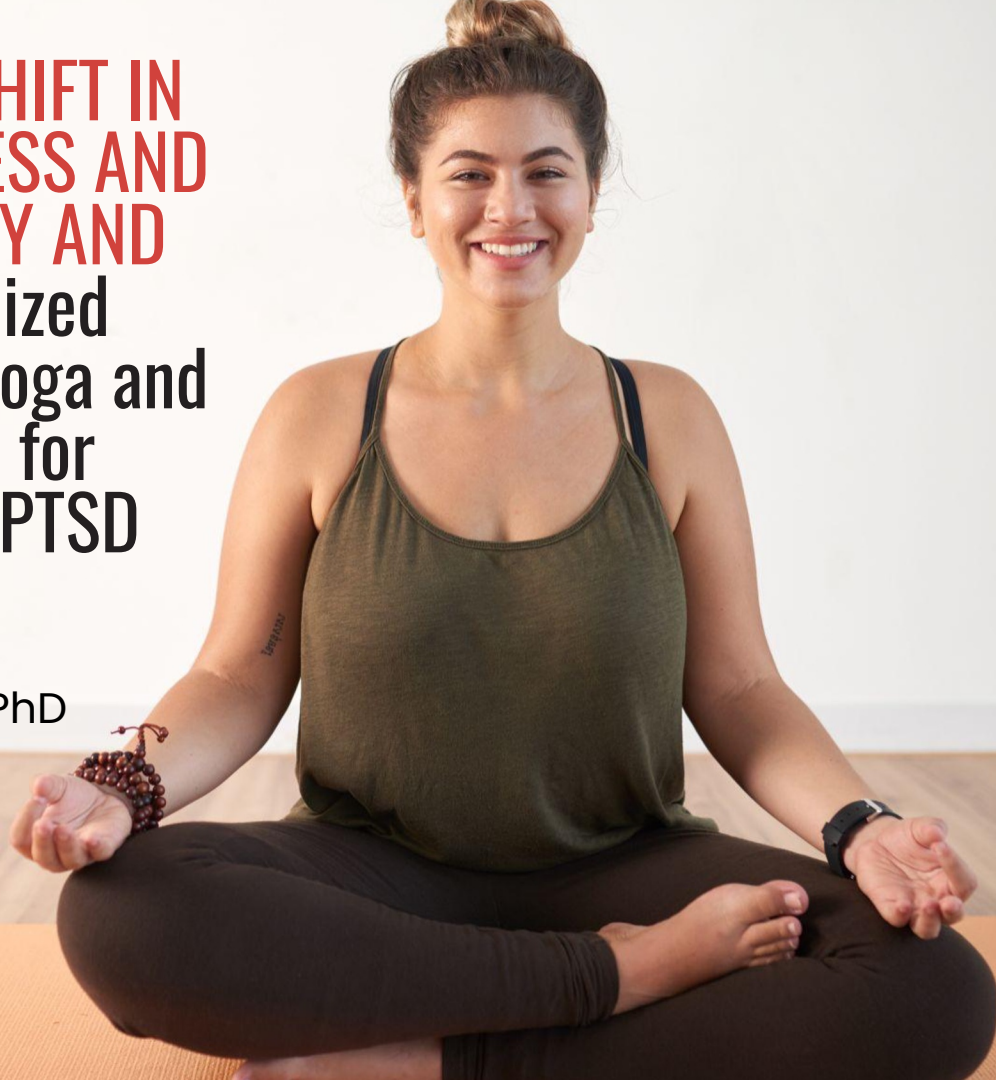


“IT’S A PROFOUND SHIFT IN HOW I MANAGE STRESS AND EXPERIENCE MY BODY AND FEELINGS”: A randomized controlled trial of a yoga and mindfulness program for eating disorders and PTSD

Esther Estey, PhD, RYT-200
Catherine Cook-Cottone, PhD
Wendy Guyker, PhD
Chelsea Roff



AFFILIATIONS



HARVARD MEDICAL SCHOOL
TEACHING HOSPITAL

Center for Mindfulness and Compassion



University at Buffalo

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U.S. Department
of Veterans Affairs

&



Stanford
MEDICINE

DISCLAIMER + DISCLOSURES

- ▶ This is an educational presentation
- ▶ The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this presentation.



RESEARCH TEAM & LAB



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Credit authorship contribution statement

Esther E. E. Estey: Conceptualization, Methodology, Project administration, Investigation, Data curation, Formal analysis, Writing – original draft, Writing – review & editing, Visualization. Chelsea Roff: Funding acquisition, Conceptualization, Resources, Writing – review & editing. Wendy Guyker: Conceptualization, Formal analysis, Writing – review & editing. Catherine P. Cook-Cottone: Funding acquisition, Conceptualization, Methodology, Project administration, Validation, Writing – review & editing, Supervision.

Acknowledgements

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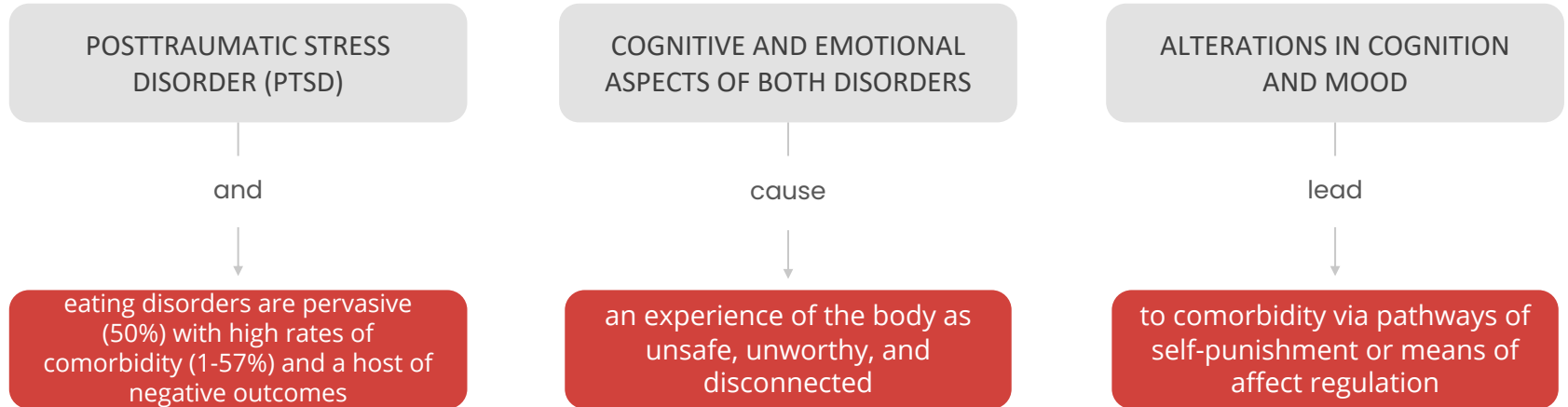
**Center for
Mindfulness
and Compassion**

AGENDA

- ▶ Rationale for Yoga, Mindfulness, & Self-Compassion for Comorbid ED and PTSD
- ▶ Eat Breathe Thrive (EBT)
- ▶ Aims, Population, Measures
- ▶ Methods and Procedures
- ▶ Results



THE LINK BETWEEN EDS & PTSD



WHY YOGA, MINDFULNESS, AND SELF-COMPASSION? DEFINITIONS & MECHANISMS

- ▶ **Yoga:** physical postures, breathing techniques, mindfulness and meditation, relaxation (as cited in Patwardhan, 2017)
- ▶ **Mindfulness/meditation:** intentional, nonjudgmental awareness of the present moment (Kabat-Zinn, 1994)
- ▶ **Self-compassion:** a self-attitude that involves treating oneself with warmth and understanding in moments of difficulty and recognizing that making mistakes is part of being human (Neff, 2003)



WHY YOGA, MINDFULNESS, AND SELF-COMPASSION? Cont.

EDs

- Positive body image and embodiment
- Body satisfaction
- Self-regulation
- Healthy relationship with self and others

PTSD

- Decreased arousal
- Somatic regulation
- Body awareness
- Non-judgmental observation
- Approach vs. avoid
- Present moment experiencing
- Attentional control

SELF-COMPASSION

- Reduced eating and mood disturbances
- Improved regulation and well-being
- Replaces self-judgement with self-acceptance
- Buffers trauma's impact via cognitive appraisal and emotion regulation
- Reduced shame
- Decreases in hyperarousal, re-experiencing, and avoidance



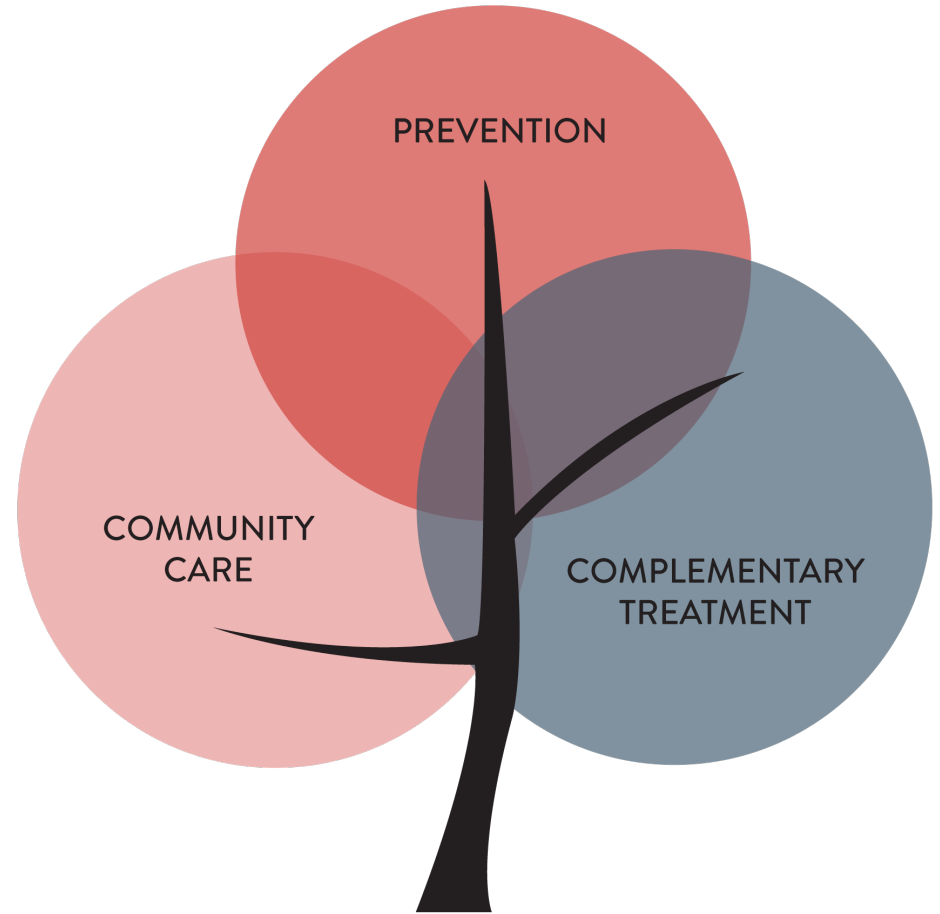
Yoga and mindfulness practices emphasize present moment awareness, self-compassion, and relating to the body as a resource for safety, support, and connection – which can be beneficial for those at risk for, and struggling with PTSD and EDs.



OUR APPROACH

EAT BREATHE THRIVE

A nonprofit organization that aims to prevent and help individuals recover from eating disorders.



ABOUT THE INTERVENTION

Eat Breathe Thrive is a structured yoga-based intervention that focuses on teaching four core skills.

It includes yoga, experiential activities, psychoeducation, meditation, and discussion. Clients work on the skills with a facilitator and peer support group.

There are two versions of the intervention, which are designed for different levels of care.



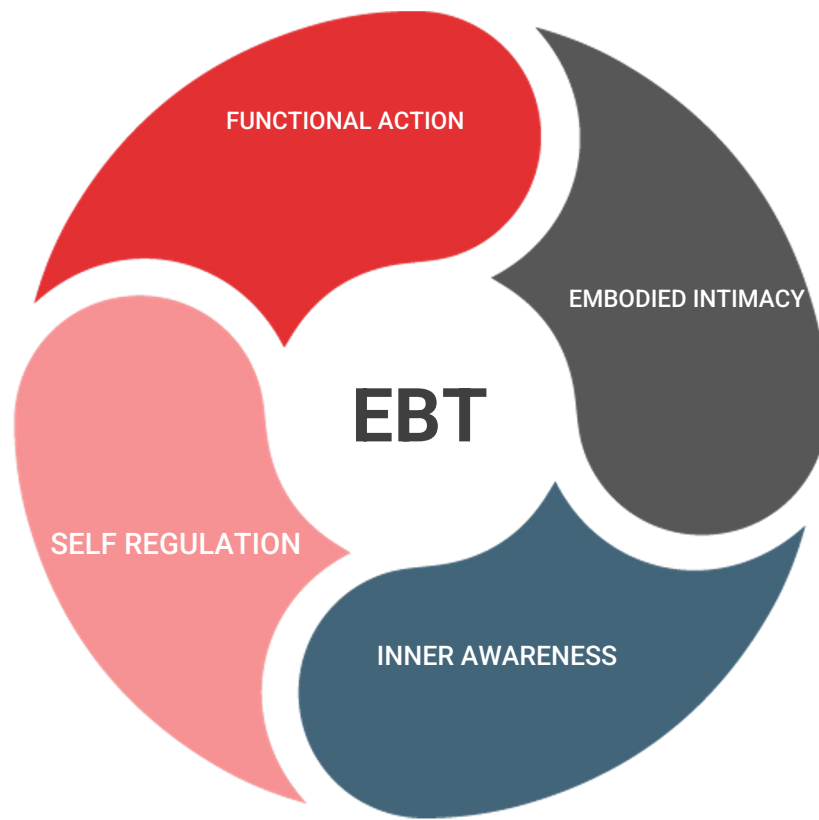
EAT BREATHE THRIVE

THE FOUR PILLARS

The intervention focuses on four core skills: functional action, embodied intimacy, inner-awareness, and self-regulation.

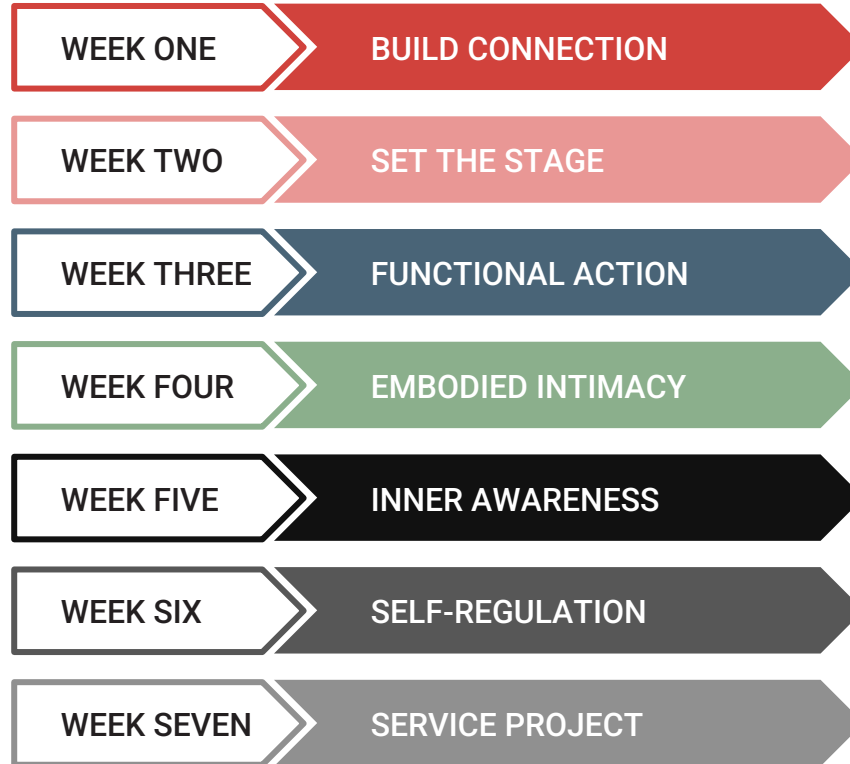
It blends psychoeducation and psychotherapeutic modalities with yoga and mindfulness practice, allowing students to embody their insights and learnings.

Sessions are delivered once or twice weekly in either a four-week or seven-week format.



SEVEN-WEEK SERIES

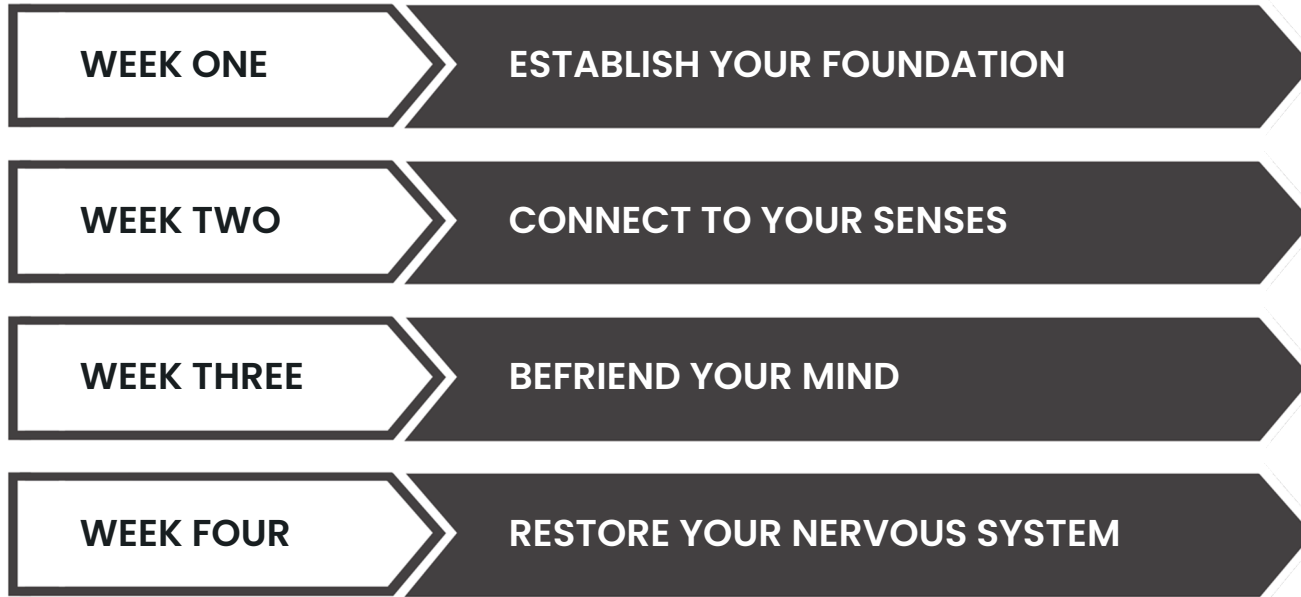
INTERVENTION OVERVIEW



More information: www.eatbreathethrive.org/eat-breathe-thrive-series

YOGA FOR EATING DISORDER RECOVERY

INTERVENTION OVERVIEW



More information: www.eatbreathethrive.org/yoga-for-eating-disorder-recovery





TRANSFORM YOUR LIFE

EAT WELL. BUILD RESILIENCE. FEEL BETTER IN YOUR BODY.

Explore a live and interactive course that combines the wisdom of mindfulness traditions with insights from modern neuroscience.



EAT MINDFULLY

Explore meditations to help you tap into hunger and fullness signals and manage emotional eating.



EXPLORE YOGA

Discover mindful movement practices that support body awareness, emotional wellbeing, and physical vitality.



BUILD RESILIENCE

Learn cutting-edge tools from neuroscience, psychology, and movement science to help you manage your emotions and generate positive states of mind.

EAT BREATHE THRIVE ONLINE SERIES

WHEN: Wednesdays, 4:00 – 5:30 PM EST,
May 18th through July 6th, 2022

CONTACT: jwozniak@challiance.org

PLEASE CONTACT YOUR MENTAL HEALTH OR PRIMARY CARE PROVIDER FOR MORE INFORMATION.



OFFERED BY:



Jana Wozniak
PSYCHOLOGIST



Esther Estey
PSYCHOLOGY POSTDOCTORAL FELLOW,
PH.D., RYT-200

Note: This course will take place online via Google Meet.

EBT ADAPTED FOR PRIMARY CARE

“My body is capable of doing lots of things.”

“I can notice what is going on now.”

“I can recognize and forgive myself.”

“I am more conscious of what I am eating and my eating habits.”

“I feel good in my body.”

RESEARCH INITIATIVE

STUDY ONE

PREVENTION

Does Eat Breathe Thrive prevent eating disorders in college athletes?

CONTROLLED,
NONRANDOMIZED STUDY

STUDY TWO

COMMUNITY CARE

Does Eat Breathe Thrive help people with subclinical eating disorders?

RANDOMIZED
CONTROLLED TRIAL

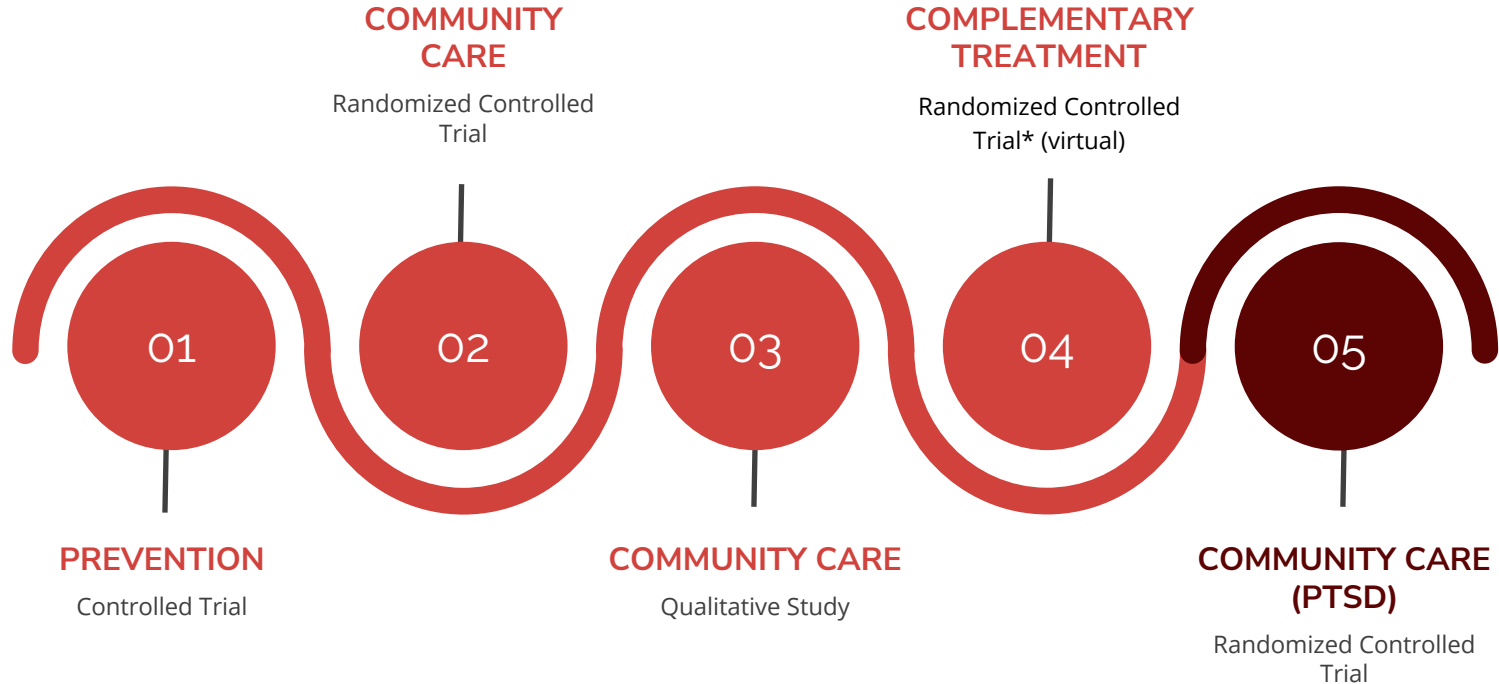
STUDY THREE

TREATMENT

Is Eat Breathe Thrive an effective complementary treatment for people with eating disorders in active recovery?

RANDOMIZED
CONTROLLED TRIAL

STUDIES TO DATE





A controlled trial assessing the acceptability and efficacy of a yoga-based eating disorder prevention program among division I athletes: eat breathe thrive (EBT)

Catherine Cook-Cottone^{a*}, Stephanie Rovig^a, Maya Cottone^b, Esther Elyn Evelyn Estey^a, Wendy Guyker^a, and Chelsea Roff^c

^aDepartment of Counseling, School, and Educational Psychology, University at Buffalo, State University of New York, Buffalo, USA; ^bDivision of Psychological and Educational Services, Counseling Psychology, Fordham University, New York City, USA; ^cGive Back Yoga Foundation, Colorado, USA

ABSTRACT

Objective: This study evaluated the acceptability and effectiveness of the Eat Breathe Thrive™ (EBT) program as an eating disorder prevention intervention among women collegiate athletes.

Method: Change over time in eating disorder risk and competencies of positive embodiment were examined in 94 women ($n = 48$ EBT participants and $n = 46$ matched-controls) from one National Collegiate Athletic Association (NCAA) Division I-classified university in the United States. Eating disorder risk factors were measured using the Eating Disorder Examination Questionnaire (EDE-Q) and State Trait Anxiety Inventory (STAI). Aspects of positive embodiment were measured using the Multidimensional Assessment of Interoceptive Awareness (MAIA) and The Mindful Self-Care Scale (MSCS). Data were collected through participants' completion of online surveys across three time-points.

Results: Repeated measures ANOVAs revealed EBT participants reported experiencing significantly less state anxiety and greater interoceptive body trusting over time relative to matched-controls. No other significant interactions were found. Respondents found the EBT program acceptable.

Discussion: Acceptability and partial support for integrative, yoga-based, interventions targeting Division I student-athletes is indicated.



Efficacy of Eat Breathe Thrive: A randomized controlled trial of a yoga-based program

Esther E.E. Estey^{a,b,1}, Chelsea Roff^{a,b,1}, Michael B. Kozlowski^{a,b,2}, Stephanie Rovig^{a,b,1}, Wendy M. Guyker^{a,b,1}, Catherine P. Cook-Cottone^{a,b,1}

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ABSTRACT

Evidence positions yoga as a promising intervention for enhancing positive embodiment and supporting the prevention of, and recovery from, eating disorders (EDs) by reducing ED symptomatology and building skills that facilitate an ongoing, embodied sense of wellbeing. However, yoga-based programs are few and rigorous literature on their efficacy is limited. This study examined the efficacy and feasibility of a yoga-based program called Eat Breathe Thrive (EBT) which aims to prevent EDs and support embodiment. Participants ($N = 108$, 59.5% women) from a community sample in the United States and United Kingdom, ages 18–65, were randomly allocated to a 2-h, 7-week EBT program or waitlist-control condition. Compared to controls, EBT participants experienced significant decreases in ED behaviors, depression, and difficulties regulating emotions. They reported significantly greater use of mindfulness skills, such as interoceptive awareness, mindful self-care, and mindful eating. After a single session, participants reported immediate improvement in their sense of well-being, indicating increased state positive embodiment. Most effects were sustained at 6-month follow-up. The majority of individuals attended most sessions. Self-reported treatment integrity was excellent. Directions for future research are proposed. Results support the efficacy and feasibility of an integrated yoga intervention that fosters positive ways of inhabiting the body.

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Eat Breathe Thrive: an interpretative phenomenological analysis of a yoga-based eating disorder intervention

Carly Lua Pershyn^a, Wendy Guyker^a, Elizabeth Schlant^b, Ashlye Borden^a, Chelsea Roff^a, Esther Elyn Evelyn Estey^{c,d}, and Catherine Cook-Cottone^{b,a}

^aDepartment of Counseling, School, and Educational Psychology, University at Buffalo, Buffalo, USA; ^bJohn Hopkins School of Medicine, Baltimore, Maryland; ^cEat Breathe Thrive, Colorado, USA; ^dCenter for Mindfulness and Compassion, Harvard Medical School, Department of Psychiatry, Harvard Medical School, Cambridge, Massachusetts, USA

ABSTRACT

A growing body of evidence suggests that yoga-based interventions might aid in the prevention and treatment of eating disorders. The current qualitative study used Interpretative Phenomenological Analysis (IPA) to analyze the nature and degree of impact of a yoga and mindfulness-based eating disorder prevention intervention Eat Breathe Thrive (EBT). Data was collected via semi-structured interviews with 16 participants over the age of 18 who took part in the EBT program between 2018 and 2022. Using IPA methodology, and after several rounds of coding, emergent themes were interpreted and organized to develop a theoretical model explaining the mechanism of change experienced and described by EBT participants. The resulting model outlines an experiential progression from psychoeducation and skill development/practice to increased mindful awareness, and empowered state experiences which led to the following outcomes: independent positive action, self-initiated positive state experiences, and increased embodied well-being. Participants reported increased self-compassion and self-acceptance, with decreased emphasis on disordered eating behaviors. Qualitative data is necessary for understanding why yoga works, from an experiential perspective. This study adds to the new, and rapidly expanding body of research supporting the positive effects of yoga and mindfulness on the prevention and treatment of eating disorders.

From state to trait, EBT's potential to create a predictable experience of health and wellness that leads to **long-term, trait-based change.**



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AN INTERNATIONAL JOURNAL OF RESEARCH

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ANNOUNCEMENT

The 2020 Seymour Fisher Outstanding Body Image Dissertation Award Winner

Body Image: An International Journal of Research
is pleased to announce and congratulate the recipient of the
2020 Seymour Fisher Outstanding Body Image Dissertation Award:

Esther Estey

Faculty of the Graduate School
University at Buffalo, State University of New York
Buffalo, New York

“Efficacy of Eat Breathe Thrive: A Randomized Controlled Trial of a Yoga-Based Program”



**EBT | For Comorbid EDs and
PTSD**

STUDY AIMS

AIM 1

Decreasing PTSD symptoms and comorbid ED behaviors

AIM 2

Improving one's relationship with the body via mechanisms of positive embodiment

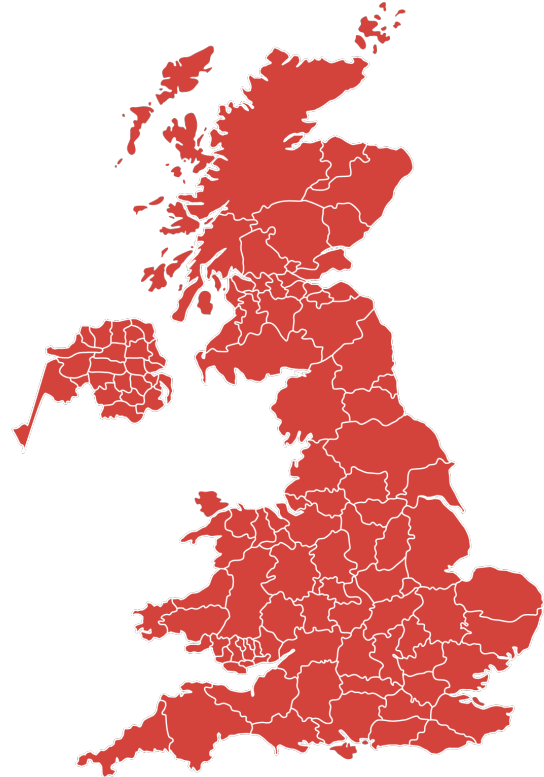
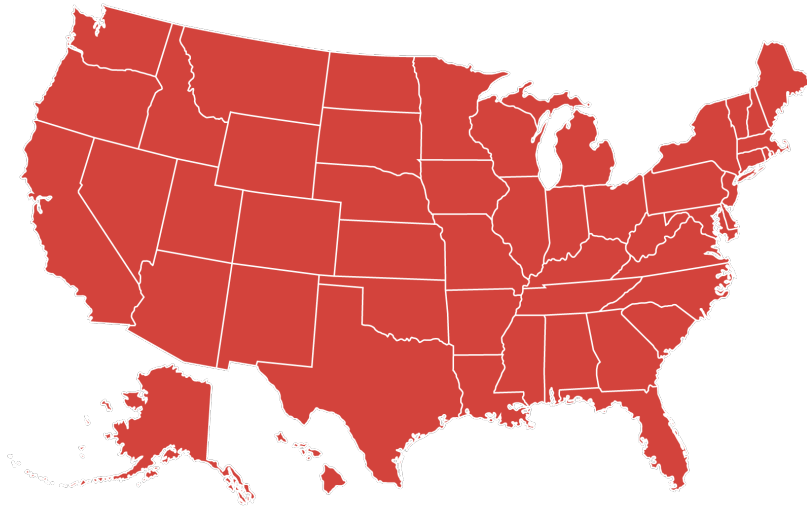
AIM 3

Cultivating critical, adaptive coping skills



SAMPLE

200 ADULTS ACROSS 8 COMMUNITY SITES (16 PROGRAMS) IN THE U.S. AND UK



STUDY HYPOTHESES & MEASURES

FUNCTIONAL ACTION

ED Risk
Functional Appreciation
Self-Compassion

Decreased ED risk
Improvements in aspects of body image

Eating Disorder Examination
Questionnaire
Functional Appreciation Scale
Self-Compassion Scale - Short

EMBODIED INTIMACY

Embodied Intimacy

Increases in embodiment

Embodied Intimacy Scale

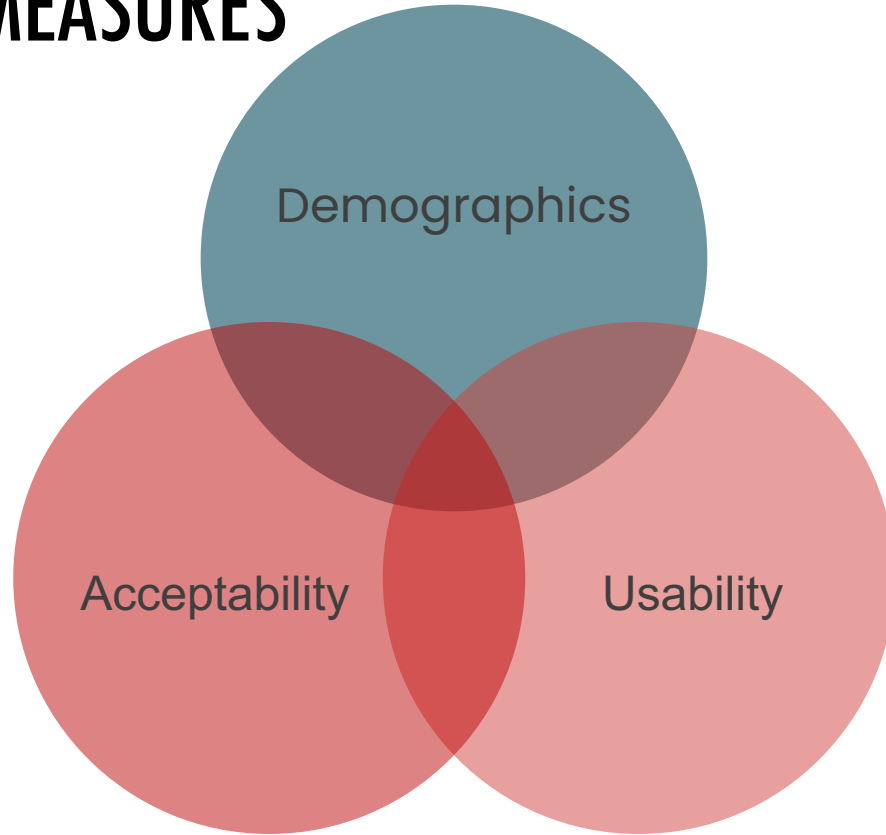
SELF-REGULATION

PTSD Symptoms
Anxiety (State and Trait)
Adaptive Coping

Decreases in PTSD, mood disturbance
Adaptive coping

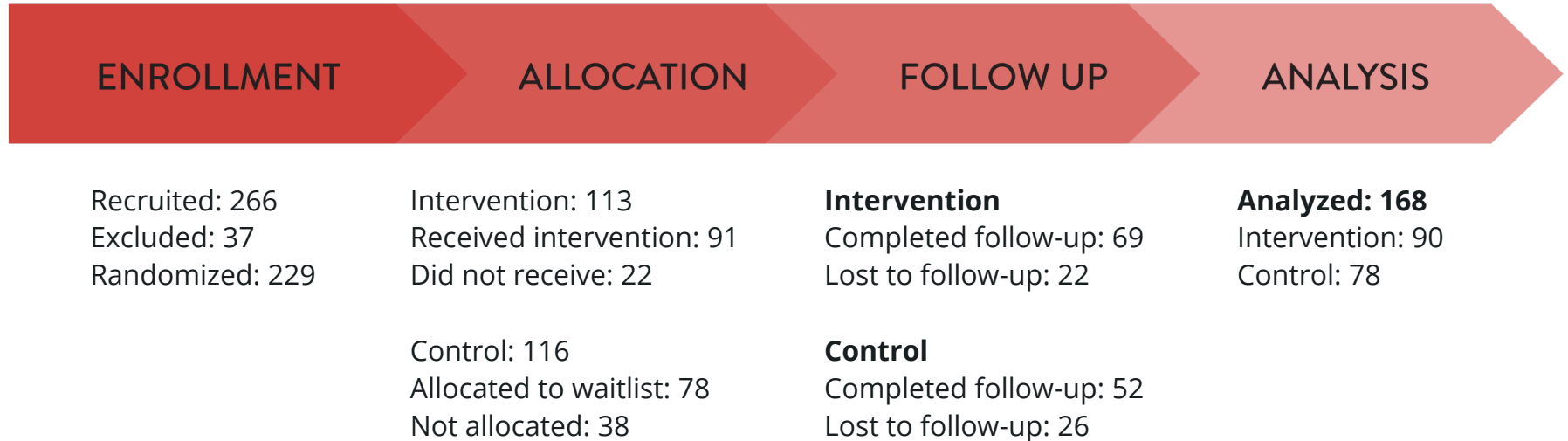
The PTSD Checklist for DSM-5
State-Trait Anxiety Inventory for Adults
Brief Coping Orientations to Problems
Experienced Inventory

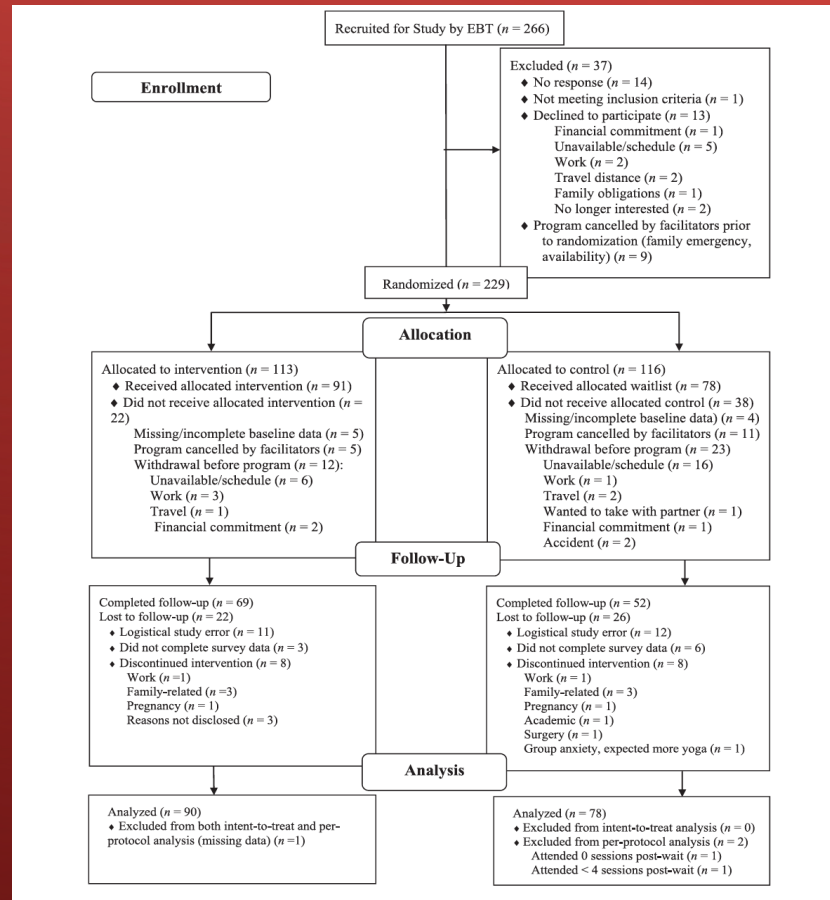
ADDITIONAL MEASURES



Treatment Integrity also assessed

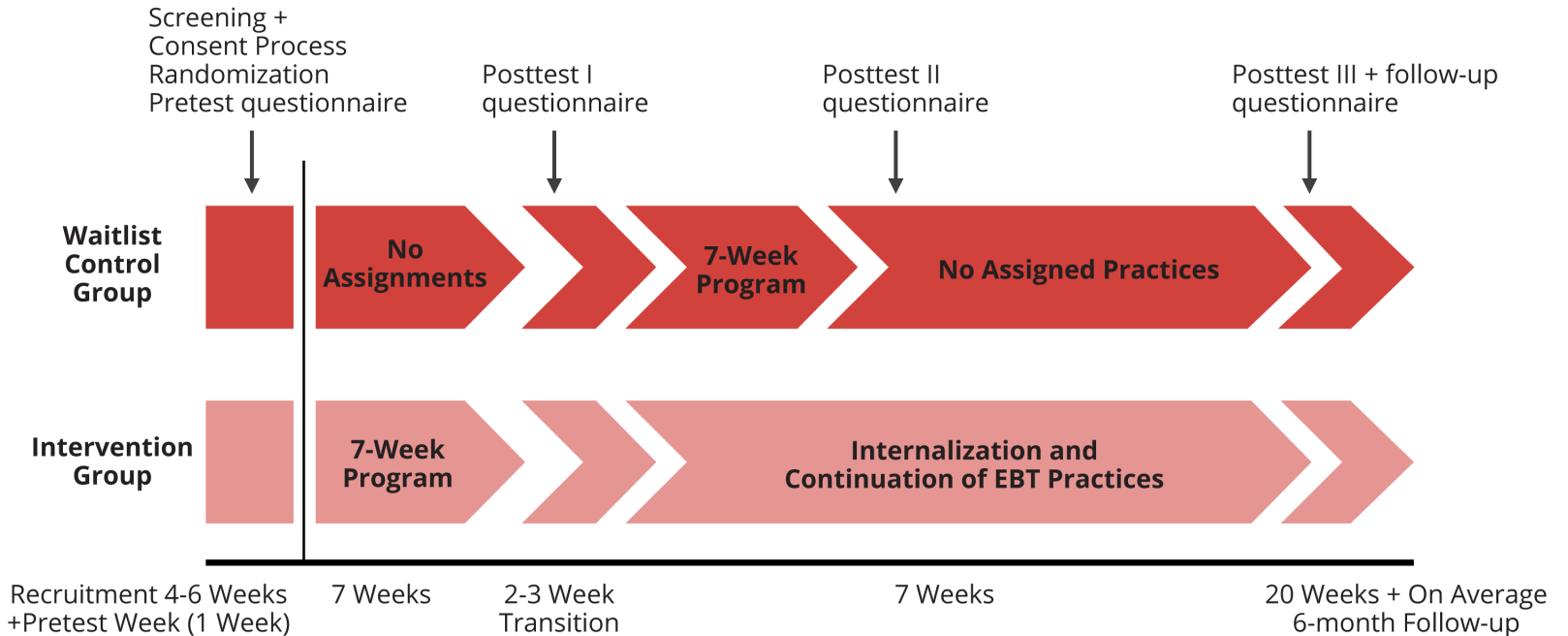
CONSORT STUDY FLOW





Attrition = 15%, comparable to other yoga studies (Michell et al., 2007; Pacanowski et al., 2020)

METHODS + PROCEDURE



A photograph of four diverse women in athletic wear (yellow, purple, red, and teal tank tops) laughing and talking in a field at sunset. The scene is warm and joyful, with the sun low on the horizon creating a golden glow. A semi-transparent white banner is overlaid across the middle of the image, containing the text 'STUDY OUTCOMES'.

STUDY OUTCOMES

Table 2
Demographics.

	EBT n = 90	Control n = 78	Total N = 168
Age (mean, SD)	24.73 (14.37)	28.19 (16.29)	26.34 (15.34)
Gender			
Cisgender Women	84 (93.3%)	73 (93.6%)	157 (93.5%)
Cisgender Men	6 (6.7%)	5 (6.4%)	11 (6.5%)
Nationality			
United States	53 (59.6%)	47 (60.3%)	100 (59.9%)
United Kingdom	25 (28.1%)	26 (33.3%)	51 (30.5%)
Other	11 (12.4%)	4 (6.4%)	16 (9.6%)
Ethnicity			
White	72 (80.0%)	66 (84.6%)	138 (82.1%)
Asian	4 (4.4%)	4 (5.1%)	8 (4.8%)
Hispanic/Latino	4 (4.4%)	1 (1.3%)	5 (3.0%)
Black/African American	2 (2.2%)	–	2 (1.2%)
Multiracial/Other	8 (8.9%)	7 (9%)	15 (8.9%)
Sexual Orientation			
Heterosexual	68 (76.4%)	64 (82.1%)	132 (79%)
Homosexual/Gay/Lesbian	6 (6.7%)	3 (3.8%)	9 (5.4%)
Bisexual	11 (12.4%)	7 (9.0%)	18 (10.8%)
Questioning	2 (2.2%)	1 (1.3%)	3 (1.8%)
Queer	2 (2.2%)	3 (3.8%)	5 (3.0%)
Highest Education			
High school graduate	5 (5.6%)	1 (1.3%)	6 (3.6%)
Some college	10 (11.1%)	8 (10.3%)	18 (10.7%)
College degree	32 (35.6%)	26 (33.3%)	58 (34.5%)
Graduate/professional degree	43 (47.8%)	42 (53.9%)	85 (50.6%)
Religion/Spirituality			
Not religious/spiritual	44 (48.9%)	33 (43.4%)	77 (46.4%)
Buddhist	–	2 (2.6%)	2 (1.2%)
Christian	13 (14.4%)	14 (18.4%)	27 (16.3%)
Jewish	3 (3.3%)	3 (3.9%)	6 (3.6%)
Hindu	–	1 (1.3%)	1 (0.6%)
Muslim	1 (1.1%)	–	1 (0.6%)
Spiritual/but not religious	26 (28.9%)	17 (22.4%)	43 (25.9%)
Other	3 (3.3%)	6 (7.8%)	9 (5.4%)
Relationship Status			
Single	36 (40.0%)	19 (24.4%)	55 (32.7%)
Committed/long-term	16 (17.8%)	20 (25.6%)	36 (21.4%)
Married/domestic partnership	33 (36.7%)	31 (39.7%)	64 (38.1%)
Divorced	1 (1.1%)	4 (5.1%)	5 (3.0%)
Other	4 (4.4%)	4 (5.1%)	8 (4.8%)
Children			
No children	59 (65.6%)	47 (60.3%)	106 (63.1%)
1 or more children	31 (34.4%)	31 (39.7%)	62 (36.9%)
Employment Status			
Employed	69 (76.7%)	67 (85.9%)	136 (81.0%)
Not employed	21 (23.3%)	11 (14.1%)	32 (19.0%)
Student Status			
Student	19 (21.1%)	16 (20.5%)	35 (20.8%)
Not student	71 (78.9%)	62 (79.5%)	133 (79.2%)

Note. No significant differences were found between groups on demographic variables. Percentages for multiracial and "other" were combined in this Table 1 participant (0.6%) did not complete high school. In the nationality of origin category, participants identified as originating from Spain, Italy, Poland, Romania, Philippines, Canada, Japan, China, Slavia, Brazil, or Russia. In religion/spirituality "other" category, participants identified as utilitarian, agnostic, occult, or unsure. In the relationship "other" category, participants identified their relationship status as separated, newly committed, polyamorous, or open.

RESULTS

PRELIMINARY | AT BASELINE

- ▶ No statistically significant differences among groups on demographics
- ▶ Majority of participants were White and female; age range 18-63 (M = 26.34)
- ▶ 59.9% of participants endorsed the U.S., 30.5% the UK as their nation of origin
- ▶ Practitioners were higher in protective factors; treatment group had higher sx's; differences accounted at baseline
- ▶ Levels of PTSD were clinically significant
- ▶ More than half had 1-3 years of yoga experience
- ▶ Treatment integrity was 96-100%
- ▶ Most individuals attended 6-7/7 sessions

Table 4
Group Differences in the Study Variables across Time

Measures	Group		Effect of Group	Time	For significant Group x Time effect, was effect significant for EBT Group at 6 mos follow-up?
	EBT Group M(SD)	Control Group M(SD)			
EDE-Q T	Pretest	2.53(1.33)	2.51(1.34)	.03; 4.95*	Yes
	Posttest	2.18(1.34)	2.45(1.31)		5.63***;.59
EDE-Q R	Pretest	1.86(1.43)	2.01(1.50)	.003; .495	
	Posttest	1.66(1.33)	1.70(1.54)		
EDE-Q EC	Pretest	1.82(1.62)	1.50(1.48)	.02; 4.03*	Yes
	Posttest	1.55(1.56)	1.51(1.43)		3.39**;.36
EDE-Q SC	Pretest	3.48(1.63)	3.42(1.65)	.07; 12.17***	Yes
	Posttest	2.91(1.65)	3.48(1.68)		6.33***;.67
EDE-Q WC	Pretest	2.95(1.57)	3.12(1.65)	.02; 3.79	
	Posttest	2.61(1.65)	3.10(1.63)		
EIS	Pretest	3.01(.59)	3.20(.54)	4.53*; .03	Yes
	Posttest	3.12(.54)	3.15(.48)		2.88**;.35
FAS	Pretest	3.87(.80)	4.03(.71)	14.25***; .10	Yes
	Posttest	4.24(.66)	4.02(.61)		5.54***;.67
SC	Pretest	2.60(.75)	2.81(.78)	15.50***; .11	Yes
	Posttest	2.98(.75)	2.83(.85)		5.9***;.71
STAI-State	Pretest	2.22(.67)	2.00(.59)	6.71*; .05	Yes
	Posttest	1.96(.65)	2.04(.61)		3.32***;.40
STAI-Trait	Pretest	2.57(.66)	2.28(.54)	14.31***; .10	Yes
	Posttest	2.34(.64)	2.35(.63)		5.6***;.67
PCL	Pretest	33.60(17.36)	29.63(17.69)	15.95***; .11	Yes
	Posttest	24.01(17.95)	30.89(20.12)		7.2***;.86
Cope-PF	Pretest	21.59(5.38)	22.35(5.26)	3.22	
	Posttest	22.97(4.82)	22.14(5.03)		
Cope-EF	Pretest	29.28(5.13)	29.61(6.31)	0.29	
	Posttest	29.60(4.17)	29.48(5.91)		
Cope-AC	Pretest	14.30(4.47)	13.51(3.98)	5.16*(.04)	Yes
	Posttest	13.36(3.55)	14.01(3.77)		1.92*; .23

Note. ***p<.001; **p<.01; *p<.05; N = 168 (90 intervention group, 78 waitlist control group); EDE-Q = Eating Disorder Examination Questionnaire; EDE-Q T = EDE-Q Total. EDE-Q subscales: R = Restraint; EC = Eating Concern; SC = Shape Concern, WC = Weight Concern; EIS = Embodied Intimacy Scale; FAS = Functional Appreciation Scale; SCS = Self-Compassion Scale; STAI-State= State-Trait Anxiety Inventory-State Anxiety Subscale; STAI-Trait= State-Trait Anxiety Inventory-Trait Anxiety Subscale; PCL = PTSD Checklist; COPE-PF = Problem-focused Coping; COPE-EF = Emotion-focused Coping; COPE-AC = Avoidant Coping

RESULTS

PILLAR IV | SELF-REGULATION



Posttraumatic Stress Symptoms
(9-point change in score, large effect size [.8])

RESULTS (CONT.)

PILLAR I-II | FUNCTIONAL ACTION, EMBODIED INTIMACY



Comorbid Eating Disorder Symptomatology

(Global/Total, Eating Concern, & Shape Concern; no significant differences in Dietary Restraint or Weight Concern)

(Small to moderate effect sizes)

RESULTS (CONT.)

PILLAR I-II | FUNCTIONAL ACTION, EMBODIED INTIMACY



Functional Appreciation

Embodied Intimacy

Self-Compassion

(Small to moderate effect sizes)

RESULTS

PILLAR IV | SELF-REGULATION



Adaptive Coping

Less avoidant coping

(When analyzed separately as a 2-item facet of emotion-focused coping self-blame significantly decreased)

(Small effect size)



State and Trait Anxiety

(Small to moderate effect sizes)

Problem-Focused Coping and Emotion-Focused Coping were not significant

FOLLOW-UP EFFECTS

All of the positive effects for the EBT group were maintained at follow-up.



APPRECIATION FOR FUNCTIONALITY

“When we went through the body to, like looking at functionality rather than appearance. I think that was really, really in terms of appreciating your body and also in terms of food because... **it’s not how it looks, it’s all the wonderful things your body does for you** and that goes on to food because you need to choose your foods according to your body’s performance rather than anything else. So again, I suppose making better choices in terms of this is going to be good for my body.”



COMPASSIONATE EMBODIMENT

AWARENESS, REDUCED OBJECTIFICATION, +
SELF-KINDNESS

"I'm so much more aware of the critical thoughts that arise...I have just less patience with those thoughts. I kind of feel as though I'm sort of caught in the bigger picture and my body is just the world, **the reflection I see in the mirror is merely like sort of this external part of myself...there's so much more underneath and I think I feel more patient and more kind to myself in a subtle way.**



OUTCOMES ON OTHER MEASURES + SUMMARY

ACCEPTABILITY AND USABILITY

88% would recommend, 11% wouldn't

All completers reported continued use of practice to manage emotions/stress at follow-up

STRENGTHS

Methodological rigor

Integrative

Low attrition

Multifaceted nature

LIMITATIONS

Self-report, primarily White female sample, no active comparison condition, control's exposure to measures, use of app difficult, recruitment method

Findings suggest that although designed to address ED symptoms, EBT's targeted focus on mindful awareness, acceptance, self-compassion and **the felt-experience of the body as a friend and resource** may also help reduce symptoms of PTSD.

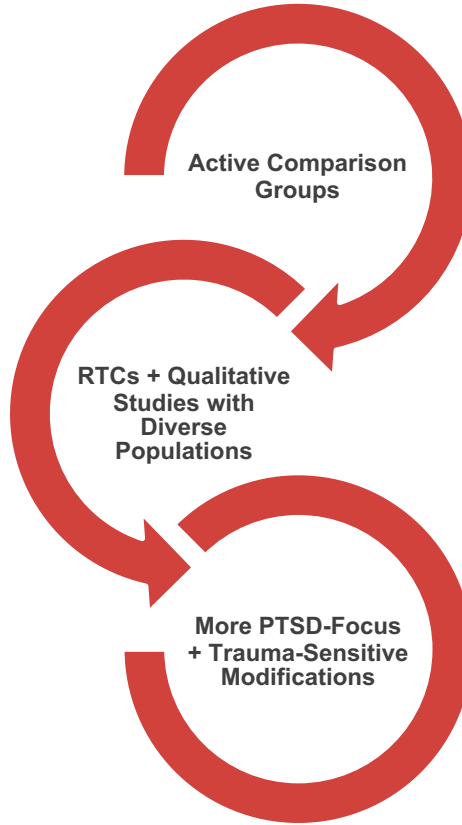


CONTRIBUTION TO THE LITERATURE

- 1 The first known investigation of a yoga and mindfulness program for EDs and comorbid PTSD
- 2 Beyond symptom reduction: increased embodiment among those with trauma + ED behaviors
- 3 Contemplative, multimodal, accessible, low-cost, mind-body program that can address EDs and PTSD in non-clinical settings in the UK and US



FUTURE DIRECTIONS





HOW TO CITE THIS PRESENTATION

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QUESTIONS?

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