercises) Interprofessional	BA Pain	1-2 PT sessions	Pain Use of self-help techniques Duration of improvement post-PT 53% reported major reduction in pain. 83% reported using self-help techniques. 26% had >2-week duration of reduced symptoms
Kim & Yu, 2015	*Effects of complex MT on PTSD, pain, function, and balance of male torture survivors with chronic low back pain*	RCT (Manual therapy + self-exercise *vs* self-exercise)	N=30 male SOT with chronic low back pain Korea	Individual PT described; Yes Exercise (pelvic tilt, upper abdominal exercises, lumbar stabilization exercises), myofascial release, MET* PT only	BA Pain	2x/week (MT/MET) 3x/week exercise x 8 weeks	PDSK* for PTSD VAS Korean Oswestry Disability Index Dynamic balance test Between group comparisons significant improvement in all measures in the MT group

Author/ Year	Title	Source	Subjects/ Country	Treatment	Identified Themes	Frequency	Outcomes/*Results*
Wang et al., 2016	A novel BPS approach of traumatized victims of torture and war in the post conflict context: a pilot RCT in Kosovo	RCT Parallel arm CBT+ BF+ physical activity/ exercise compared to waitlist	N=34 DIGNITY SOT in Kosovo *N=13 CBT+B-F+PT group, 15 waitlist*	Group PT described: Partially. BPS; Physical games/ activities session adjusted to "capacity of participants." Psychology+ PT	BA	60-90 min x 10 weeks over 3 months	Mental health Emotional well-being Physical health- chronic pain symptoms, BMI, handgrip, balance Functioning No differences between groups; limited effect of the intervention
(Nordbrandt et al., 2020)	Trauma-affected refugees treated with basic body awareness therapy or mixed physical activity as augmentation to treatment as usual: a pragmatic RCT	RCT 3-armed, pragmatic comparing TAU* (10 -16 sessions with MD / psychology + 1-2 sessions with social worker, or TAU + BBAT PT, or TAU + exercise PT	N=338 SOT in Denmark,	Individual PT described; Yes BBAT or PT exercises focusing on "improving strength, endurance, balance and coordination." No intensity or progression described. Competence Centre for Transcultural Psychiatry Interprofessional-MD, psychology, social work, PT	BA	60 min/ week x 20 weeks	HTQ- PTSD HSC Quality of life Sheehan Disability Scale Global assessment of functioning Health social function VAS BPI Interoceptive awareness Dynamic Gait Index Senior fitness test All groups improved; no difference between groups

* BA= body awareness; BBAT= basic body awareness therapy, BPS= biopsychosocial; BF= biofeedback; CAPS= Clinically administered PTSD Scale, CBT= Cognitive behavioral therapy; COI= Country of origin; DRI = Disability rating index; DRC= Democratic Republic of the Congo; HEP= home exercise program; HRSD= Hamilton Rating of Severe Depression; HSC= Hopkins symptom checklist; HTQ= Harvard Trauma questionnaire; ICF= International Classification of Functioning, Disability and Health; MET= Muscle energy technique; MT=manual therapy; N/A= not applicable; NET= Narrative exposure therapy; NPR= Numerical Pain Rating; Pain Mgmt.= pain management; PDSK= Post-traumatic diagnostic scale; PNE= pain neuroscience education; PTSD= post-traumatic stress disorder; RCT= randomized controlled trial; ROM= range of motion; SOT= Survivors of torture; TAU= treatment as usual; VAS=Visual analogue scale

***Table 2**: Frequency of Recommended PT Interventions*

Type of PT	Frequency (n=15)	Authors
Body awareness	7 (47%)	Alme et al., 2021; Gamble et al., 2020; Gueron et al., 2020; Nielsen, 2014; Sjölund et al., 2009, Karrer, 2020, 2022
Pain education/PNE*	7 (47%)	Gamble et al., 2020; Gueron et al., 2020; Liedl et al., 2011; Nielsen, 2014; Singh et al., 2019, Karrer, 2020, 2022
Strengthening	7 (47%)	Gamble et al., 2020; Gueron et al., 2020; Kim & Yu, 2015; Liedl et al., 2011; Negron, 2018; Nielsen, 2014; Nordbrandt et al., 2020
Trauma-informed model	6 (40%)	Alme et al., 2021; Gamble et al., 2020; Gueron et al., 2020; Nielsen, 2014; Singh et al., 2019; Sjölund et al., 2009
Sleep hygiene	5 (33%)	Gamble et al., 2020; Gueron et al., 2020; Nielsen, 2014, Karrer, 2020, 2022
Stretching	5 (33%)	Gamble et al., 2020; Gueron et al., 2020; Liedl et al., 2011; Negron, 2018; Singh et al., 2019
BBAT*	4 (27%)	Nielsen, 2014; Nordbrandt et al., 2020, Karrer, 2020, 2022
Biopsychosocial approach	4 (27%)	Nielsen, 2014; Wang et al., 2016, Karrer, 2020, 2022
Breathing exercises	4 (27%)	Gamble et al., 2020; Negron, 2018; Nielsen, 2014, Karrer, 2022
Manual Therapy	4 (27%)	Kim & Yu, 2015; Negron, 2018; Nielsen, 2014; Singh et al., 2019
Self-efficacy/advocacy	3 (20%)	Alme et al., 2021; Gueron et al., 2020; Sjölund et al., 2009
Balance	2 (13%)	Gueron et al., 2020; Nordbrandt et al., 2020,
Behavior change principles	2 (13%)	Karrer, 2020, 2022
General exercise (not specified)	2 (13%)	Dibaj et al., 2017; Singh et al., 2019
Physical activity	1 (7%)	Wang et al., 2016
Aerobic exercise	1 (7%)	Gueron et al., 2020
Aquatic therapy	1 (7%)	Dibaj et al., 2017
Mental imagery	1 (7%)	Nielsen, 2014
Pelvic floor exercise	1 (7%)	Gueron et al., 2020

*PNE= pain neuroscience education; BBAT= basic body awareness therapy

barrier to successful rehabilitation (Ferrari et al., 2019; Raman & Sharma, 2022). Mental imagery has been used for treatment of complex regional pain syndrome, phantom pain, and other chronic pain conditions, and has been found to alter pain sensations. (Bowering et al., 2013; Fardo et al., 2015; Limakatso et al., 2020) These PT interventions fit the body-awareness & empowerment, and pain management themes.

Individual PT sessions were provided or recommended by six sources. (Dibaj et al., 2017; Kim & Yu, 2015; Liedl et al., 2011; Negron, 2018; Nielsen, 2014; Nordbrandt et al., 2020) One source provided group treatments, (Wang et al., 2016) six provided or recommended a combination of both group and individual sessions, (Gamble et al., 2020; Gueron et al., 2020; Gueron & Ruiter, 2020; Karrer, 2022; Karrer et al., 2020; Singh et al., 2019) and two authors did not specify. (Alme et al.,

Table 3: Themes and PT interventions

Identified Themes	PT Interventions	
Trauma-Informed Care	Strategies directed at psychological and physical health: avoid re-traumatization development of a therapeutic alliance create a safe environment culturally sensitive patient centered care	
Pain Management	PNE Manual therapy Sleep hygiene Mental imagery	Intervention impacting either theme: Stretching Strengthening Physical activity/general exercise/aerobic exercise Aquatic therapy
Body-awareness & empowerment	Body awareness exercise BBAT Breathing exercise Pelvic floor exercise Self-efficacy Self-advocacy	

2021; Sjölund et al., 2009) All but three sources recommended or included interprofessional care when working with SOT. (Dibaj et al., 2017; Gamble et al., 2020; Gueron et al., 2020; Gueron & Ruiter, 2020; Karrer, 2022; Liedl et al., 2011; Negron, 2018; Nielsen, 2014; Nordbrandt et al., 2020; Singh et al., 2019; Sjölund et al., 2009; Wang et al., 2016).

Thematic Application

We categorized the described interventions from our 15 sources thematically. In this thematic application, eight sources recommended and described care utilizing all three themes (trauma-informed care, body-awareness & empowerment, pain management) (Table 1). (Alme et al., 2021; Gamble et al., 2020; Gueron et al., 2020; Nielsen, 2014; Singh et al., 2019; Sjölund et al., 2009) The remaining sources recommended interventions using one or two of the themes: five utilized interventions characterized by both the body-awareness & empowerment and pain management themes, (Dibaj et al., 2017; Gueron & Ruiter, 2020; Kim & Yu, 2015; Liedl et al., 2011; Negron, 2018) while two used interventions solely characterized by the body-awareness & empowerment theme. (Nordbrandt et al., 2020; Wang et al., 2016) Several PT interventions could be considered in both the pain management and the body-awareness & empowerment themes as the effects of the treatment can address both pain and movement (Table 3).

Research Outcomes

The ten papers that sought to substantiate PT interventions for SOT included one case series (Dibaj et al., 2017) (n=6), one survey (Gueron & Ruiter, 2020) (n=87), three pre-post observational studies (Gueron et al., 2020; Karrer et al., 2020; Negron, 2018) (n= 192, 38, and 1183), and five randomized controlled trials (Gamble et al., 2020; Kim & Yu, 2015; Liedl et al., 2011; Nordbrandt et al., 2020; Wang et al., 2016) (Table 1). Sample size ranged from 30-36 participants in four of the randomized controlled trials, while the 5th had 338 participants divided among 3 treatment groups.

Outcomes of the randomized controlled trials were mixed. In comparing a combination of cognitive behavioral therapy (CBT), biofeedback (BF) and PT consisting of physical activity and exercise to a waitlist control group, there were no significant differences between groups, and limited effect of the intervention (n=34). (Wang et al., 2016) When comparing usual care (MD and psychology) to usual care + BBAT PT, and usual care + PT general exercises, all participants improved, with no between group differences (n=338). (Nordbrandt et al., 2020) Both these trials used interventions categorized by one theme, the body-awareness & empowerment theme. Refer to Table 1 for outcome measures used and intervention specifics.

In comparing CBT+BF to CBT+BF+PT led exercises, there were significant improvements in cognitive coping strategies in the PT group, but no difference in pain intensity between the groups (n=36). (Liedl et al., 2011) A fourth study found that manual therapy and PT supervised exercise resulted in significant improvements in all measures as compared to an independent 3x/week self-exercise regime (n=30). (Kim & Yu, 2015) These two studies incorporated both the body-awareness & empowerment

and pain management themes. The fifth trial, a combination of PT and psychology sessions compared to a waitlist control group demonstrated statistically significant, within and between group changes, for all measures (n=30). (Gamble et al., 2020) This study utilized all three themes: trauma informed approach, body-awareness and empowerment and pain management.

Discussion

The main aim of our scoping review was to identify and outline recommendations for physical therapists when working with SOT. We identified fifteen sources of evidence describing PT treatment for SOT. Of these sources, three styles of source reporting emerged: 1) presenting or examining a trauma-informed biopsychosocial approach, 2) examination of PT for a specific condition such as PTSD, or 3) examination of a specific PT intervention such as manual therapy. A trauma-informed biopsychosocial approach addresses the multifaceted conditions challenging SOT. Eight sources described activities that reflect this trauma informed model. (Alme et al., 2021; Gamble et al., 2020; Gueron et al., 2020; Karrer, 2022; Karrer et al., 2020; Nielsen, 2014; Singh et al., 2019; Sjölund et al., 2009) Other sources focused on methods to treat symptoms of specific conditions. Post-traumatic stress and its contribution to chronic pain in SOT was frequently targeted through interventions including varying combinations of CBT, biofeedback, Basic Body Awareness Therapy, and exercise. (Dibaj et al., 2017; Liedl et al., 2011; Nordbrandt et al., 2020; Wang et al., 2016) Lastly, a few sources examined a specific PT intervention. The impact of adding manual therapy to reduce pain, PTSD symptoms, and improve function was individually assessed by two sources. (Kim & Yu, 2015; Negron, 2018) The differences in the treatment approach and style of source reporting made it challenging to compare programs and outcomes. Therefore we categorized the PT treatment into themes following the trauma informed model described by the PREP collaboration in order to understand and present the data. (Alme et al., 2021) Three main themes were used: a trauma-informed approach, interventions that address body-awareness & empowerment, and pain management.

We found eight sources who included treatment inclusive of all three themes in their PT program for working with SOT. Of these eight sources, only three were research studies examining outcomes of the approach. (Gamble et al., 2020; Gueron et al., 2020; Karrer et al., 2020) There were positive findings, but results must be taken cautiously due to design limitations (small sample sizes and lack of a control group in two of the sources). Studies using only one treatment theme (body-awareness & empowerment) resulted in no between group differences; of the studies using only one treatment theme, one was appropriately powered (Nordbrandt et al., 2020) and one was not (Wang et al., 2016). Studies using two treatment themes (body-awareness & empowerment and pain management) had mixed results. (Kim & Yu, 2015; Liedl et al., 2011) We suspect that utilizing PT interventions related to all three themes helps ensure therapists are providing a holistic, comprehensive plan of care to address the survivors' complex needs. However, larger, appropriately powered studies are needed to assess the impact of this PT approach on outcomes of pain and disability in SOT.

The physical therapy mode of delivery was largely performed via individual sessions. This is appropriate particularly in the early stages of treatment, in order to establish a trusting, therapeutic alliance with the survivor. We recommend individual assessment and treatment for SOT. As treatment progresses, group sessions are an optional mode of delivery and may enhance outcomes. (Karrer et al., 2020; Lakke & Meerman, 2016) Dosage of the prescribed interventions could also impact outcomes. The frequency of the PT programs varied from one to three times per week, with duration ranging from one to 20 weeks. Clarity around recommendations for frequency as well as intensity of PT from future studies is needed.

Eleven of our sources recommended or described interprofessional care for SOT. This included PT treatment in combination with psychological, social, or medical services. Cognitive behavioral therapy and biofeedback interventions described in our sources were provided by a psychology team. Similar to treatment recommendations for chronic pain, we recommend interprofessional collaborations to meet the medical, physical, and mental health needs of SOT. (Cohen et al., 2021; Dale & Stacey, 2016; Fitzcharles et al., 2021; Flynn, 2020; Holten & Veasey Sr., 2008)

Our sources were largely from European countries at treatment centers designed for refugees and SOT. The variability in country of origin of the survivors speaks to the global need for education and training of physical therapists. The World Confederation for Physical Therapy (WCPT) calls on physical therapists globally to adhere to principles specifically condemning any practice of torture. (WCPT, 2023) Additionally, the WCPT calls for entry level PT program curriculum to include principles for the treatment of vulnerable populations, including those with physical and psychological effects of torture. Guidelines and recommendations exist to help clinicians in their quest to help improve the lives of SOT. (Alme et al., 2021; Karrer, 2022; Nielsen, 2014) However, larger controlled trials examining the effect of these methods are warranted. Based on the available evidence, allocating resources to PT treatment programs for SOT is a feasible and whole-person approach to address the complex mental and physical health

needs of this population. With over 100 million displaced persons globally, the need is high for physical therapists to understand trauma-informed care and implement appropriate interventions for SOT and for those who have undergone trauma due to forced migration events.

It is possible that relevant sources in other databases, or grey literature, were not included in this review. We used a rigorous search strategy and collaboration with a research librarian to mitigate this threat. A limitation of our review is the availability of data from several of our sources. For example, some did not specify the exact PT treatment, frequency, or mode of intervention. Our review included sources with varying levels of methodological rigor, which we purposefully allowed to understand the extent of the literature. Described treatment preferences may be regional as seen by BBAT, which is not routinely prescribed or practiced outside of Europe. Lastly, many SOT have a history of head injury and none of the sources described any type of concussion screening or treatment; this area of rehabilitation may be underutilized for this group of individuals.

Conclusions

Our review describes the scope of the literature for the physical therapy treatment of SOT. There is variability in PT approach and choice of intervention. A trauma-informed PT approach, coordinated with pain management, and body-awareness & empowerment interventions may address the complex needs of survivors. However, rigorous studies of this approach are lacking. As the number of displaced persons continues to rise globally, and human rights violations persist, we must be prepared to care for these vulnerable people. Physical therapists are encouraged to utilize a holistic approach, and to examine outcomes of this approach for SOT.

Acknowledgements:

The authors would like to thank Gary S. Atwood, M.A./MSLIS, Systematic Review Librarian and Library Associate Professor at the University of Vermont, for his help in development of the search strategy and conduction of the literature search.

References

Alme, M. N., Jalovcic, D., Fricker, I., Peters, S., Vårdal, R., Rocca, P., Hale, W., Alagöz, E., Leskovsek, N., Benyaich, A., McGowan, E., Pettersson, A., Boström, C., Giusti, L. M., Landry, M., Lowe, R., Wilhelmsen, K. T., & van Wijchen, J. (2021). Collaborative effort to increase the physiotherapist's competency in rehabilitation of torture survivors. *61-66*. https://doi.org/10.7146/torture.v30i3.121793

Amris, K., & Prip, K. (2000, March 3). *Physiotherapy for Torture Victims*. http://doc.rct.dk/doc/TORT2000-3-3.pdf

Amris, K., & Williams, A. C. de C. (2015). Managing chronic pain in survivors of torture. *Pain Management*, *5*(1), 5–12. https://doi.org/10.2217/pmt.14.50

Baird, E., Williams, A. C. de C., Hearn, L., & Amris, K. (2017). Interventions for treating persistent pain in survivors of torture. *The Cochrane Database of Systematic Reviews*, *8*, CD012051. https://doi.org/10.1002/14651858.CD012051.pub2

Berthold, S. M., Polatin, P., Mollica, R., Higson-Smith, C., Streets, F. J., Kelly, C. M., & Lavelle, J. (2020). The complex care of a torture survivor in the United States: The case of "Joshua." *Torture Journal*, *30*(1), Article 1. https://doi.org/10.7146/torture.v30i1.113063

Bowering, K. J., O'Connell, N. E., Tabor, A., Catley, M. J., Leake, H. B., Moseley, G. L., & Stanton, T. R. (2013). The Effects of Graded Motor Imagery and Its Components on Chronic Pain: A Systematic Review and Meta-Analysis. *The Journal of Pain*, *14*(1), 3–13. https://doi.org/10.1016/j.jpain.2012.09.007

Carinci, A. J., Mehta, P., & Christo, P. J. (2010). Chronic pain in torture victims. *Current Pain and Headache Reports*, *14*(2), 73–79. https://doi.org/10.1007/s11916-010-0101-2

Cohen, S. P., Vase, L., & Hooten, W. M. (2021). Chronic pain: An update on burden, best practices, and new advances. *The Lancet*, *397*(10289), 2082–2097. https://doi.org/10.1016/S0140-6736(21)00393-7

Dale, R., & Stacey, B. (2016). Multimodal Treatment of Chronic Pain. *The Medical Clinics of North America*, *100*(1), 55–64. https://doi.org/10.1016/j.mcna.2015.08.012

Dibaj, I., Halvorsen, J. Ø., Kennair, L. E. O., & Stenmark, H. I. (2017). An evaluation of combined narrative exposure therapy and physiotherapy for comorbid PTSD and chronic pain in torture survivors. *Torture Journal*, *27*(1), Article 1. https://doi.org/10.7146/torture.v27i1.26534

Doherty, S. M., Craig, R., Gardani, M., & McMillan, T. M. (2016). Head injury in asylum seekers and refugees referred with psychological trauma. *Global Mental Health*, *3*, e28. https://doi.org/10.1017/gmh.2016.23

Duo, L., Yu, X., Hu, R., Duan, X., Zhou, J., & Wang, K. (2023). Sleep disorders in chronic pain and its neurochemical mechanisms: A narrative review. *Frontiers in Psychiatry*, *14*. https://www.frontiersin.org/articles/10.3389/fpsyt.2023.1157790

Edwards, R. R., Dworkin, R. H., Sullivan, M. D., Turk, D., & Wasan, A. D. (2016). The role of psychosocial processes in the development and maintenance of chronic pain disorders. *The Journal of Pain : Official Journal of the American Pain Society*, *17*(9 Suppl), T70–T92. https://doi.org/10.1016/j.jpain.2016.01.001

Fardo, F., Allen, M., Jegindo, E.-M. E., Angrilli, A., & Roepstorff, A. (2015). Neurocognitive evidence for mental imagery-driven hypoalgesic and hyperalgesic pain regulation. *Neuroimage*, *120*, 350–361. https://doi.org/10.1016/j.neuroimage.2015.07.008

Ferrari, S., Vanti, C., Pellizzer, M., Dozza, L., Monticone, M., & Pillastrini, P. (2019). Is there a relationship between self-efficacy, disability, pain and sociodemographic characteristics in chronic low back pain? A multicenter retrospective analysis. *Archives of Physiotherapy*, *9*(1), 9. https://doi.org/10.1186/s40945-019-0061-8

Fitzcharles, M.-A., Cohen, S. P., Clauw, D. J., Littlejohn, G., Usui, C., & Häuser, W. (2021). Nociplastic pain: Towards

an understanding of prevalent pain conditions. *The Lancet*, *397*(10289), 2098–2110. https://doi.org/10.1016/S0140-6736(21)00392-5

Flynn, D. M. (2020). Chronic Musculoskeletal Pain: Nonpharmacologic, Noninvasive Treatments. *American Family Physician*, *102*(8), 465–477.

Gamble, A., Ahmed, A. M. A., Rahim, S. H., & Hartman, J. (2020). The effects of a combined psychotherapy and physiotherapy group treatment program for survivors of torture incarcerated in an adult prison in Kurdistan, Iraq: A pilot study. *Torture Journal*, *30*(2), Article 2. https://doi.org/10.7146/torture.v30i2.119199

George, S. Z., Fritz, J. M., Silfies, S. P., Schneider, M. J., Beneciuk, J. M., Lentz, T. A., Gilliam, J. R., Hendren, S., & Norman, K. S. (2021). Interventions for the Management of Acute and Chronic Low Back Pain: Revision 2021. *Journal of Orthopaedic & Sports Physical Therapy*, *51*(11), CPG1–CPG60. https://doi.org/10.2519/jospt.2021.0304

Gueron, L. J. P., Amoyi, A., Chao, W., Chepngetich, J., Kibet, J. J., Nyambok, S., & Wesonga, J. (2020). Group physiotherapy with survivors of torture in urban and camp settings in Jordan and Kenya. *Torture Journal*, *30*(3), Article 3. https://doi.org/10.7146/torture.v30i3.121785

Gueron, L. J. P., & Ruiter, M. de. (2020). International survey of the utilisation of physiotherapy in treatment centers for survivors of torture. *Torture Journal*, *30*(3), Article 3. https://doi.org/10.7146/torture.v30i3.122775

HealTorture. (2024). *Improving Well-Being for Refugees in Primary Care: A Toolkit for Providers*. Heal Torture. https://healtorture.org/improving-well-being-for-refugees-in-primary-care-a-toolkit-for-providers/

Hoegh, M. (2022). Pain Science in Practice: What Is Pain Neuroscience? Part 1. *Journal of Orthopaedic & Sports Physical Therapy*, *52*(4), 163–165.

Holten, K. B., & Veasey Sr., G. D. (2008). Managing chronic pain: What's the best approach? *Journal of Family Practice*, *57*(12), 806–811.

IASP. (2014). *IASP Taxonomy—IASP*. http://www.iasp-pain.org/Taxonomy

IATBBAT. (2018). *Basic Body Awareness Therapy (BBAT) | International Association of Teachers in Basic Body Awareness Therapy | Kineoo—Jordy den Engelsman*. http://iatbbat.com/basic-body-awareness-therap.html

Karrer, A.-M. (2022). *DIGNITY Implementing Manual*.

Karrer, A.-M., Hansen, A. K. V., Nordin, L., & Oestergaard, M.-L. D. (2020). Acceptability of a physiotherapeutic pain school treatment in trauma-affected populations in the Middle Eastern & Northern African region. *Torture Journal*, *30*(3), Article 3. https://doi.org/10.7146/torture.v30i3.122375

Keshk, M., Harrison, R., Kizito, W., Psarra, C., Owiti, P., Timire, C., Camacho, M. M., De Maio, G., Safwat, H., Matboly, A., & Van den Bergh, R. (2021). Offering care for victims of torture among a migrant population in a transit country: A descriptive study in a dedicated clinic from January 2017 to June 2019. *International Health*, *13*(2), 89–97. https://doi.org/10.1093/inthealth/ihaa068

Kim, H. J., & Yu, S. H. (2015). Effects of complex manual therapy on PTSD, pain, function, and balance of male torture survivors with chronic low back pain. *Journal of Physical Therapy Science*, *27*(9), 2763–2766. https://doi.org/10.1589/jpts.27.2763

Lakke, S. E., & Meerman, S. (2016). Does working alliance have an influence on pain and physical functioning in patients with chronic musculoskeletal pain; a systematic review. *Journal of Compassionate Health Care*, *3*(1), Article 1. https://doi.org/10.1186/s40639-016-0018-7

Liedl, A., Müller, J., Morina, N., Karl, A., Denke, C., & Knaevelsrud, C. (2011). Retracted: Physical Activity within a CBT Intervention Improves Coping with Pain in Traumatized Refugees: Results of a Randomized Controlled Design. *Pain Medicine*, *12*(2), 234–245. https://doi.org/10.1111/j.1526-4637.2010.01040.x

Limakatso, K., Madden, V. J., Manie, S., & Parker, R. (2020). The effectiveness of graded motor imagery for reducing phantom limb pain in amputees: A randomised controlled trial. *Physiotherapy*, *109*, 65–74. https://doi.org/10.1016/j.physio.2019.06.009

Longstreth, G. F., Attix, C., & Kuck, J. (2022). Torture Survivors and Asylum: Legal, Medical, and Psychological Perspectives. *The American Journal of Medicine*, S0002-9343(22)00808-7. https://doi.org/10.1016/j.amjmed.2022.10.014

Main, C. J., & George, S. Z. (2011). Psychologically Informed Practice for Management of Low Back Pain: Future Directions in Practice and Research. *Physical Therapy*, *91*(5), 820–824. https://doi.org/10.2522/ptj.20110060

McKinney, M. M. (2011). Treatment of survivors of torture: Spiritual domain. *Torture : Quarterly Journal on Rehabilitation of Torture Victims and Prevention of Torture*, *21*(1), 61–66.

McPherson, J. I. (2019). Traumatic brain injury among refugees and asylum seekers. *Disability and Rehabilitation*, *41*(10), 1238–1242. https://doi.org/10.1080/09638288.2017.1422038

Mindtools. (2023). *Centering—Maintaining Focus in Stressful Situations*. Mindtools. https://www.mindtools.com/ashwpqm/centering

Negron, A. (2018). Supporting asylum seekers and refugees who suffer chronic pain: An experience. *International Journal of Migration, Health, and Social Care; Hove*, *14*(1), 55–67. http://dx.doi.org/10.1108/IJMHSC-02-2016-0011

Nielsen, H. (2014). *Interventions for Physiotherapists Working with torture Survivors*. Interventions for Physiotherapists Working with Torture Survivors. https://www.dignity.dk/wp-content/uploads/publication-series-6.pdf

Nordbrandt, M. S., Sonne, C., Mortensen, E. L., & Carlsson, J. (2020). Trauma-affected refugees treated with basic body awareness therapy or mixed physical activity as augmentation to treatment as usual-A pragmatic randomised controlled trial. *PloS One*, *15*(3), e0230300. https://doi.org/10.1371/journal.pone.0230300

Perrot, S., Cohen, M., Barke, A., Korwisi, B., Rief, W., Treede, R.-D., & Pain, T. I. T. for the C. of C. (2019). The IASP classification of chronic pain for ICD-11: Chronic secondary musculoskeletal pain. *PAIN*, *160*(1), 77. https://doi.org/10.1097/j.pain.0000000000001389

Rabin, M., & Willard, C. (2014). Torture and Refugees. In A. Annamalai (Ed.), *Refugee Health Care: An Essential Medical Guide* (pp. 181–192). Springer. https://doi.org/10.1007/978-1-4939-0271-2_14

Raman, S., & Sharma, P. (2022). Self-efficacy as a mediator of

the relationship between pain and disability in chronic pain patients: A narrative review. *Bulletin of Faculty of Physical Therapy*, *27*(1), 42. https://doi.org/10.1186/s43161-022-00101-y

Siengsukon, C. F., Al-dughmi, M., & Stevens, S. (2017). Sleep Health Promotion: Practical Information for Physical Therapists. *Physical Therapy*, *97*(8), 826–836. https://doi.org/10.1093/ptj/pzx057

Sigvardsdotter, E., Vaez, M., Rydholm Hedman, A.-M., & Saboonchi, F. (2016). Prevalence of torture and other warrelated traumatic events in forced migrants: A systematic review. *Torture : Quarterly Journal on Rehabilitation of Torture Victims and Prevention of Torture*, *26*(2), 41–73.

Singh, T. D., Roy, L. D., Thoibi, P., Kumari, N., Devi, T. S., & Surjit, N. (2019). The Role of Physiotherapy in Direct Assistance to Victims of Torture: A Holistic Approach to Healing and Wellbeing. *IRA-International Journal of Management & Social Sciences (ISSN 2455-2267)*, 54. https://doi.org/10.21013/jmss.v14.n2sp.p6

Sjölund, B. H., Kastrup, M., Montgomery, E., & Persson, A. L. (2009). Rehabilitating torture survivors. *Journal of Rehabilitation Medicine*, *41*(9), 689–696. https://doi.org/10.2340/16501977-0426

Tricco, A. C., Lillie, E., Zarin, W., O'Brien, K. K., Colquhoun, H., Levac, D., Moher, D., Peters, M. D. J., Horsley, T., Weeks, L., Hempel, S., Akl, E. A., Chang, C., McGowan, J., Stewart, L., Hartling, L., Aldcroft, A., Wilson, M. G., Garritty, C., … Straus, S. E. (2018). PRISMA Extension for Scoping Reviews (PRISMA-ScR): Checklist and Explanation. *Annals of Internal Medicine*, *169*(7), 467–473. https://doi.org/10.7326/M18-0850

Tsur, N., Defrin, R., Shahar, G., & Solomon, Z. (2020). Dysfunctional pain perception and modulation among torture survivors: The role of pain personification. *Journal of Affective Disorders*, *265*, 10–17. https://doi.org/10.1016/j.jad.2020.01.031

UN General Assembly. (1984). *Convention against Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment*. OHCHR. https://www.ohchr.org/en/instruments-mechanisms/instruments/convention-against-torture-and-other-cruel-inhuman-or-degrading

UNHCR. (2022). *Istanbul protocol. Manual on the Effective Investigation and Documentation of Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment.* Professional Series # 8). Geneva. United Nations High Commissioner for Human Rights-(Updated version-Original 1999)

UNHRC. (2022). *Global Trends Report 2022*. UNHCR. https://www.unhcr.org/global-trends-report-2022

Wang, S.-J., Bytyçi, A., Izeti, S., Kallaba, M., Rushiti, F., Montgomery, E., & Modvig, J. (2016). A novel bio-psycho-social approach for rehabilitation of traumatized victims of torture and war in the post-conflict context: A pilot randomized controlled trial in Kosovo. *Conflict and Health*, *10*, 34. https://doi.org/10.1186/s13031-016-0100-y

WCPT. (2023). *Policy Statement: Torture*. World Physiotherapy. https://world.physio/policy/ps-torture

Wijma, A. J., Wilgen, C. P. van, Meeus, M., & Nijs, J. (2016). Clinical biopsychosocial physiotherapy assessment of patients with chronic pain: The first step in pain neuroscience education. *Physiotherapy Theory and Practice*, *32*(5), 368–384. https://doi.org/10.1080/09593985.2016.1194651

Submitted 12th of July 2023
Accepted 2nd of February 2024