

Self-Managed CIH Approaches for Chronic Pain and PTSD: A Review of Reviews

BELLE ZACCARI, PSYD

5.16.24

CIH CYBERSEMINAR SERIES

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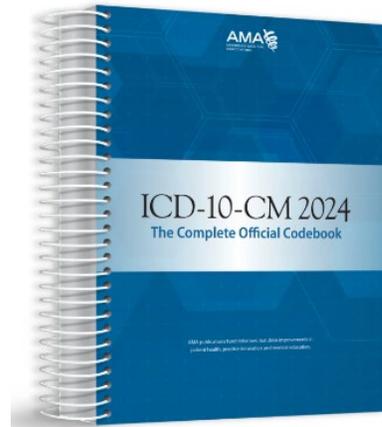
Objectives

- ❖ Background and Relevance: Review Chronic pain and PTSD (CP+PTSD) Comorbidity
- ❖ Present Study and Findings
- ❖ Discussion & Future Directions for Related Research

Diagnostic Criteria

CHRONIC PAIN

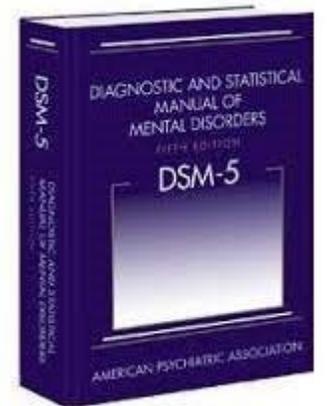
- Recurrent pain
- > 3 mo. duration
 - Nocioceptive
 - Neuropathic
 - Nocioplastic⁸⁻⁹
- Included Disorders
 1. chronic primary pain (e.g. fibromyalgia, back pain)
 2. chronic cancer pain
 3. chronic post-traumatic and postsurgical pain
 4. chronic neuropathic pain
 5. chronic headache and orofacial pain
 6. chronic visceral pain
 7. chronic musculoskeletal pain



PTSD

DSM-5 PTSD Symptom Criteria:

- Re-experiencing
- Avoidance
- Changes to Mood and Cognitions
- Hyperarousal



Associated Harms of CP+PTSD

greater risk of suicide

pain interfering with life

increased rate of disability

increased pain and distress

worsening symptoms of PTSD

decreased patient satisfaction

negative impacts on social functioning

greater cost & increased health care utilization

higher pain intensity, pain catastrophizing, disability, and health care utilization

poorer coping skills when both conditions are present vs. just one or the other



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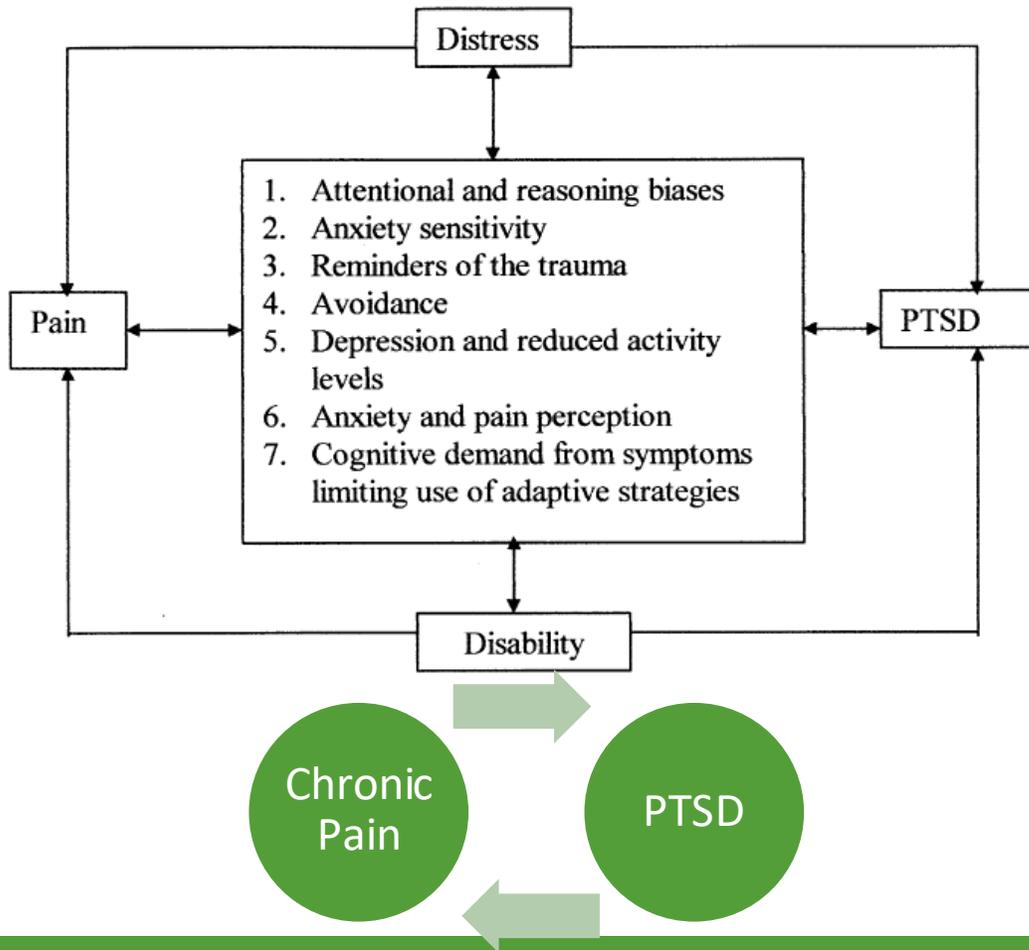
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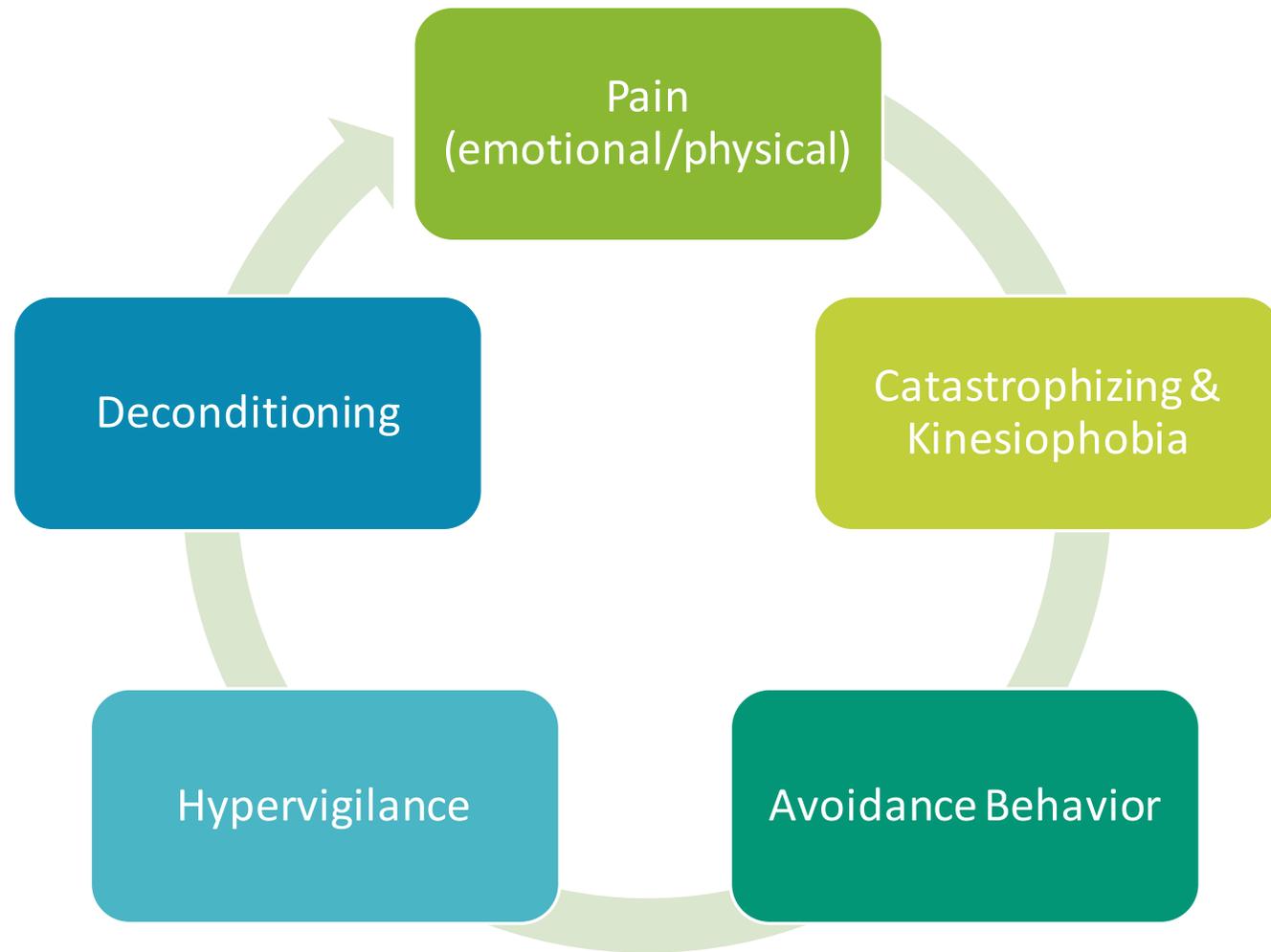
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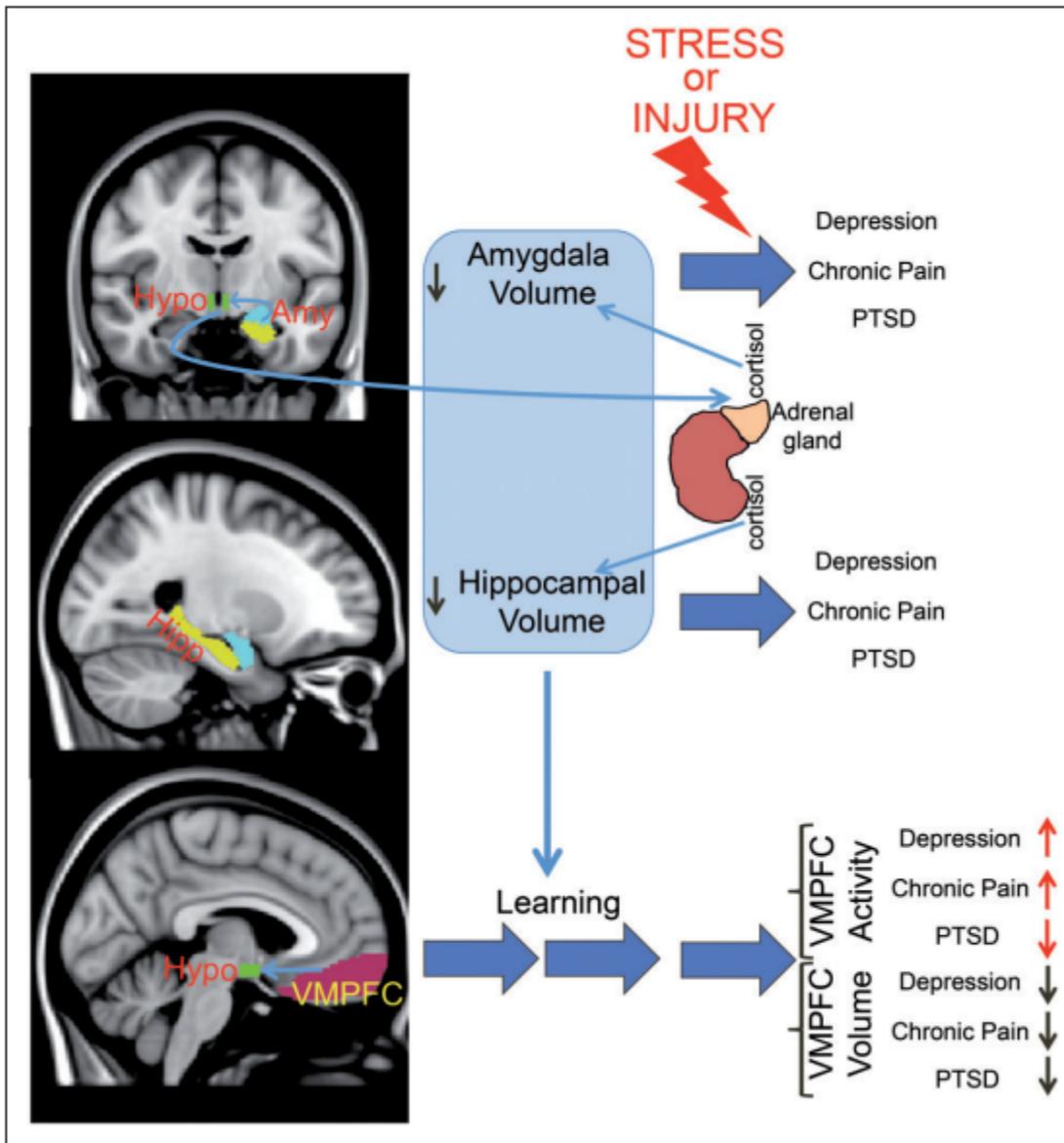
Mutual Maintenance

Shared Vulnerability





Fear-Avoidance Model



Invited Review—Inaugural Issue: RDoC & Beyond

Chronic Pain and Chronic Stress: Two Sides of the Same Coin?

Chadi G Abdallah^{1,2} and Paul Geha^{1,2,3}

**CHRONIC
STRESS**

Chronic Stress
Volume 1: 1–10
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REVIEW ARTICLES

The Shared Neuroanatomy and Neurobiology of Comorbid Chronic Pain and PTSD

Therapeutic Implications

Scioli-Salter, Erica R. PhD^{*†}; Forman, Daniel E. MD[‡]; Otis, John D. PhD^{*5}; Gregor, Kristin PhD^{*}; Valovski, Ivan MD^{||}; Rasmusson, Ann M. MD^{||}

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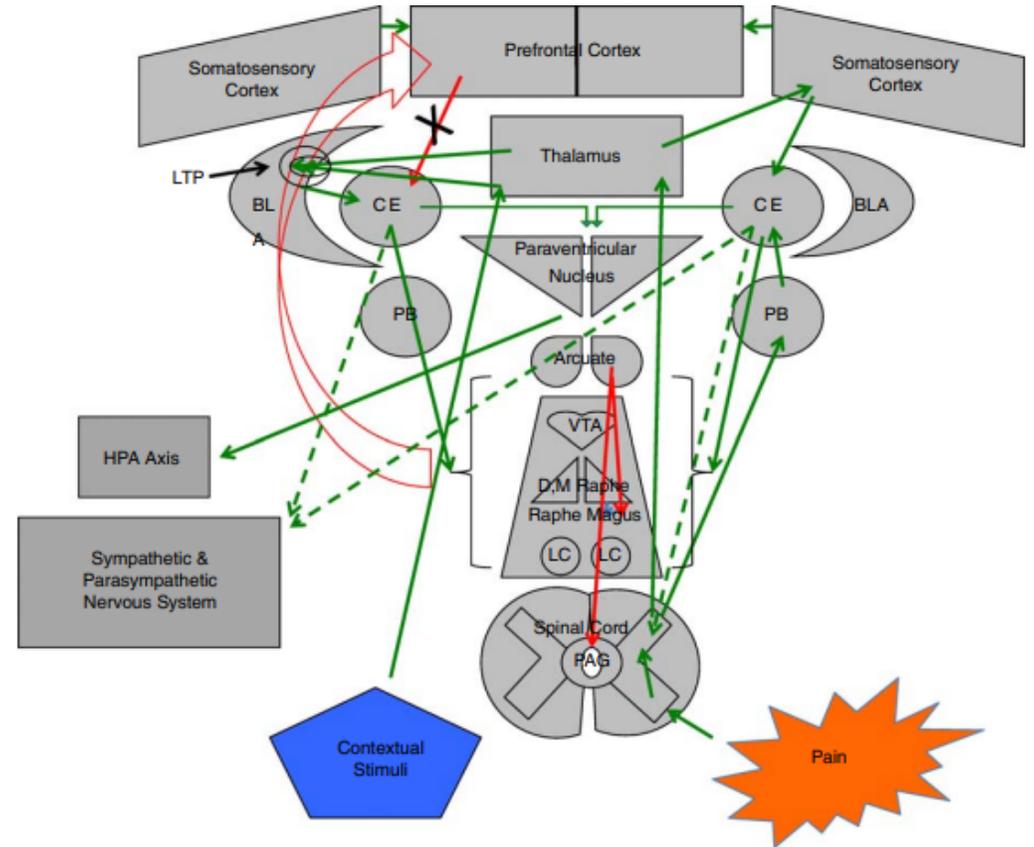
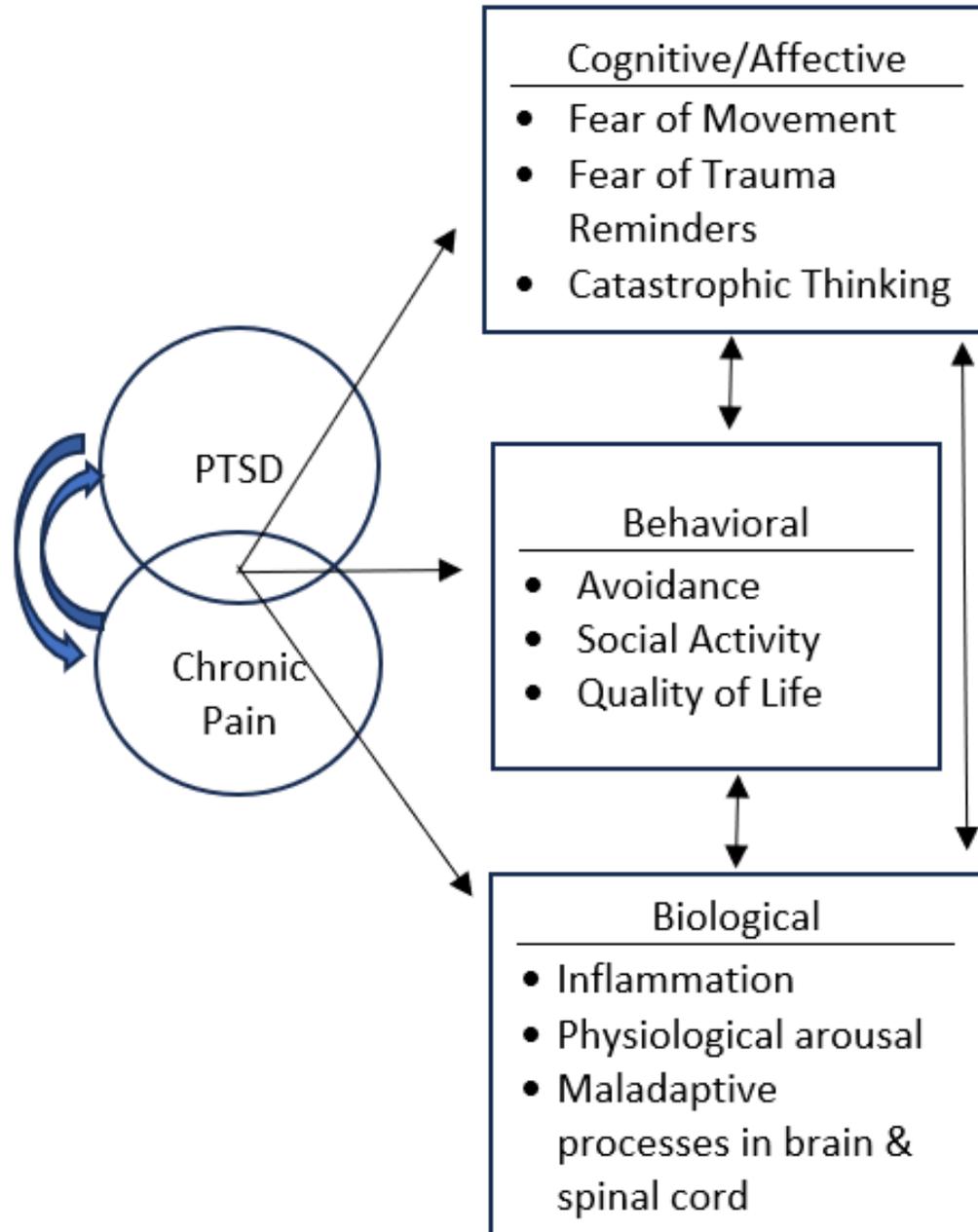
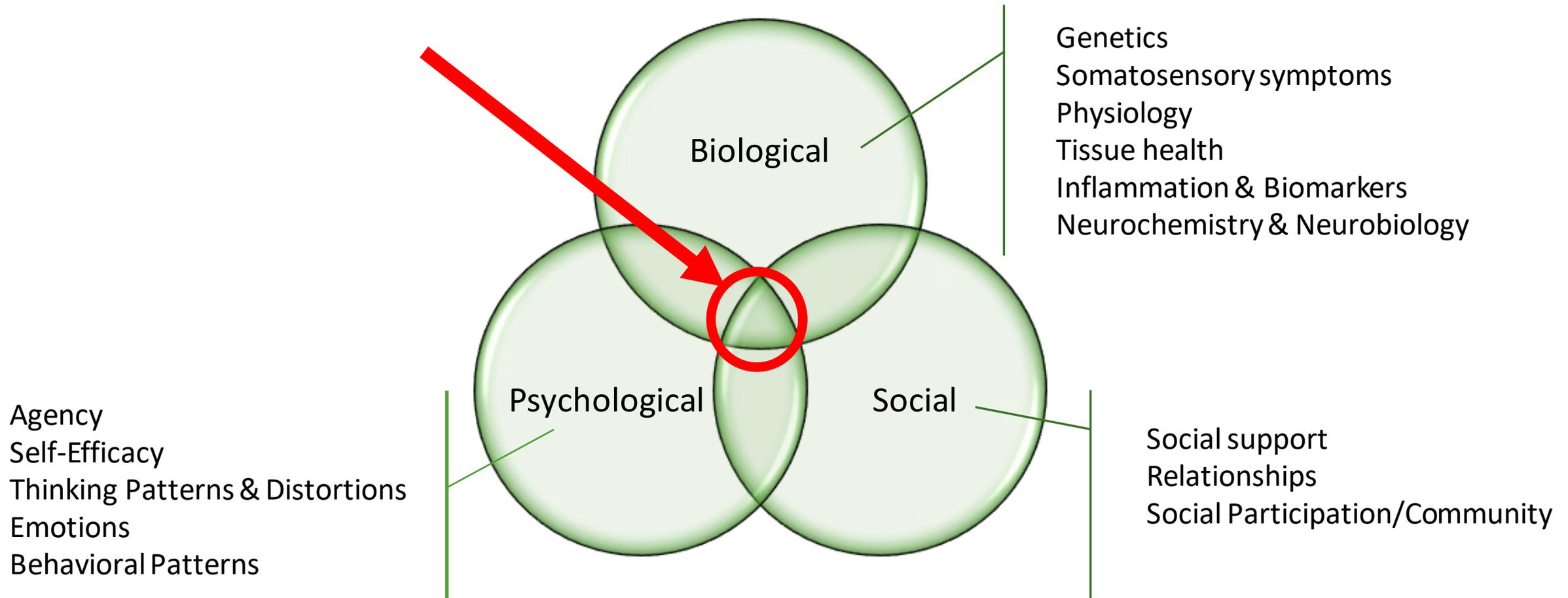


FIGURE 1. Neuroanatomy of chronic pain and posttraumatic stress disorder (PTSD) comorbidity. Left side of figure illustrates the convergence and learned association (via long-term potentiation or LTP) between peripheral pain signals and contextual stimuli associated with the traumatic experience in the basolateral nucleus of the amygdala (BLA) after passage through the thalamus. Projections from the BLA to the central nucleus of the amygdala (CE) activate the species specific defense response (SSDR) which includes: (1) intense activation of monoamine projections from the brainstem ventral tegmental area (VTA) (dopamine), dorsal and median raphe (serotonin), and locus coeruleus (LC) (norepinephrine) to the prefrontal cortex (PFC), which results in decrements in working memory and deactivation of the PFC brake on the amygdala; (2) activation of behavioral responses (eg, freezing) mediated by the periaqueductal gray (PAG); (3) activation of cardiovascular responses (not shown); (4) activation of the hypothalamic-pituitary-adrenal (HPA) axis, with release of steroids and hormones that facilitate stress adaptation and contribute to stress-induced hypoalgesia and impact inflammation; and (5) activation of the sympathetic and parasympathetic nervous system. Right side of figure illustrates the convergence of peripheral pain signals in the CE of the amygdala after indirect routing through the thalamus and BLA (per previous paragraph), direct routing through the parabrachial nucleus (PB), and delayed routing through the somatosensory cortex (which also projects to the PFC to potentially enable finer discrimination of signal inputs). Also illustrated are descending pain inhibitory pathways (red arrows) activated by release of NPY in the arcuate nucleus of the hypothalamus, which in turn project to the raphe magnus and periaqueductal gray. Dashed arrows indicates indirect projections; green arrows, excitatory; red arrows: inhibitory.



Conceptual Model of CP+PTSD

Biopsychosocial Model



Non-Pharmacological Trials

Psychotherapy

- Cognitive & Behavioral Models
 - CPT + CBT-CP – Otis et al., 2009 (N=6)
 - CPT + CBT-CP for Women with Fibromyalgia – Lacefield et al., 2020 (N=12)
- Behavioral Activation
 - BA for CP-PTSD – Plagge et al., 2013 (N=58)
- Emotional Awareness Expression Therapy
 - Emotional Awareness Expression Therapy for CP+PTSD - Yarns et al., 2022 (N=16)

Complementary and Integrative Health

- Mindfulness
 - Mindfulness for women with chronic pain– Okvat et al., 2021 (N=105)
- Yoga
 - Yoga for CP+PTSD – Chopin et al., 2020 (N=49)

The Impact of Psychological Interventions on Posttraumatic Stress Disorder and Pain Symptoms
A Systematic Review and Meta-Analysis

Ellen Goldstein, PhD, Christina McDonnell, MSc,†
 Rachel Atchley, PhD, MCR,‡ Kathleen Dorado, BA,† Carter Bedford, BA,‡
 Roger L. Brown, PhD,§ and Aleksandra E. Zgierska, MD, PhD**

- 2019
- N=18 (11 RCTs), 1583 participants
- 3 modalities: Exposure-based, CBT, Mindfulness
- RCTs, Uncontrolled, Multimodal

Outcome	Nonsignificant	Moderate	Large
PTSD		X	
Pain Intensity	X		
Pain interference	X		

Modality	PTSD	Pain Intensity
Exposure-based	LARGE	small
CBT	LARGE	small
Mindfulness	Medium	Medium

VHA Directive 1137

May 18, 2017

VHA DIRECTIVE 1137(2)

Department of Veterans Affairs
Veterans Health Administration
Washington, DC 20420

AMENDED
JULY 2, 2021

VHA DIRECTIVE 1137(2)
Transmittal Sheet
May 18, 2017

PROVISION OF COMPLEMENTARY AND INTEGRATIVE HEALTH

1. REASON FOR ISSUE: This Veterans Health Administration (VHA) directive establishes policy regarding the provision of complementary and integrative health (CIH) approaches, representing a significant change in how care is to be delivered across the VHA system.

[Directive 1137: Provision of Complementary and Integrative Health](#)

- Acupuncture
- Biofeedback
- Guided imagery
- Clinical Hypnosis
- Massage Therapy
- Meditation
- Tai chi
- Yoga

Whole Health Use and Interest Across Veterans With Co-Occurring Chronic Pain and PTSD: An Examination of the 18 VA Medical Center Flagship Sites

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Table 4. Differences in Whole Health Utilization Across Conditions.

Intervention or Approach	Chronic Pain (# of Veterans; %)	Chronic Pain + PTSD (# of Veterans; %)	Unadjusted Risk Ratio [95% CI]	Unadjusted P-value	Adjusted Risk Ratio [95% CI]	Adjusted P-value
Any core whole health	1179 (28.27)	680 (40.05)	1.42 [1.32, 1.52]	.000	1.24 [1.12, 1.35]	.000
Any CIH	1668 (40.00)	903 (53.18)	1.33 [1.26, 1.40]	.000	1.23 [1.14, 1.31]	.000
Acupuncture (traditional)	262 (6.28)	164 (9.66)	1.54 [1.28, 1.84]	.000	1.29 [1.03, 1.61]	.028
Acupuncture (community care)	301 (7.22)	198 (11.66)	1.62 [1.36, 1.90]	.000	1.40 [1.15, 1.71]	.001
Acupuncture (BFA)	304 (7.29)	152 (8.95)	1.23 [1.02, 1.47]	.032	1.01 [.81, 1.26]	.926
Massage	199 (4.77)	97 (5.71)	1.20 [.94, 1.51]	.134	1.11 [.84, 1.47]	.450
Massage (community)	241 (5.78)	136 (8.01)	1.39 [1.13, 1.69]	.002	1.36 [1.06, 1.73]	.014
Chiropractic	453 (10.86)	246 (14.49)	1.33 [1.15, 1.53]	.000	1.02 [.85, 1.21]	.821
Chiropractic (community)	365 (8.75)	185 (10.90)	1.25 [1.05, 1.47]	.011	1.28 [1.05, 1.56]	.017
Guided imagery	160 (3.84)	99 (5.83)	1.52 [1.19, 1.93]	.001	1.64 [1.22, 2.18]	.001
Meditation	423 (10.14)	265 (15.61)	1.54 [1.34, 1.76]	.000	1.36 [1.14, 1.60]	.001
Tai chi	256 (6.14)	174 (10.25)	1.67 [1.39, 2.00]	.000	1.67 [1.33, 2.07]	.000
Yoga	308 (7.39)	241 (14.19)	1.92 [1.64, 2.24]	.000	1.66 [1.37, 2.00]	.000
Biofeedback	31 (.74)	30 (1.77)	2.38 [1.45, 3.89]	.001	-	-
Hypnosis	91 (2.18)	68 (4.00)	1.84 [1.35, 2.49]	.000	2.15 [1.47, 3.12]	.000

Note. Firth's penalized logistic regression used; risk ratios represent increase in likelihood of intervention use for chronic pain + PTSD group compared to chronic pain only group; % are within condition percentages; - values not presented due to model estimation issues.

VHA Whole Health Services and Complementary and Integrative Health Therapies: a Gateway to Evidence-Based Mental Health Treatment



Bella Etingen, PhD¹, Bridget M. Smith, PhD^{1,2}, Steven B. Zeliadt, PhD^{3,4}, Jenesse E. Kaitz, PhD⁵, Anna M. Barker, MS⁵, Justeen K. Hyde, PhD^{5,6}, Gemmae M. Fix, PhD^{5,6}, David E. Reed II, PhD³, Ekaterina Anderson, PhD^{5,7}, Timothy P. Hogan, PhD^{5,8}, and Barbara G. Bokhour, PhD^{5,7}

Table 4 Factors associated with use of evidence-based psychotherapy among veterans with mental health diagnoses (utilization of any core whole health (WH) service, any complementary and integrative health (CIH) therapy, and specific CIH therapies) (*n* = 265,364)

Variable	OR	95% CI
Utilization of core WH services [REF: no utilization of core WH]	2.38***	2.23–2.54
Utilization of any CIH therapy [REF: no utilization of any CIH]	2.39***	2.25–2.53
Meditation [REF: no utilization of meditation]	3.53***	3.22–3.86
Tai Chi/Qigong [REF: no utilization of Tai Chi/Qigong]	3.47***	3.03–3.98
Yoga [REF: no utilization of yoga]	3.37***	3.01–3.77
Guided imagery [REF: no utilization of guided imagery]	2.93***	2.19–3.93
Biofeedback [REF: no utilization of biofeedback]	2.75***	2.17–3.48
Acupuncture [REF: no utilization of acupuncture]	2.04***	1.86–2.23
Massage therapy [REF: no utilization of massage therapy]	1.83***	1.52–2.21
Chiropractic care [REF: no utilization of chiropractic care]	1.65***	1.50–1.82
Hypnosis [REF: no utilization of hypnosis]	1.64*	1.04–2.60

All models controlled for marital status, gender, age, number of prior year mental health encounters, number of chronic conditions, race, ethnicity, facility variation, rurality, service connection, and each of the individual mental health conditions of focus in this analysis (depression, anxiety, and PTSD)

****p* < 0.001

Summary / Study Rationale

- ❖ CP+PTSD is a “perfect storm” of shared, reinforcing symptoms and consequences
- ❖ Talk therapy approaches for simultaneous treatment of CP+PTSD don’t work as well for pain; mindfulness-based approaches work well for CP+PTSD
- ❖ The use of mindfulness-based/Complementary and Integrative Health (CIH) treatment modalities for CP+PTSD is increasing
- ❖ Veterans with CP+PTSD desire CIH and use it more than those with pain alone and it makes Veterans with PTSD much more likely to use an EBP
- ❖ **Objective:** to summarize recent, high quality systematic reviews of self-managed CIH modalities for CP+PTSD and identify common themes about intervention types that may address both conditions

Methods

Key Questions

What self-managed CIH interventions help reduce symptoms of co-morbid pain and PTSD?

①

What self-managed CIH interventions help reduce symptoms of PAIN?

②

What self-managed CIH interventions help reduce symptoms of PTSD?

Protocol: P.I.C.O.T.S

CHRONIC PAIN		PTSD
Adults with Chronic Pain	POPULATION	Adults with PTSD
Tai Chi/Qi Gong, mindfulness/meditation, or yoga	INTERVENTION	Tai Chi/Qi Gong, mindfulness/meditation, or yoga
Any	COMPARATORS	Any
Pain Intensity, Pain-related Functioning	OUTCOMES	PTSD clinical interviews and symptom inventories (e.g. CAPS, PCL, PSS, PDS)
Short and long-term	TIMING	Short and long-term
Systematic reviews and meta-analyses	STUDY DESIGN	Systematic reviews and meta-analyses

Information Sources & Search Strategy

Search Conducted: October 2022 – March 2023

Databases: Ovid MEDLINE ALL, Ovid APA PsychInfo, Cochrane Central Register of Controlled Trials

Literature Search Strategy:

- Used a “best evidence” approach
- Search strategies developed in consultation with a research librarian
- Titles and abstracts were reviewed for inclusion
- Abstracts and full-text were dual-reviewed by two independent reviewers

Data Abstraction:

- Data were abstracted into a customized database and checked by two independent reviewers
- PICOTS data abstracted

Data Synthesis:

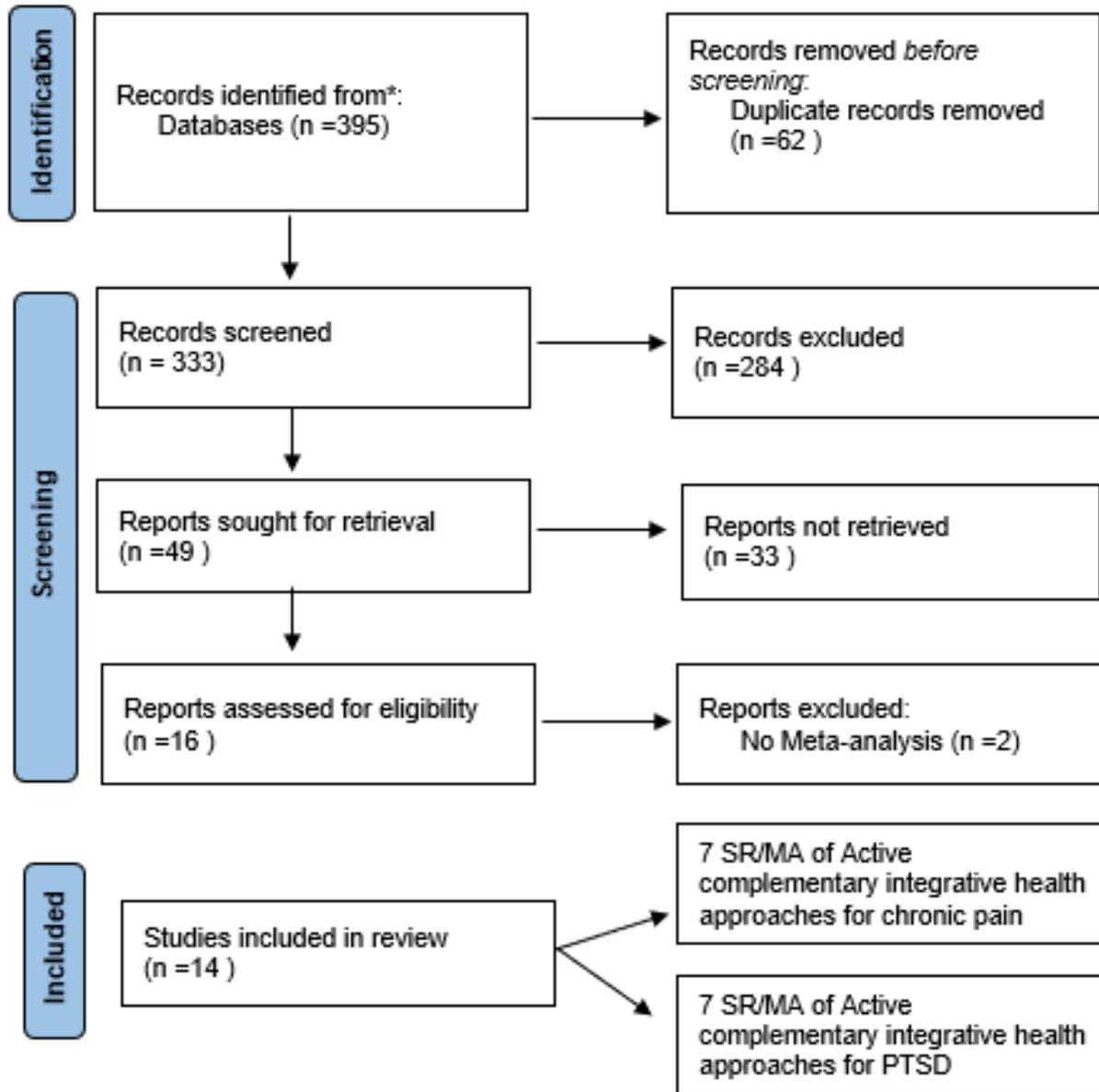
- Summary of abstracted data and qualitative synthesis of the literature for each key question

Assessing Overall Body of Evidence:

- Used Grading of Recommendations Assessment, Development and Evaluating (GRADE) to examine the certainty of evidence for treatment effects and outcomes of interest.

Results

Identification of studies via databases



Results

Author, y	Aims	Search dates	No. RCTs (patients)	Pop.	Interventions	Comparators	Outcomes
Anheyer et al., 2022	Assess safety and efficacy of yoga for LBP	Inception – Dec 2011	30 (2,702)	LBP	Yoga	Any	1) Pain Intensity 2) Disability 3) QoL
Donahue et al., 2021	Examine efficacy of CIH for reducing pain	1985-2019	15 (920)	US military	Non-pharm.& nonsurg. conventional or nonconventional	TAU, WLC, sham, or pain education	1) Pain intensity 2) Physical functioning 3) Depression
Hu et al., 2021	Review effects of Tai Chi on phys. and MH for patients with KOA	Inception – June 2020	16 (986)	KOA	Tai Chi	No exercise, education, UC, PT	1) KOA symptoms 2) Mood 3) Balance 4) Self-efficacy
Li et al., 2019	Quantitative summary of efficacy of yoga for CNNP	Inception – Jan 2019	10 (686)	CNNP	Yoga	Any	1) Pain intensity & Dis'y 2) CROM 3) QoL ; 4)Mood
Lin et al., 2022	Evaluate the efficacy of meditation-based therapies for CLBP management	Inception – July 2021	12 (1,153)	CLBP	Meditation/mindfulness based interventions	Any	1) Pain intensity, QoL, pain-related dis'y 2) Distress/ anxiety 3) Pain bothersome.
Soares et al., 2022	Determine effectiveness of meditation for adults with non-specific LBP	Inception – April 17, 2020	8 (1,234)	Nonsp. LBP	Meditation assoc. w/ movement. Excluded movement-based interventions (e.g. Yoga)	UC, WLC, education	1) Pain intensity & Dis'y 2) Anxiety 3) Depression kinesiophobia...
Zhu et al., 2020	Compare the effects of yoga for patients with CLBP	inception – Nov 2019	18 (1,943)	CLBP	Yoga	Non-exercise and PT exercise	1) Pain 2) Disability 3) QoL

Author, y	Aims	Search dates	No. RCTs (patients)	Pop.	Interventions	Comparators	Outcomes
Bisson et al., 2020	Det. ES of non-pharm & non-psych tx for PTSD	NR	30 (1,828)	Adults w/PTSD	Nonpharm. and nonpsych.* (e.g. Mantram, MBSR, yoga)	WL, TAU, sham TMS, medication, CBT, etc.	1) PTSD
Goldberg et al., 2019	Quantify the efficacy and acceptability of MBIs for military veterans	Inception – Oct 16, 2019	20 (898)	Military veterans with PTSD	MBIs. Excluded non-mindfulness CIH practices (e.g., mantram, yoga)	Any	1) PTSD 2) Depression 3) Gen.psych 4) QoL/Fx 5) Mindfulness
Liu et al., 2022	Meta-analysis of the effect of MBSR on PTSD	NR	10 (768)	Adults w/PTSD	MBSR	No intv. (WLC, TAU) or intv. (PCGT)	1) PTSD
Nguyen-Feng et al., 2019	Assess & quant. synthesize effectiveness of yoga	Inception – Feb 25, 2016	10 (542)	Adults who have exp. PTEs	Yoga	Any (e.g. TAU, inactive control, active control)	1) PTSD 2) Depression 3) Anxiety
Sun et al., 2021	Efficacy of mindfulness meditation	Jan 2010-Dec 2019	19 (1,326)	Veterans w/ military-rel. PTSD	Mindfulness Meditation	Any	1) PTSD
Taylor et al., 2020	Evaluate efficacy of MBIs for conseq. of trauma	Inception – Sep 30, 2018	24 (5,659)	Comm, homeless incarcerated adults with trauma	MBIs Excluded practices with breath/med. only	Any	1) PTSD
Zhu et al., 2021	Effects of mind–body ex. on PTSD, dep, & anx.	Jan 1980-Nov 2020	16 (871)	Adults w/PTSD	Mind body ex. (e.g. yoga, MBSR)	Any	1) PTSD

Aims

CHRONIC PAIN

Efficacy (4)

- Yoga (2), CIH, meditation-based treatments
- One of these also evaluated safety

Effectiveness (2)

- Meditation
- Yoga

Effects (1)

- Tai Chi on physical and mental health

PTSD

Efficacy (4)

- MBIs (2)
- Mindfulness meditation
- One also evaluated acceptability (MBIs)

Effects (1)

- MBSR
- Mind-body exercise

Effectiveness (1)

- Yoga

Effect sizes (1)

- Non-Pharm and non-psychological

Population

CHRONIC PAIN

Low Back Pain (LBP; 3)

- Chronic low back pain (2)
- Non-specific low back pain (1)
- Knee Osteoarthritis (KOA; 1)

Chronic Non-specific Neck Pain

All pain (injury, accident, pain conditions)

- Military Populations

PTSD

Adults with PTSD

Military Veterans; Militaryrelated PTSD (2)

Adults who have experienced trauma

Community, residential, homeless, incarcerated adults with trauma*

Intervention and Comparisons

Group	Interventions	Comparators
Chronic Pain	Yoga (3)	<ul style="list-style-type: none"> Any (UC, WLC, exercise, PT, education, etc. ; 2) Non-exercise and PT exercise (OT, PT)
	Meditation/Mindfulness (2)	<ul style="list-style-type: none"> Any (UC, CBT, education, etc.) UC, WLC, education
	Tai Chi	No exercise, education, UC, PT
	Non-Pharm, Non-Surgical	TAU, WLC, sham, education
PTSD	Mindfulness Based Interventions (MBIs; 4)	<ul style="list-style-type: none"> Any (WL, TAU, intervention, etc) No intervention or intervention
	Yoga	Any (TAU, inactive control, active control, none, UC)
	Mind-body exercises	Regular daily life, none, toning, TAU, PCGT, WLC
	Non-Pharm, Non-Psych	WL, TAU, sham, TMS, medication, CBT, etc.

Primary Outcomes & Timing

OUTCOMES

Chronic Pain

- Pain intensity (5)
 - Pain Intensity and Disability (2)
 - Pain Intensity, Quality of Life (QoL) and Pain-related disability (1)
- Knee Osteoarthritis Symptoms (1)

PTSD

All studies measured PTSD and PTSD symptoms as the sole primary outcome

TIMING

Chronic Pain

- One study looked at immediate and short-term results

PTSD

- 6 weeks, 3 months, 7 months, one year
- 3 months was common

Evidence Quality

RISK OF BIAS

Chronic Pain

- Cochrane tool (n=3)
- Funnel plots paired with another method (n=2)
- Physiotherapy Evidence Database
- Unnamed tool

PTSD

- Cochrane tool (n=6)

GRADE

Chronic Pain

- None mentioned (n=4)
- GRADE (n=3)

PTSD

- None mentioned (n=4)
- GRADE (n=3)

Qualitative Synthesis – Pain Outcomes

- ❖ Yoga to passive or no control shows back and neck pain improvement. Yoga to active control mostly does not. Yoga has longevity of these results for pain
- ❖ CIH showed better results with pain outcomes than depression outcomes
- ❖ Tai Chi had widespread benefit to pain, quality of life, mood, and functioning, MH and PH
- ❖ Meditation works well for and quality of life at short term and long term

Aim/Author, y	CIH Inter./Comparator	PTSD Outcome(s)	Summary Estimate for PTSD sx Reduction	Quality Assessment
Yoga for LBP Anheyer, 2022	Yoga: Active Control Yoga: Passive Control	Pain intensity Pain-related disability	Yoga: Passive Control Pain Intensity (ST/LT) SMD = -0.37; -0.52 to -0.22 Pain-related dis'y (ST/LT) SMD = - 0.38; -0.55 to -0.21 Yoga: Active was NS	Funnel Plot Linear Regression (Egger test) Ranged low, clear, high risk Recent trials had lower risk of selection bias
CIH for Chronic Pain (US military populations) Donahue, 2021	CIH: Non-pharm.& non-surg. conv. or non-conv Comparator: Active or passive control	Pain Intensity	d+ = 0.44 95% CI = 0.21 to 0.67	Visual Inspection Statistical Tests of Funnel Plots Small-study effects found on both ROB approaches
Tai Chi for KOA Hu et al., 2021	CIH: Tai Chi Comparator: Active or passive control	Pain (pain subscale of the WOMAC)	SMD = -.69 CI = -0.95 to -0.44	Cochrane ROB: risk ranged unclear -high GRADE: low/moderate quality of evidence
Yoga for CNNP Li et al., 2019	CIH: Yoga Comparator: Active or passive control	Intensity of neck pain	SMD = -1.13 CI = [-1.60, -0.66]	Cochrane ROB: ranged from low to high
Meditation for CLBP Lin et al., 2022	CIH: Meditation/MBIs Comparator: Active or passive control	Pain intensity	SMD = -.01 CI = [-0.23, 0.20]	ROB (NR which ROB rubric was used): ranged from low to high
Meditation+movement for Nonsp. LBP Soares et al., 2022	CIH: meditation+movement Comparator: passive controls (UC/WLC, educ.)	Chronic pain (intensity, bothersome, etc.)	Pain intensity (ST) SMD = -0.14 95% CI = -0.36 to 0.08	Physiotherapy Evidence Database ROB: 62.5% of studies were low ROB GRADE: Low certainty evidence
Yoga for pain, disability, and quality of life CLBP Zhu et al., 2020	CIH: Yoga Comparator: Active (PT) or passive (non-exercise)control	Pain, disability, and quality of life	Yoga: non-exercise pain MDs ranged: -0.43 to -0.83 (ST-LT) Yoga: non-exercise dis'y SMDs ranged: -0.30 to -0.38 (ST- LT) Yoga: PT was NS	Cochrane ROB: unclear but low ROB (publication) GRADE guidelines for strength of evidence evaluation

Qualitative Synthesis – PTSD Outcomes

- ❖ MBIs work better than both active and passive controls for PTSD
- ❖ MBSR can produce moderate to large effect sizes for PTSD
- ❖ Mindfulness-based and Mind-body exercises can have significant effect on reducing PTSD
- ❖ The quality of evidence limits the strength of the evidence

Aim/Author, y	CIH Intervention(s)/ Comparator	PTSD Related Outcome(s)	Summary Estimate for PTSD sx Reduction	Quality Assessment
Nonpharm and nonpsych approaches to PTSD Bisson et al., 2020	CIH: Mantram, MBSR, yoga, etc. Comparators: WL, TAU, sham, etc.	PTSD	SMDs ranged; provided for each intervention	Cochrane ROB GRADE: mostly “very uncertain”
MBIs in veterans Goldberg et al., 2020	CIH: MBIs Comparator: Active and passive control	PTSD symptoms	g ranged 0.32 to 0.80	Cochrane ROB; Several areas of concern
MBSR for PTSD Liu et al., 2022	CIH: MBSR Comparator: TAU, PCGT, health education	PTSD symptoms	g=0.46 95% CI: 0.31–0.62	Cochrane ROB; only reported no publication bias
Yoga for psych symptoms following trauma Nguyen-Feng et al., 2019	CIH: yoga Comparator: Active and passive control	PTSD symptoms	Avg w/in group d=-1.32 for yoga d = -0.26 for controls Overall b/t groups d=1.06	Cochrane Back Review Group risk of bias tool; ROB ranges from unclear (3) to high (6)
Mindfulness meditation for military-related PTSD Sun et al., 2021	CIH: mindfulness meditation Comparator: Any	PTSD	SMD= -0.33 95% CI [-0.45; -0.21]	Cochrane Collaboration’s tool; Funnel plot was visually asymmetrical; Egger's test showed possible publication bias p = 0.01
Mindfulness and yoga for psych trauma Taylor et al., 2020	CIH: MBIs Excl prac. w/ only breath or med Comparator: None/Any	PTSD	Sig pooled effect of MBIs g = 0.51 95%CI 0.31 to 0.71	Cochrane ROB; range from low to high
Mind-body exercises for PTSD symptoms Zhu et al., 2021	CIH: yoga intervention, MBX, MBSR, BMT Comparator: None/Any	PTSD	Significant effect on PTSD SMD = -0.41 95% CI = -0.64 to -0.19	ROB mentioned in author contributions but nowhere else

Summary

- Included reviews used mindfulness, Yoga, and Tai Chi for both chronic pain conditions and PTSD. (N=14: n=7 chronic pain n=7 PTSD)
- CIH works better than active and non-specific controls for pain intensity and disability related to back, neck, and knee pain with additional benefits to quality of life and functioning
- CIH was superior to non-specific controls for PTSD with additional benefits to mood and quality of life. In two reviews, CIH outperformed active controls for PTSD and mood.
- Shared outcomes for both chronic pain and PTSD included increased physical functioning, quality of life, and improved mood symptoms.
- Overall, the reviews reported low strength evidence.

Discussion

Findings support the CPGs for pain and PTSD

Using pain intensity instead of pain interference

Catastrophic thinking should be an outcome of interest in future reviews due to its overlap in CP and PTSD presentation

Only some measured the length/dose of CIH intervention (yoga)

Only some measured long -term (>3 months)

Adverse events (Soares)

Attrition/completion rates (Goldberg)

More Rigorous design needed

- One was limited to 8 week MBSR intervention

Thank you

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