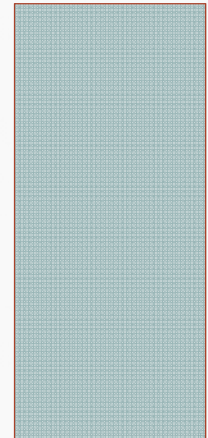


HOW DOES YOGA PRACTICE IMPROVE TREATMENT RELATED SIDE-EFFECTS AND WELL- BEING IN CANCER PATIENTS POST TREATMENT?

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No commercial disclosures



BACKGROUND

- Yoga therapy surveys of patients in treatment at CSC in 2012 and 2013.
 - Showed improvement in pain, fatigue and insomnia
 - Attendance dwindled due to severe side-effects
- Past meta-analysis has shown yoga to benefit fatigue, insomnia, stress & mood disturbances
 - Lin 2011, Cramer 2012, Buffart 2012, Pan 2015, Kelly 2015
- Survivors often feel 'dropped' by their care team after treatment
- What is it about practicing yoga that makes patients feel better?

YOGA AND CANCER

- Yoga combines physical and contemplative practices to promote wellness and enable healing.
- All yoga is NOT the same!
 - Vigorous styles (Ashtanga, Vinyasa, Power Yoga, Bikram) may not be safe for patients as too much heat is created in the body with these styles
 - Hatha, Gentle, restorative, yin styles are safer and emphasize relaxation and are more cooling the system
- Yoga protocols must be tested for safety and effectiveness.
- Yoga Therapists with 800+ hours of training
 - Emerging standards through International Association of Yoga Therapists (IAYT).

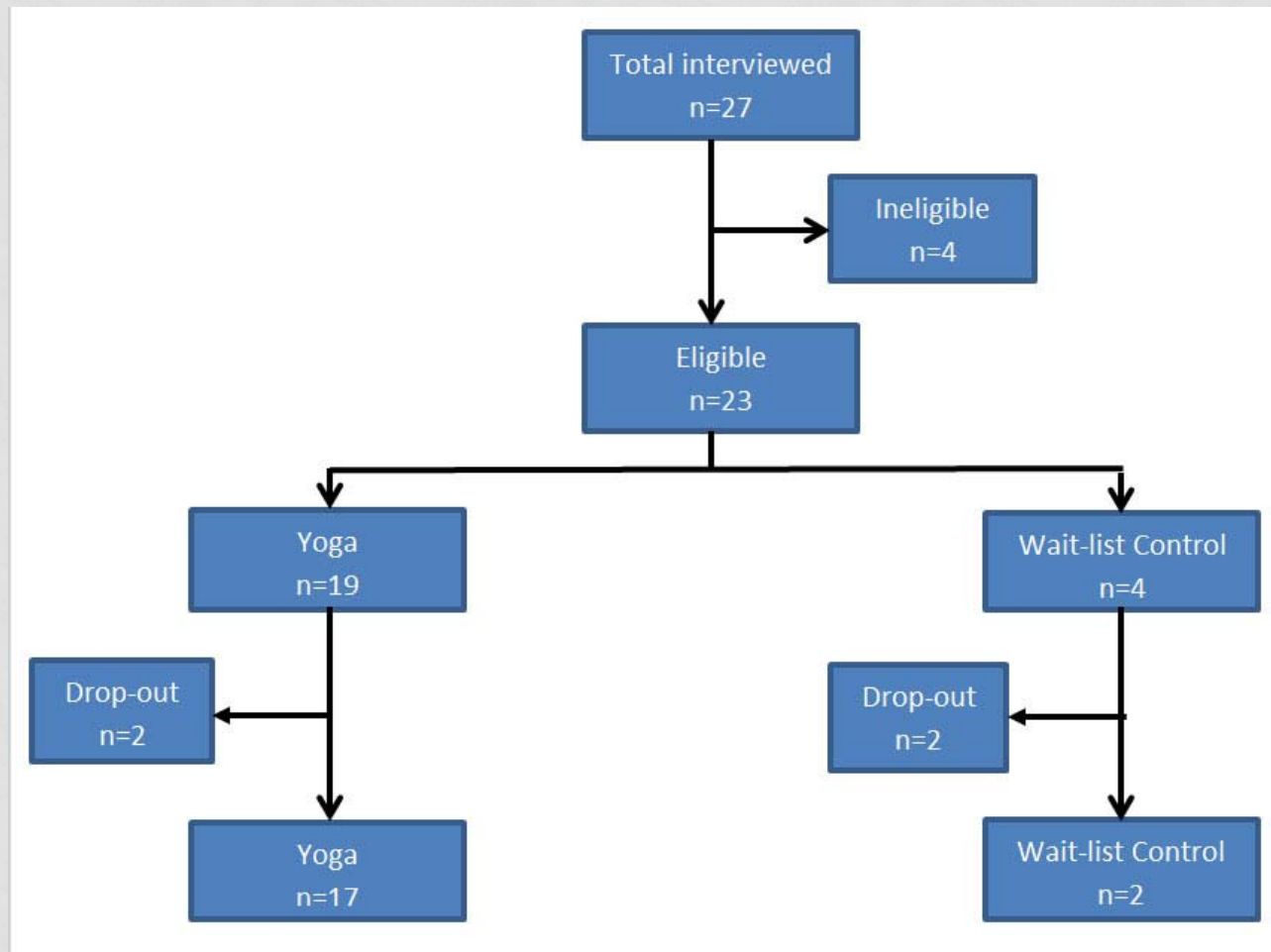
OBJECTIVES

- To standardize a Healing Yoga for Cancer Survivorship (HYCS) protocol as a CAM practice to improve post-treatment side-effects and overall well-being of cancer survivors.
- To correlate change in physical, functional, emotional, and spiritual well-being based on which parts of the yoga protocol were practiced.
- Does a dose-response relationship exist between how often yoga was practiced and how much well-being was increased among the four domains.

METHODS

- Selected from members of CSC and local yoga email list via email, social media and flier distribution.
- Intake interviews collected information on:
 - Health history, diagnosis and cancer treatment, current medication, previous exposure to CAMs, previous yoga experience, symptom severity questionnaire (FACT-G & FACIT-SP)
- Selection criteria:
 - Baseline score of 40/90 on symptom severity

COHORT DIAGRAM



YOGA GROUP CHARACTERISTICS

Majority of participants were non-Hispanic white over 50.

Most common diagnosis of breast cancer (34%) women

CHARACTERISTICS	VALUE N=17
Female (%)	15 (88%)
Median age in years (range)	55 (37-74)
Ethnicity (%)	
• Non-Hispanic white	14 (82%)
• Non-Hispanic black	2 (12%)
• Hispanic	1 (6%)
Diagnosis (%)	
• Breast cancer	6 (34%)
• Lymphoma	2 (12%)
• Melanoma	2 (12%)
• Ovarian	2 (12%)
• Endometrial	1 (6%)
• Kidney	1 (6%)
• Leukemia	1 (6%)
• Neuroendocrine	1 (6%)
• Rectal	1 (6%)

CHARACTERISTICS, CONT.

Mean 3+ years post treatment.

94% very high incidence of previous yoga exposure.

53% participants were practicing in the six months prior to the study.






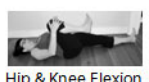

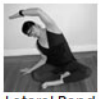











CHARACTERISTICS	VALUE N=17
Staging Information at time of study (%)	
• Stage I	1 (6%)
• Stage II	4 (23.5%)
• Stage III	4 (23.5%)
• Stage IV	4 (23.5%)
• Unknown	5 (23.5%)
Treatments received in past 10 years (%)	
• Surgery	14 (82%)
• Chemotherapy	12 (71%)
• Hormone	6 (35%)
• Radiation	5 (29%)
• Stem Cell Transplant	2 (12%)
• No Treatment	1 (6%)
Mean time since treatment in months (range)	39 (6-200)
Previous yoga experience (%)	16 (94%)
• (i.e., Hatha, Vinyasa, Siddha, Prenatal, Bikram, Gentle, Seniors, Kundalini, Yin)	
Currently practicing yoga (%)	9 (53%)

YOGA INTERVENTION

- Once weekly 90-minute in-person yoga session over eight consecutive weeks (50 days) held at Cancer Support Community (CSC) in Walnut Creek, CA.
- Taught by a certified yoga therapist.
- Assisted by two certified yoga teachers who provided hands-on adjustments and prop modifications as needed.
- DVD and booklet were provided with encouragement to practice some portion of the protocol daily on their own.




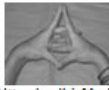




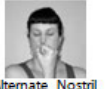




HYCS PROTOCOL – PHYSICAL

- Yoga postures (*asana*) to increase body awareness and lymphatic movement:
 - Reclining - gentle pelvic mobilization
 - Seated - spinal movements
 - Kneeling - deeper flexion and extension of spine and pelvis
 - Standing - balance, strength, stamina
 - Restorative - passive supported inversion to initiate relaxation

TYPE	HYCS PHYSICAL PRACTICES			
Reclining Asana	 Extension	 Knee to Chest	 Hip Abduction	 Twist
	 Extend Leg	 Hip & Knee Flexion	 Windshield Wipers	
Seated Asana	 Lateral Bend	 Twist	 Forward Bend	
Kneeling Asana	 Cat/Cow	 Extended Child to Cobra	 Childs to Extended Hero	
	 Standing Twist	 Tree Pose	 Warrior II Pose	 Reverse Warrior Pose
Restorative Asana	 Legs on the Chair		 Instant Maui	

HYCS PROTOCOL – CONTEMPLATIVE

- Contemplative practices include:
 - Stating Intention (*sankalpa*) - “I am calm”
 - Sound Practices (*chanting*) - increases awareness of body and breath
 - Hand Gestures (*mudra*) - directs vital energy to elicit specific response
 - Breathing (*pranayama*) - distributes vital energy, relaxation
 - Body scan - systematic relaxation of body
 - Final Relaxation - guided imagery while reclining, integrates body/mind

TYPE	HYCS CONTEMPLATIVE PRACTICES			
Setting an Intention	 State Your Intention			
Chanting	 Vowel Spiral			
Mudra	 Adhi Mudra		 Uttarabodhi Mudra	
	 4-PART MUDRA Inhale: 'I accept' Avahana Mudra	 Pause: 'I am grateful' Samputa Mudra	 Exhale: 'I give' Pushpanjali Mudra	 Pause: 'I trust' Vajrapradama Mudra
Pranayama	 Alternate Nostril Breathing	 Belly Breathing	 Exhale Retention	
Body Scan	 Body Scan			
Final Relaxation	 Guided or Silent Relaxation			

MEASUREMENTS

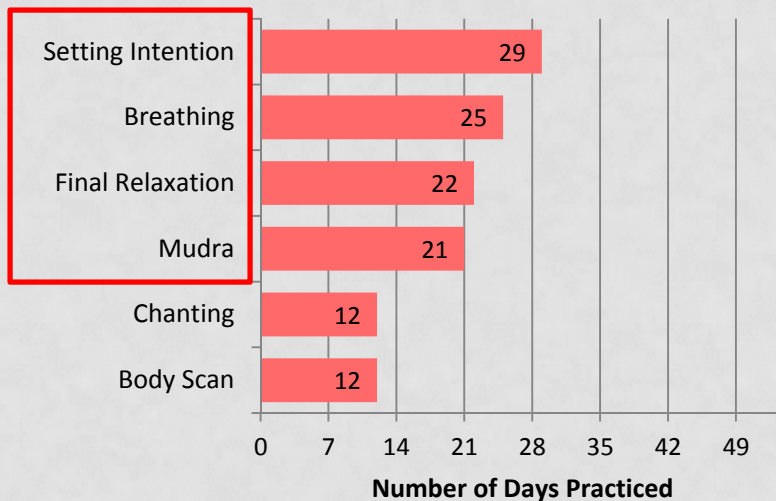
- Daily reports via online form with email reminder:
 - Type of yoga practiced that day
 - Medication changes
 - 31 physical, functional, emotional and spiritual well-being measures from FACT-G and FACIT-SP
- Self-reported changes in well-being factors were analyzed by:
 - The combination of HYCS protocols chosen by participants

RESULTS

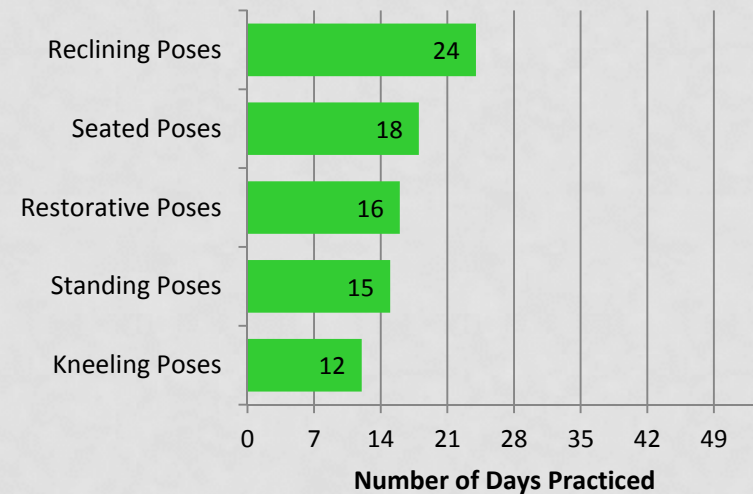
- Attendance and questionnaire compliance:
 - Weekly attendance = 67.6% (range 8-14 participants)
 - Daily reporting = 74.2% (range 7-17 participants)
- No major changes to medication usage during study.
- No adverse events.

FREQUENCY OF HYCS PRACTICE

HYCS Contemplative Practices



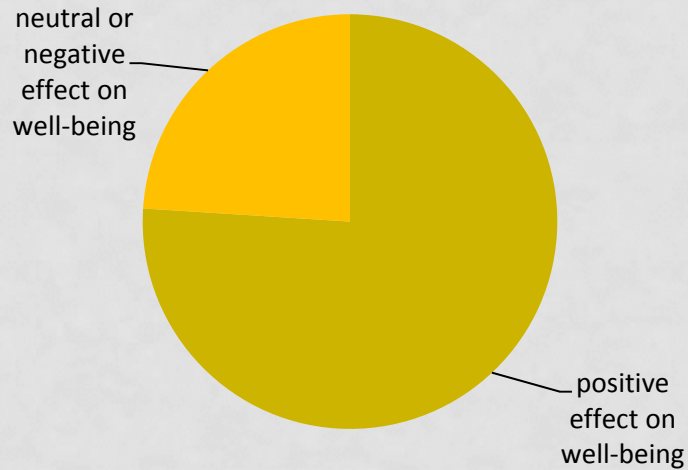
HYCS Active Practices



- Top four contemplative practices:
 - Setting Intention
 - Breathing
 - Final Relaxation
 - Mudra

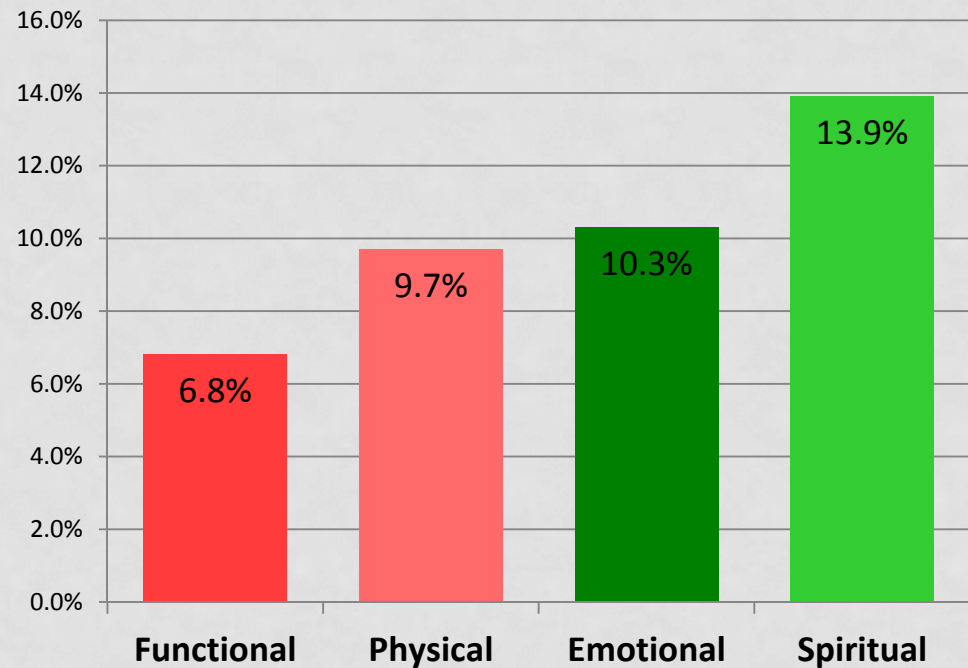
WELL BEING INCREASE BY FACTOR AND DOMAIN

HYCS Protocol Effect on Well-Being Factors Measured



- 76% of well-being factors measured were positively affected by HYCS protocol use

Well-Being Increase by Domain



OUTCOME MEASURES

DOMAIN	OUTCOME MEASURE	PERCENT CHANGE
FUNCTIONAL Increase in well-being	Ability to work	14.8%
	Mental clarity	8.8%
	Concentration	9.8%
	Life enjoyment	-0.0%
	Illness acceptance	-9.5%
	Sleep	16.0%
	Leisure activity enjoyment	14.0%
	Quality of life contentment	0.5%
	TOTAL	6.8%

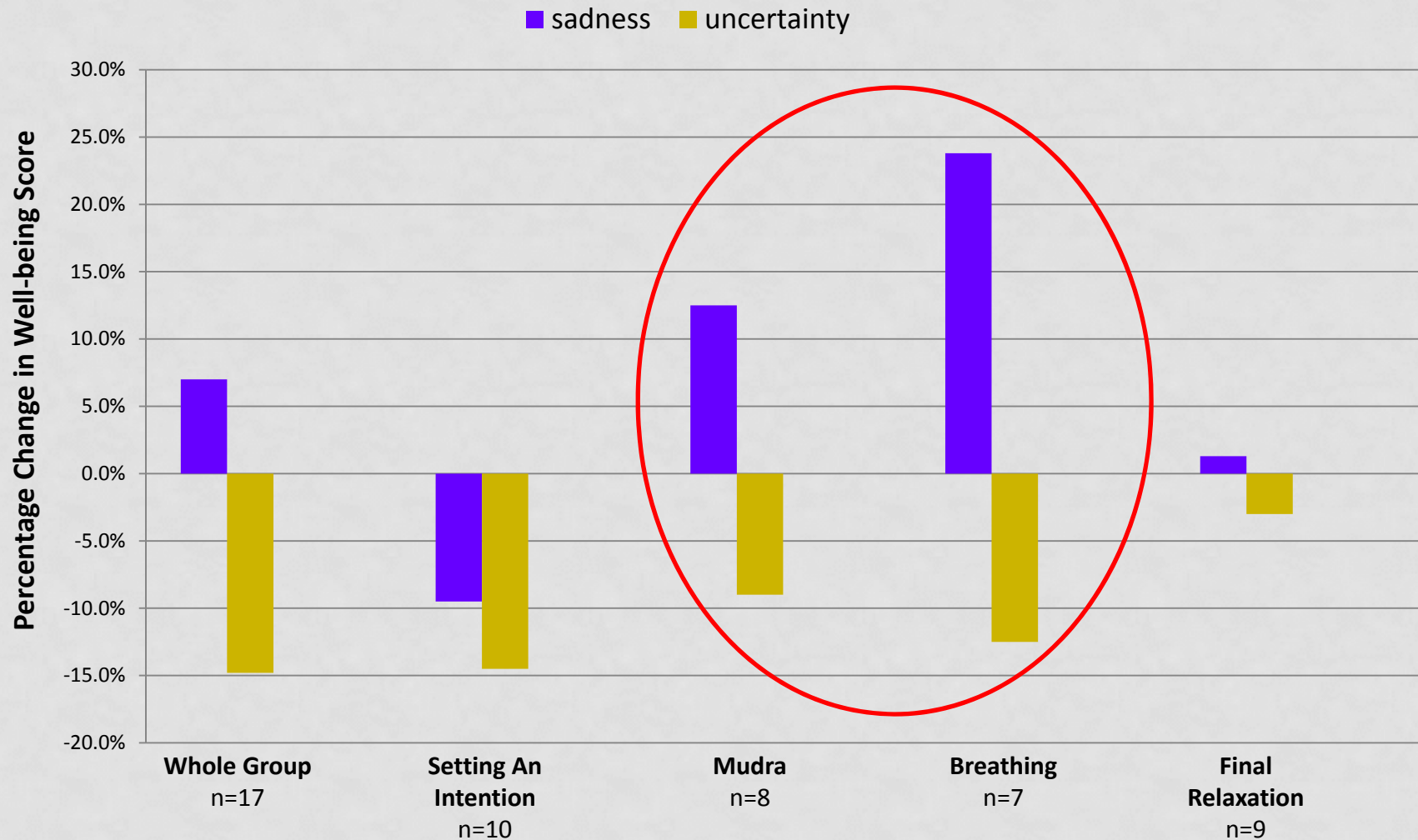
DOMAIN	OUTCOME MEASURE	PERCENT CHANGE
PHYSICAL Increase in well-being	Lack of energy	16.8%
	Fatigue	18.5%
	Need to Sleep	-4.3%
	Ability to meet needs of family	1.0%
	Pain	14.8%
	Pain interference	21.8%
	Side-effect interference	22.8%
	Perceived illness	-3.3%
	Constipation	-0.7%
	TOTAL	9.7%

DOMAIN	OUTCOME MEASURE	PERCENT CHANGE
EMOTIONAL Increase in well-being	Sadness	7.0%
	Nervousness	19.3%
	Emotional instability	17.5%
	Uncertainty about future health	-14.8%
	Worry about recurrence	-3.5%
	Worry about death	24.3%
	Hopelessness	22.0%
	TOTAL	10.3%

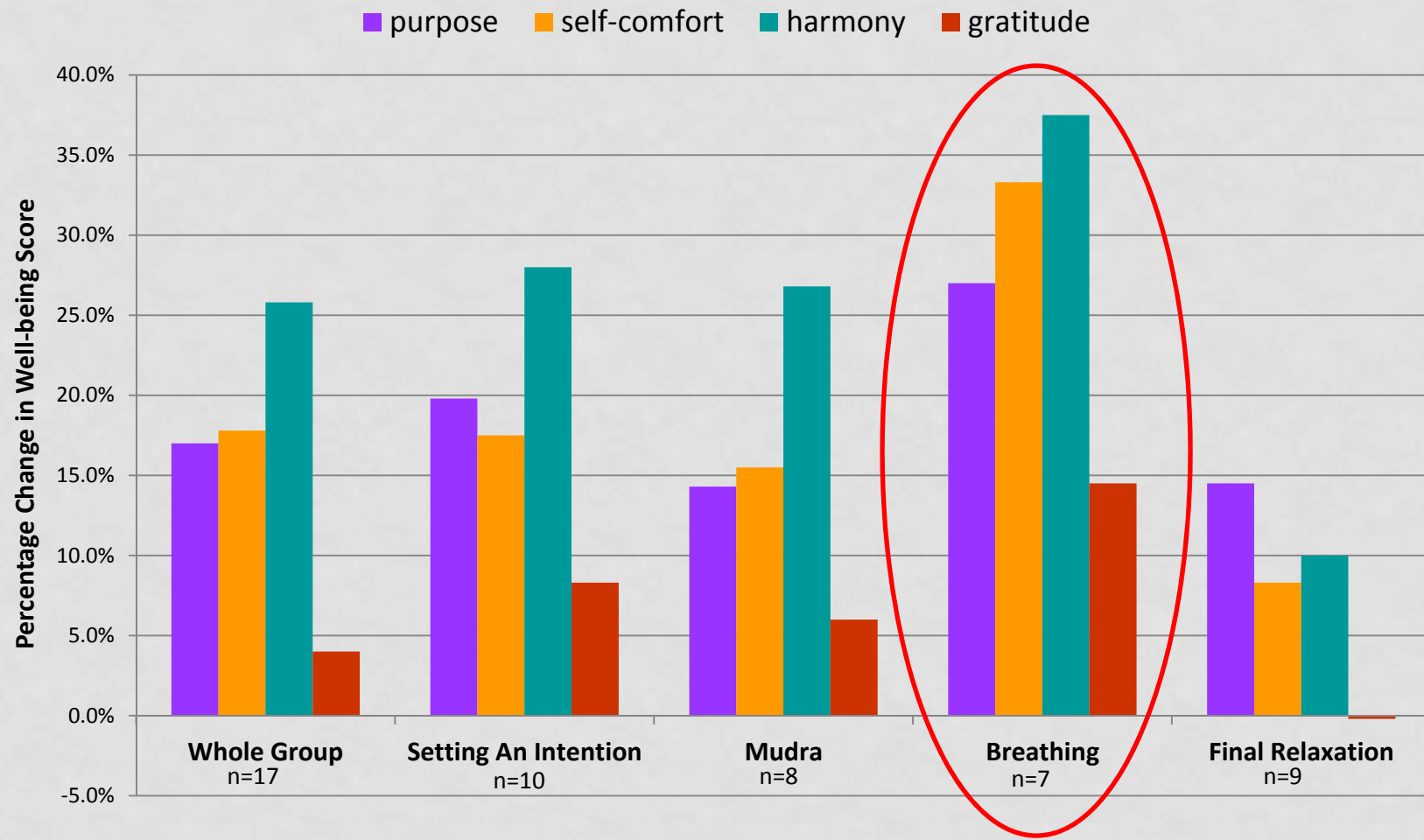
DOMAIN	OUTCOME MEASURE	PERCENT CHANGE
SPIRITUAL Increase in well-being	Peacefulness	11.8%
	Life purpose	17.0%
	Ability to self-comfort	17.8%
	Harmony	25.8%
	Self-reliance	13.0%
	Gratitude	4.0
	Hopefulness	7.8%
	TOTAL	13.9%

Does practicing more frequently lead to a greater increase in well-being?

DOSE-RESPONSE RELATIONSHIP: HOW DID PRACTICING 'TOP FOUR' PRACTICES 50% OF DAYS AFFECT EMOTIONAL FACTORS?



DOSE-RESPONSE RELATIONSHIP: HOW DID PRACTICING 'TOP FOUR' PRACTICES 50% OF DAYS AFFECT SPIRITUAL FACTORS?



LESSONS LEARNED

- Limitations due to small sample size and selection bias.
- Longer study (12 weeks or longer) may show more accurate representation of yoga's benefits.
- Incentives are needed for participants to complete follow-up questionnaires.
- Less frequent well-being questionnaires?
 - *“Sometimes [they] were great, sometimes [they] were very confronting. Some days didn't want to do them b/c I was feeling really low and it felt like that was in my face -- other times, even when I was feeling low, it was helpful to be able to put that down on the study and move on.”*

TESTIMONIAL RESPONSES: TOP FOUR PRACTICES

- *“[Setting an Intention was] very helpful as I have found it to become a center that helps me stay grounded/calm in times of doubt or ‘what if’ thinking.”*
- *“[Mudras] are calming and energizing, and most useful in a number of situations. They're fairly easy to use, and I feel their effects.”*
- *“[Breathing was] helpful especially alternative [nostril breath] as it is calming in times of anxiety.”*
- *[Final Relaxation] helped me get a good night’s sleep. I usually can get to sleep easily but wake up frequently with anxiety. Helped avoid the anxiety.”*

CONCLUSIONS

- Our findings support the need for continued investigation into how increased practice of contemplative yoga may further increase emotional and spiritual well-being.
- Yoga Nidra - which is a technique including intention setting, pranayama and relaxation - is one such contemplative practice that would be a next step to further explore how emotional and spiritual well-being could be increased among cancer survivors.

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