



2024 International Congress of Integrative Medicine & Health

# Novel Applications of Nature-based Interventions to Promote Whole Person and Planetary Health

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# Hello!



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School



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University of California,  
San Francisco (UCSF)



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University of  
North Carolina  
Greensboro



# Learning Objectives

- Describe how spending time in nature promotes whole person health.
- Describe 3 examples of nature-based interventions that are being offered for trainees, clinicians, or patients.
- List 2 strategies for getting institutional buy-in for nature-based interventions.

# Outline

- Intro to nature-based interventions
- Benefits of spending time in nature
- Nature and forest therapy “intervention”
- Harvard program (Susan)
- UNC Greensboro program (Amber)
- UCSF program (Stephanie)
- Discussion/Q&A



# Nature Based Interventions

## *Shinrin Yoku – Forest Bathing*

森林 = *shinrin* (forest) 浴 = *yoku* (bathing)

Health Ministry of Japan 1980s responded to spike in stress-related illnesses, attributed to shift from rural to urban environments.

Certified trails to guide people in outdoor experiences. Chronic disease and suicide rates dropped.

Decades of research in Japan, South Korea, Northern Europe; rapidly accelerating pace of research in US – showing multiple physiological and psychological benefits.

## *Forest Therapy - Association of Nature and Forest Therapy*

Trained guides, 60 countries, emphasizing relational experiences with nature



# General benefits of forest bathing

Physiological perspective, blood pressure and heart rate decreased in participants of SY along with increased relaxation for each of the empirical studies.

Psychologically, participants reported a decrease in anxiety along with an improved state of well-being. Gender, culture, education, marital status, economic status, nor age had an impact on the outcomes for each of the studies.

The time the participants engaged in the SY activities ranged from 15 minutes to 90 minutes. Based on the studies reviewed, the findings provided evidence, SY may be of benefit physiological and psychologically even if exposure is as little as 15 minutes.



# Responses & Connections

SY Emotional Responses

SY Neuroendocrine Responses

Neurobiological Responses

Mindfulness and Shinrin-Yoku Connection

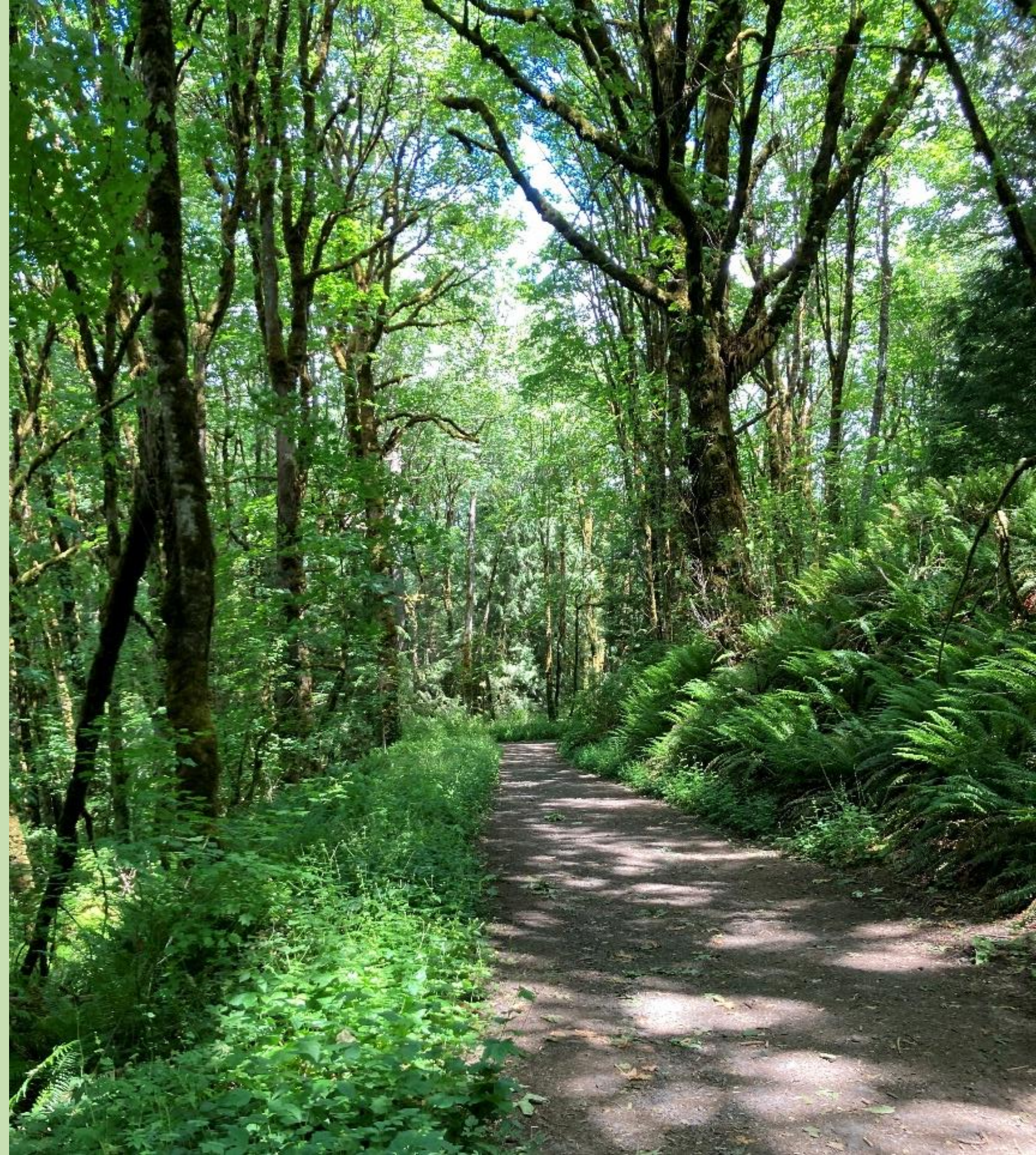
*Timko Olson ER et al. 2020*

# Psychological Wellbeing

Forest Bathing can improve medical residents' psychological wellbeing and mindfulness.

Significantly improved mindfulness scores and expressions of feeling calm, vital, or creative, as well as a decreased sense of anxiety and depression. Nonsignificant trends towards decreased burnout and irritability were seen.

*Morrison KT et al. 2024.*





# Forest Therapy Walk Key Elements

- Welcome and hospitality
- Introduction
- Pleasures of Presence
- What's in Motion
- Partnership Invitations
- Closing

- The Way of the Guide
- Invitational Language
- Emphasis on the sensory
  - SOSI (simple, open, sensory, infinite)
- Flexibility, adaptability, inclusivity
  - In person or virtual
  - Omnipartiality
- Relational Forest Therapy

# Key Principles

# BWH Medical Residents 2020-2024



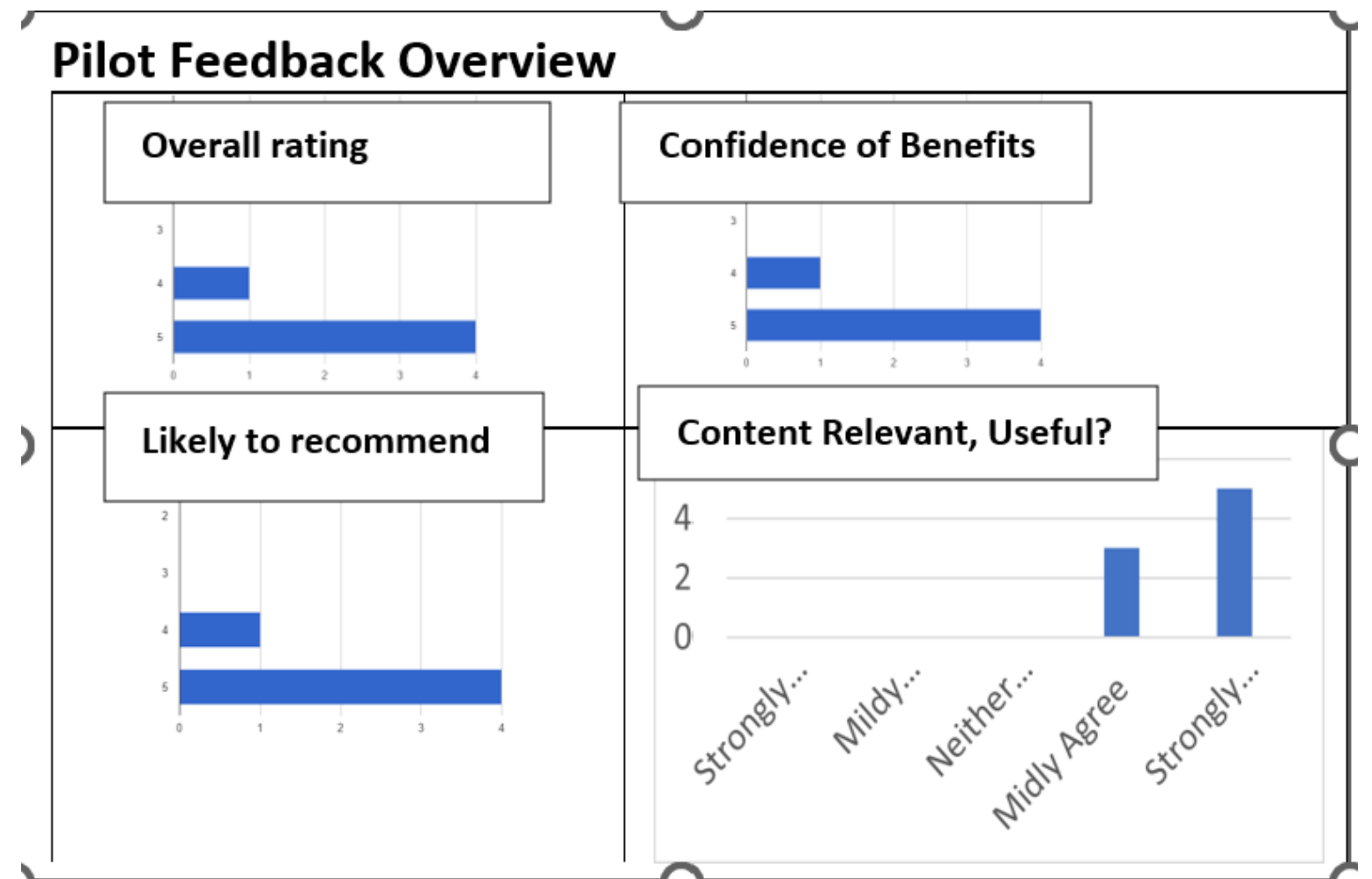
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School

# Forest Bathing with Physicians

2020-2021, 2021-2022, 2022-2023

BWH sessions occurred with:

ITU A, ITU B teams  
DGM Primary Care  
HVMA Primary Care  
BWH Management and Leadership Tract  
Residents  
BWF GMS Residents



# Testimonials

A lot beneath the surface – beautiful tree but such history that we don't know about

Everything is in motion together – reminding me that what I love about medicine is that it is a team activity

Lichenification – touching – dermatology

Nature sees a lot of life and death, like we do as physicians.

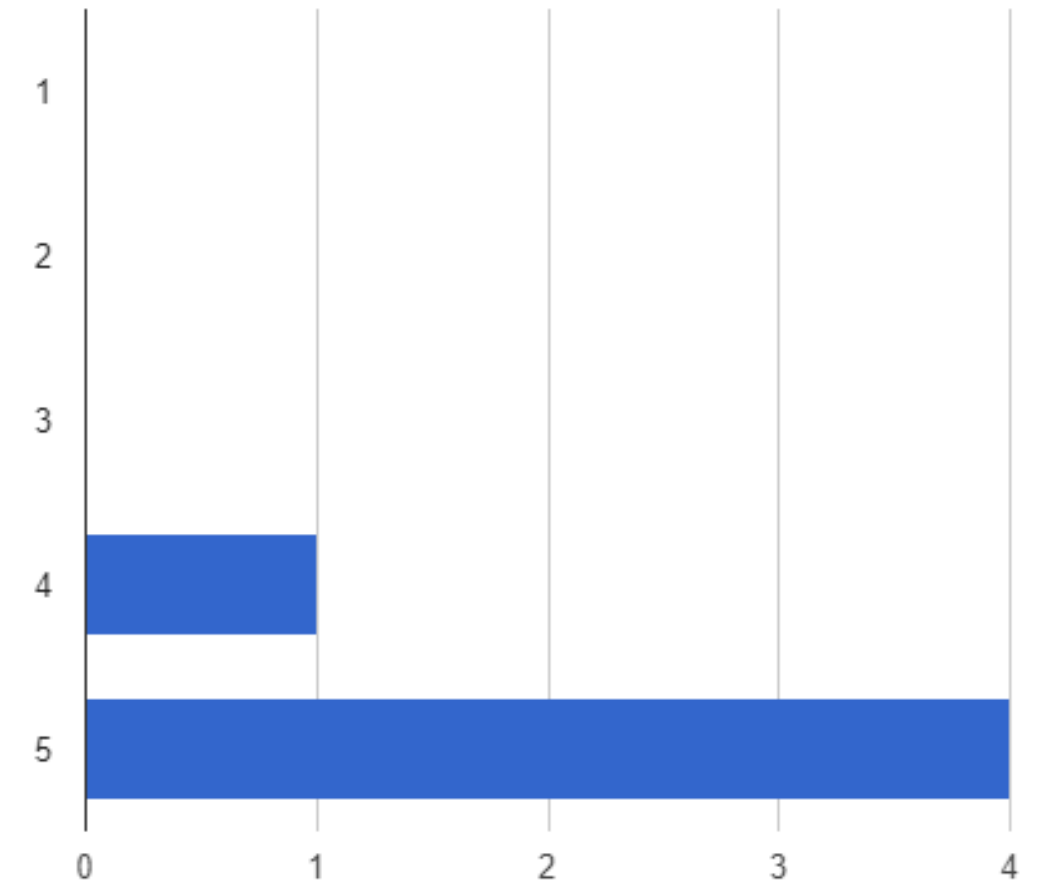
A green leaf looks strong, but was fragile when I touched it. Like black women, we assume some things are stronger than they are

Texture – not what I expected. We come with preconceived notions, but when we touch a being, it's not what we expect

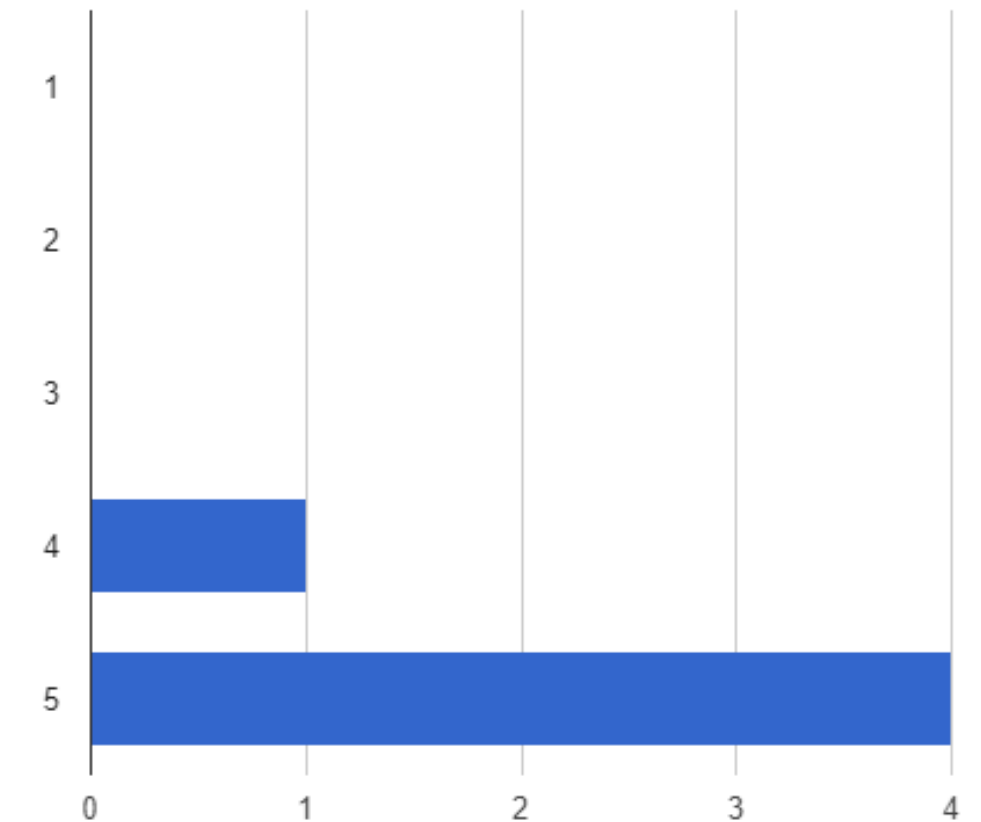
The innocence and freedom

# Forest Bathing for HVMA Primary Care Residents 2021

What is your overall rating of this experience?  
(1 is lowest, 5 is highest)



How confident are you that this walk has been beneficial?  
(1 is lowest, 5 is highest)



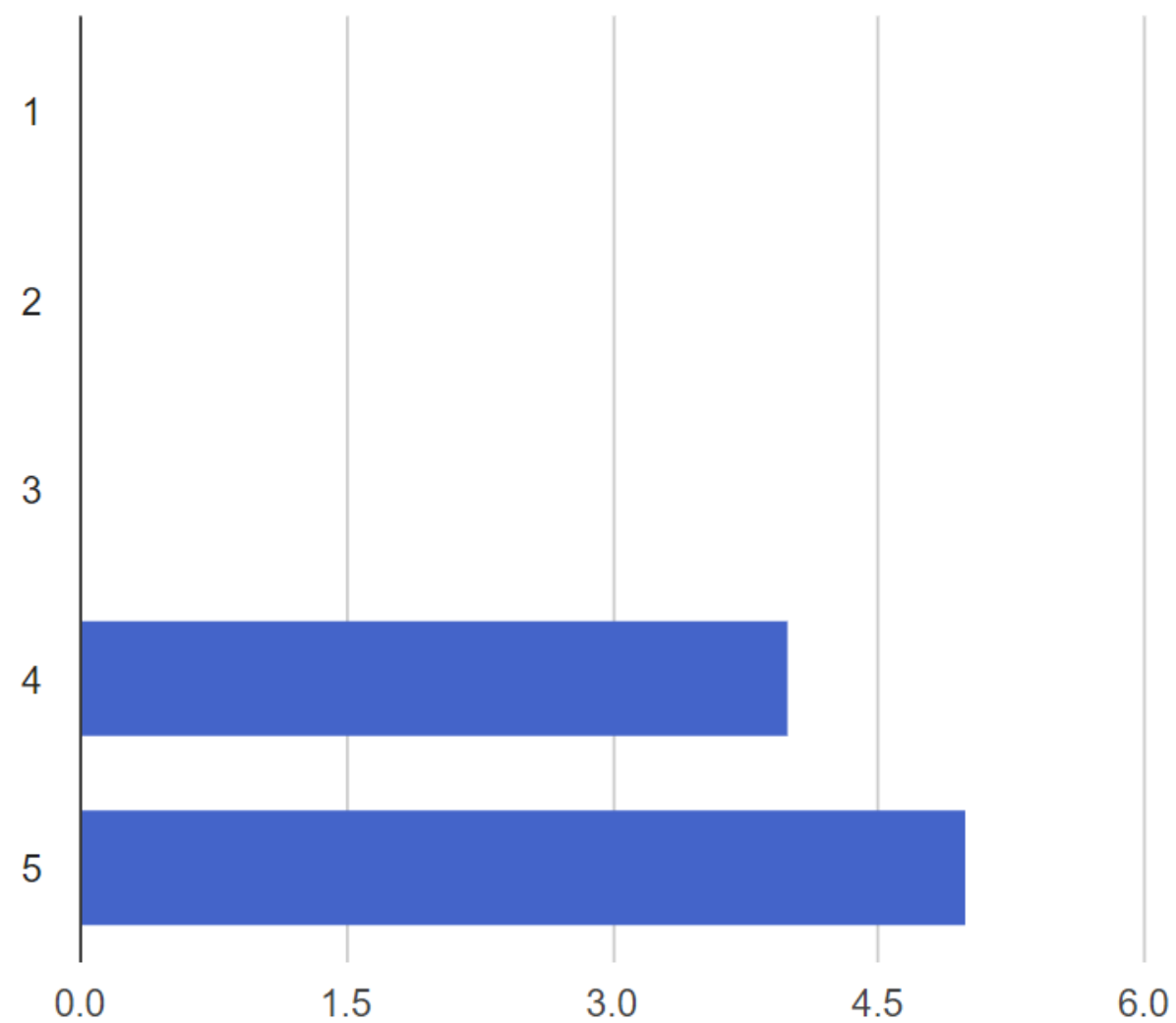
# Forest Bathing for Integrated Teaching Unit Residents 2021-2022

What is your overall rating of this experience? (1 is lowest, 5 is highest) (q6\_v2) [Refresh Plot](#) |

View as Bar Chart ▾

Total Count (N)	Missing*	Unique
9	0 (0.0%)	2

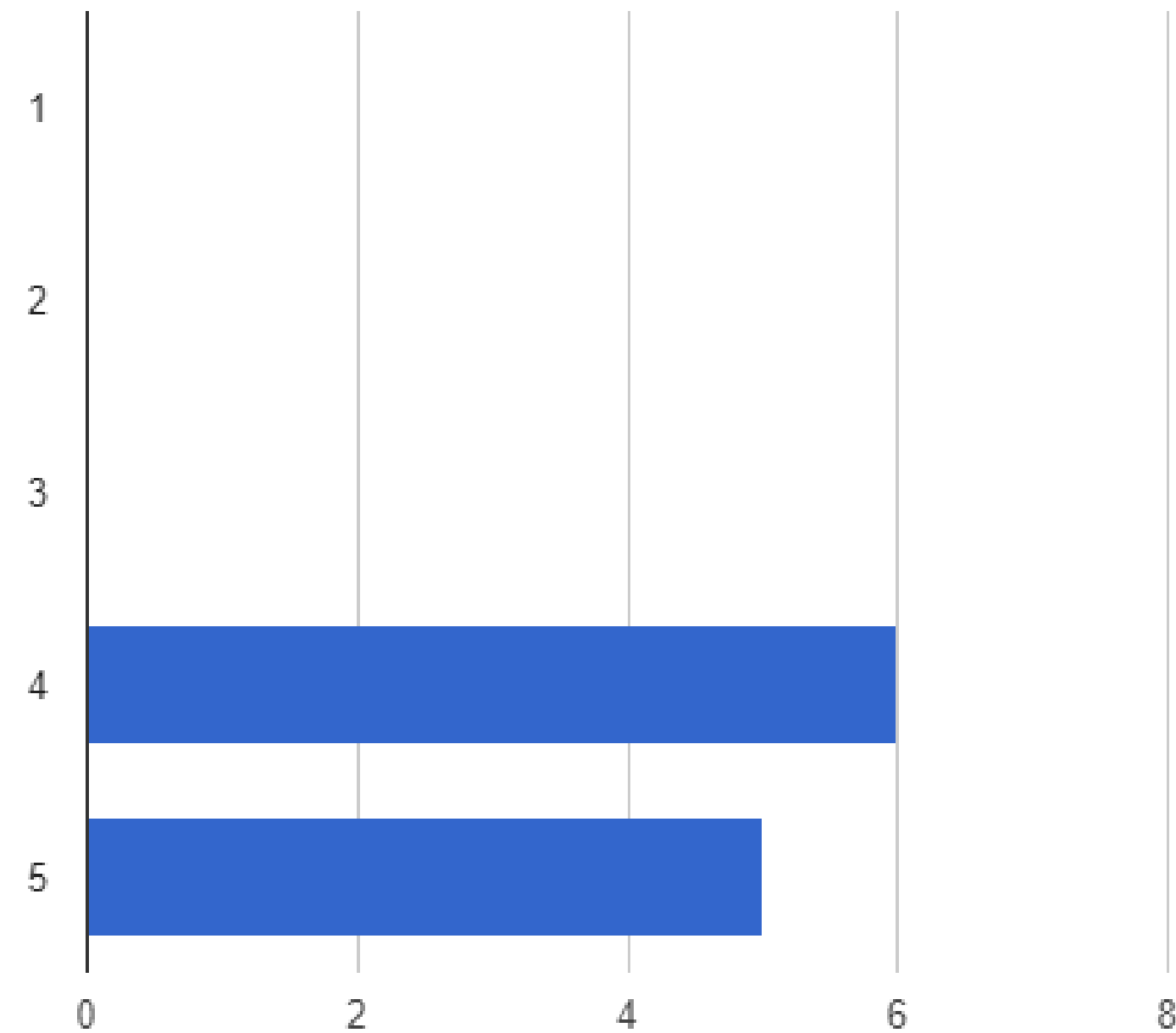
Counts/frequency: 1 (0, 0.0%), 2 (0, 0.0%), 3 (0, 0.0%), 4 (4, 44.4%), 5 (5, 55.6%)



Download image

# Forest Bathing and Systems, Leadership for BWF Residents 2022

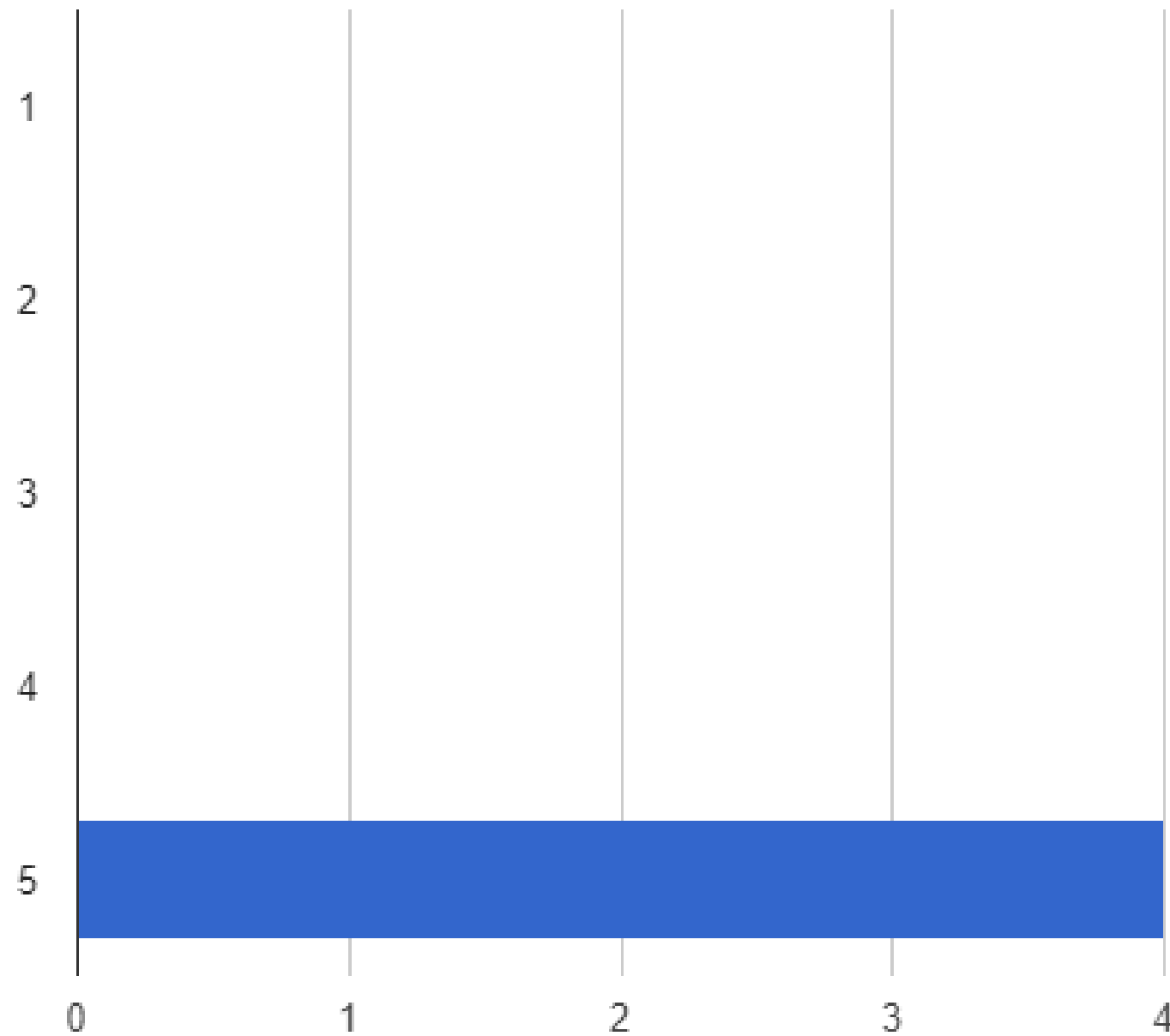
What is your overall rating of this experience?  
(1 is lowest, 5 is highest)





# Forest Bathing and Systems, Leadership for BWF Residents 2023

How likely is it that you would recommend Forest Immersion to other physicians? (1 is lowest, 5 is highest)





# BWH Faculty Pilot Program Forest Therapy for Physician Wellbeing, Community, and Resilience



Harvard Medical  
School

## Supporting Wellness, Resilience, and Community with Forest Therapy

**AIM:** To support physician healing and wellbeing, as well as to provide a context for physicians to develop skills in partnership, relational awareness, resilience, and authenticity that are foundations for teamwork and wellbeing.

**INTERVENTION:** Inspired by the Japanese practice of *shinrin-yoku*, forest bathing/forest therapy is an immersion practice in nature that supports healing and wellbeing. Trained guides invite people to become aware of all their senses and to experience partnership with the forest. This pilot consists of guided Forest Bathing experiences for frontline faculty in the Department of Medicine (DOM), with the aim to establish the basis for further development. Baseline demographics included burnout and resilience survey questions. Participants of Forest Bathing were surveyed on whether this practice was helpful, desirable, and their likelihood to recommend to other physicians.

**RESULTS:** Twenty-two faculty completed the baseline survey, twenty faculty participated, with 16 survey respondents. At baseline, 86% (19/22) reported feeling burned out more than a few times a year and 50% (11/22) reported feeling burned out more than once a month. 17% (3/18) agreed they have a hard time making it through stress events. Post intervention, 100% of participants reported that Forest Therapy could improve their wellbeing. 100% of participants would recommend this practice to other Faculty. 80% (12/15) of respondents reported the program could help them with burnout. Even with self-report of baseline resilience, most participants reported that forest therapy could help them with stressful events and setbacks. After the intervention, participants reported feeling relaxed, at peace, and calm.

**TEAM:** Susan Abookire, M.D., M.P.H.  
Nancy Shadick, M.D., M.P.H.

**Department :** Medicine

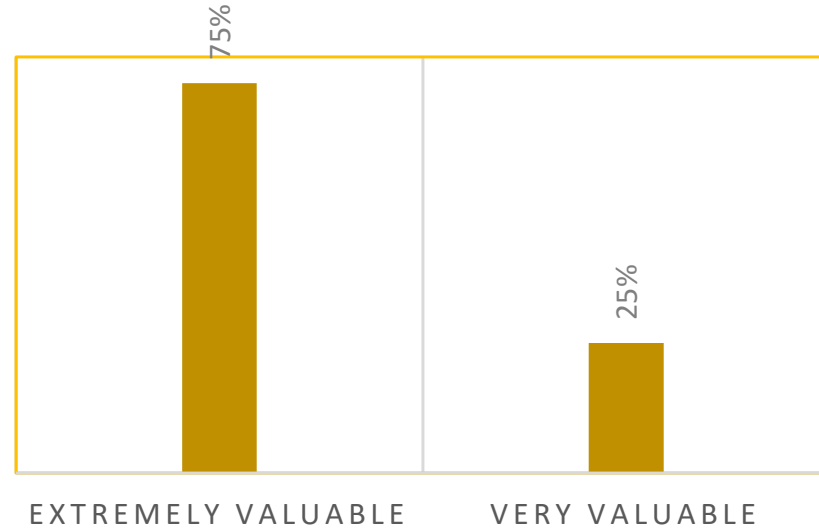
**PROJECT SPONSORS:** This program is made possible by the DOM Wellbeing Program and funding from the BWPO.

### CONCLUSIONS:

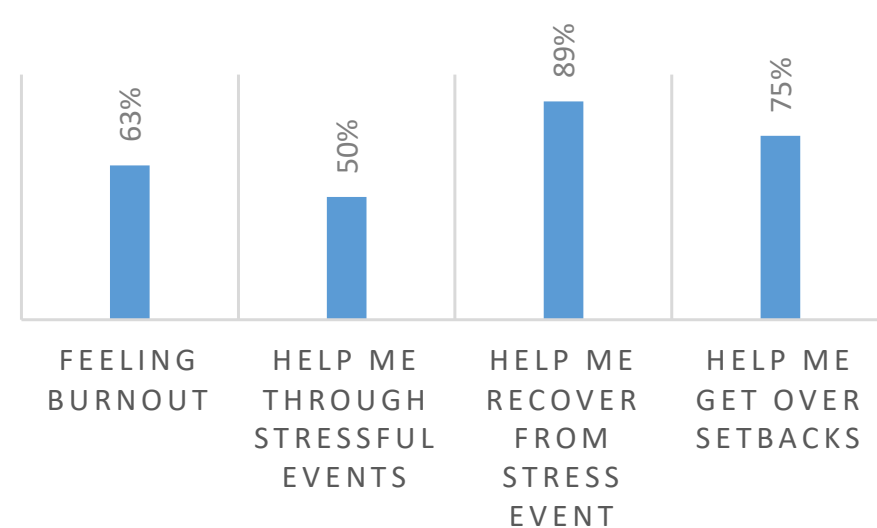
- Physicians would recommend forest therapy to other physicians
- Physicians believe forest therapy can help with wellbeing, burnout and with responding to adversity.
- Physicians felt this practice could be helpful with resilience and burnout.

**NEXT STEPS:** This pilot program demonstrates the feasibility and acceptability for DOM faculty. Next steps include expanding the program and incorporating it into programs for leadership, teambuilding, and peer support after adverse events.

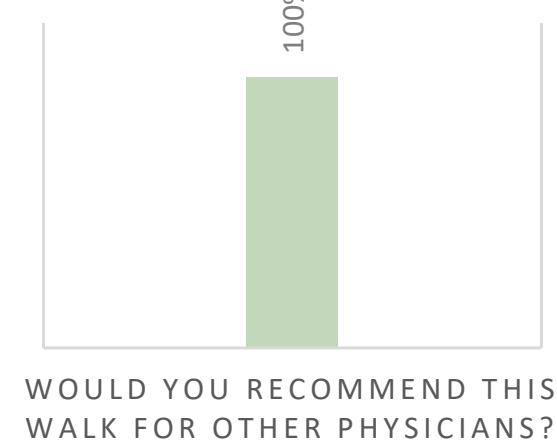
RATE THE EXPERIENCE OVERALL



FOREST THERAPY COULD HELP ME WITH:



RECOMMEND FOR OTHER PHYSICIANS?



# MGB Women Faculty Nature Inspired Leadership Coaching



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## Testimonials from Physician Leaders:

.....  
.....  
.....  
*"I am grateful for the opportunity to connect with myself, the land, and with others." Cecilia L*

*"This program played a pivotal role for me in not only understanding my interactions with others in health care, but understanding how I react to the world around me. The combination of leadership coaching in a group setting with an appreciation for nature, allowed me to draw parallels between two seemingly different aspects of my life."- Wren B, Brigham & Women's Hospital and Harvard Medical School*

*"The experience of forest therapy reduced my acute stress, but more importantly, it awakened my spirit and I left feeling more focused and invigorated." -Department of Medicine Faculty member*

*"Forest bathing is an incredible opportunity to slow down and reconnect with nature and yourself. I came into the forest with a number of anxieties and left much more relaxed and with new insights with which to approach those situations. I would highly recommend it to anyone!"  
-Primary Care Physician*

*"This leadership program opened my eyes to many aspect of leadership. I would love to explore this further in ongoing conversations with other leaders." – Brigham and Women's Medical Resident in Leadership Training Track*



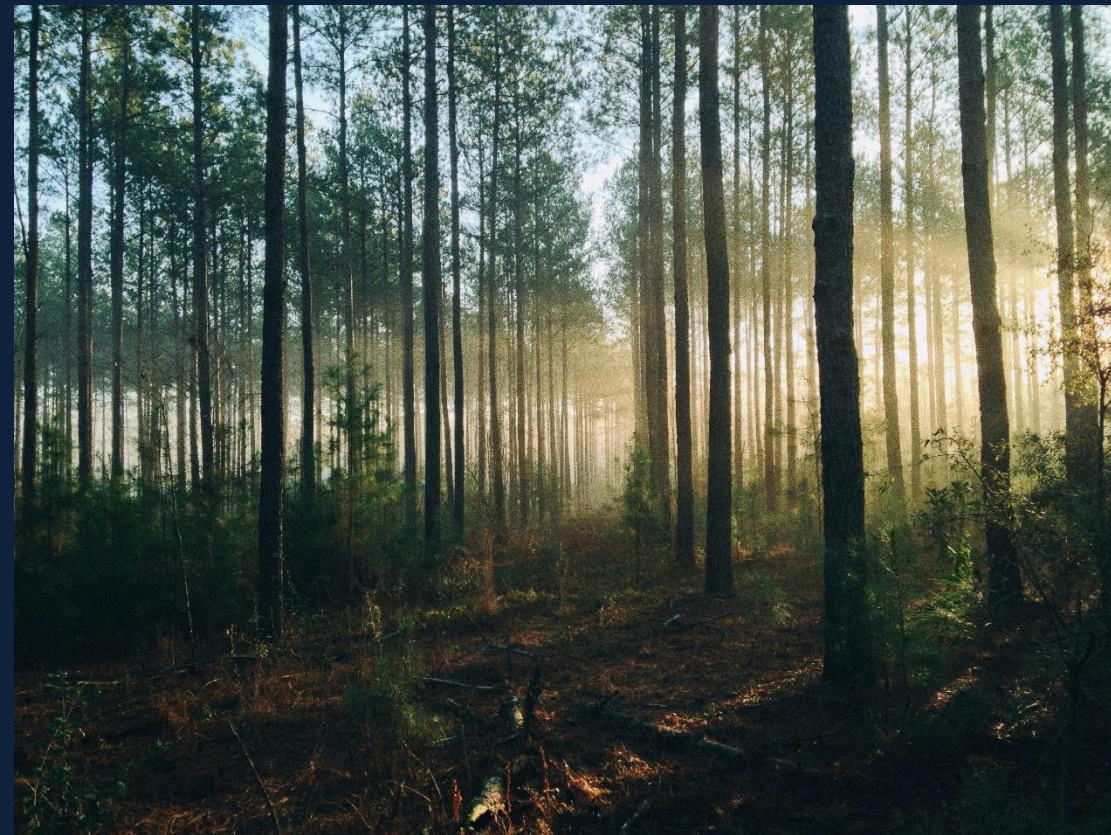
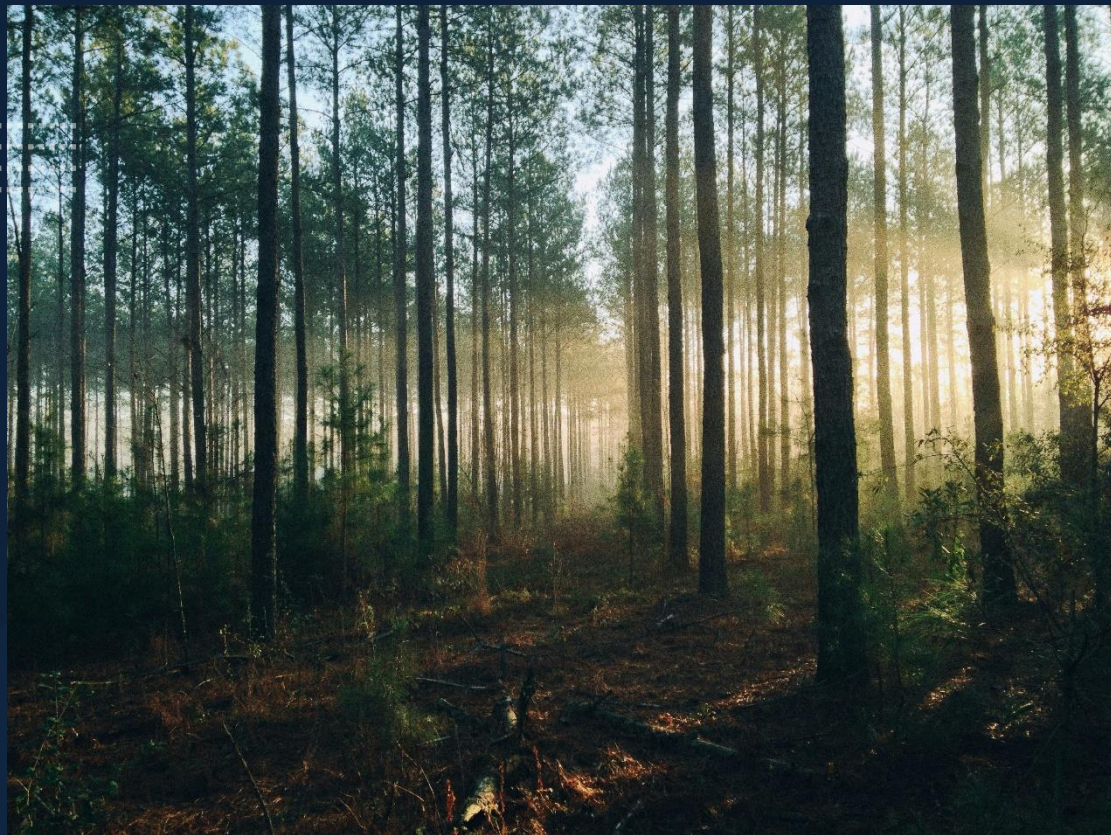
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# Harvard Medical Students



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**Presented as Scholarly  
Project at Harvard  
Medical School Soma  
Weiss Research Day 2023**

**Health Systems and Forest Therapy Medical  
Student Curriculum: Pilot at Harvard Medical  
School**

**Bessie Zhang  
Harvard Medical School, Castle Society, 2024**

**Susan Abookire MD, MPH  
Brigham and Women's Hospital**





# Fostering Engagement & Recognition with Nature (FERN)





*Find your way here*

# FERN

**Heather Coleman, Noah Lenstra, Meredith Powers, & Amber Vermeesch**





*Find your way here*

# Project Design & Procedures



*Mental Health Content part of the intervention*

*App-based program nature engagement part of intervention*

50-60 participants from each of three professional schools (nursing, education, health and human sciences) and the library department at UNCG (total N=200+)



*Find your way here*

# Methods



Pilot test (using a one group pre and post design) the intervention and Nature-Quant along with survey data pre and post intervention to increase participants overall wellness through cognitive benefits (i.e. decreasing perceived stress levels, mental distress, increasing cognitive flexibility) and measures of happiness (i.e. increase in subjective well-being, positive affect, positive social interactions, sense of meaning and purpose in life, as well)



*Find your way here*

# Data Analysis

- 1) t-tests or pre and post score differences on anxiety, stress, coping and NatureDose™ scores for nature dose;
- 2) Pearson correlations between the four outcomes measures to determine relationships at both pre and at post data collection, and
- 3) We use linear regression to determine prediction by MH content and nature exposure measures with health and behavior outcomes to determine which predicts the most strongly.



# UCSF FOREST THERAPY WALKS



University of California  
San Francisco

# UCSF Osher Center for Integrative Health

## Nature Therapy

Virtual forest therapy walk



[Home](#) / Nature Therapy

Palliative care physician and nature and forest therapy guide Dr. Stephanie Cheng will lead participants through a healing experience in the natural world. Nature and forest therapy involves the therapeutic immersion in nature and is based on the Japanese practice of *shinrin-yoku*, or forest bathing, to nourish mind, body, and soul. Forest therapy has been shown to decrease stress, improve mood, and improve sense of well-being.

This 2-hour gentle guided walk includes ample time for wandering and sitting and is suitable for all fitness and ability levels. There will be a series of sensory invitations offered to help participants slow down and connect with the natural world. There will also be opportunities to share experiences with others in the group. Participants join virtually using Zoom from the greenspace of their choice.

Participants may choose a natural setting such as a local park, yard, state park, or any other local green space (e.g., Golden Gate Park or the Presidio, if you live in San Francisco, or [find a California State Park](#)). The one requirement is that participants must have cell phone service or WiFi to participate on Zoom for the full 2 hours.

Unlike other group medical visits, this is a single session and not a full series. However, participants are welcome to register for multiple walks.

### Upcoming sessions

Thursdays, 10:00am-12:00pm

- 5/16, 6/27 (**FULL**)

Fridays, 1:00-3:00pm

- 4/5 (**FULL**), 5/3 (**FULL**), 6/14, 6.21

To register, please ask your doctor to place a referral. A referral is required, regardless of insurance. For additional questions, call the Osher Center Clinic at 415-353-7716.



University of California  
San Francisco

# Forest Therapy Group Medical Visits (GMVs)

- Open to 18+ year old patients (any diagnosis)
- Conducted virtually using Zoom
- Patients join from the location of their choice
- Sessions offered on average 2x per month (plus a few additional sessions given demand), capped at 5 participants
- Billed as a group medical visit (GMV)
- Patients can join for multiple sessions if they choose
- Resources provided to support further exploration and practice

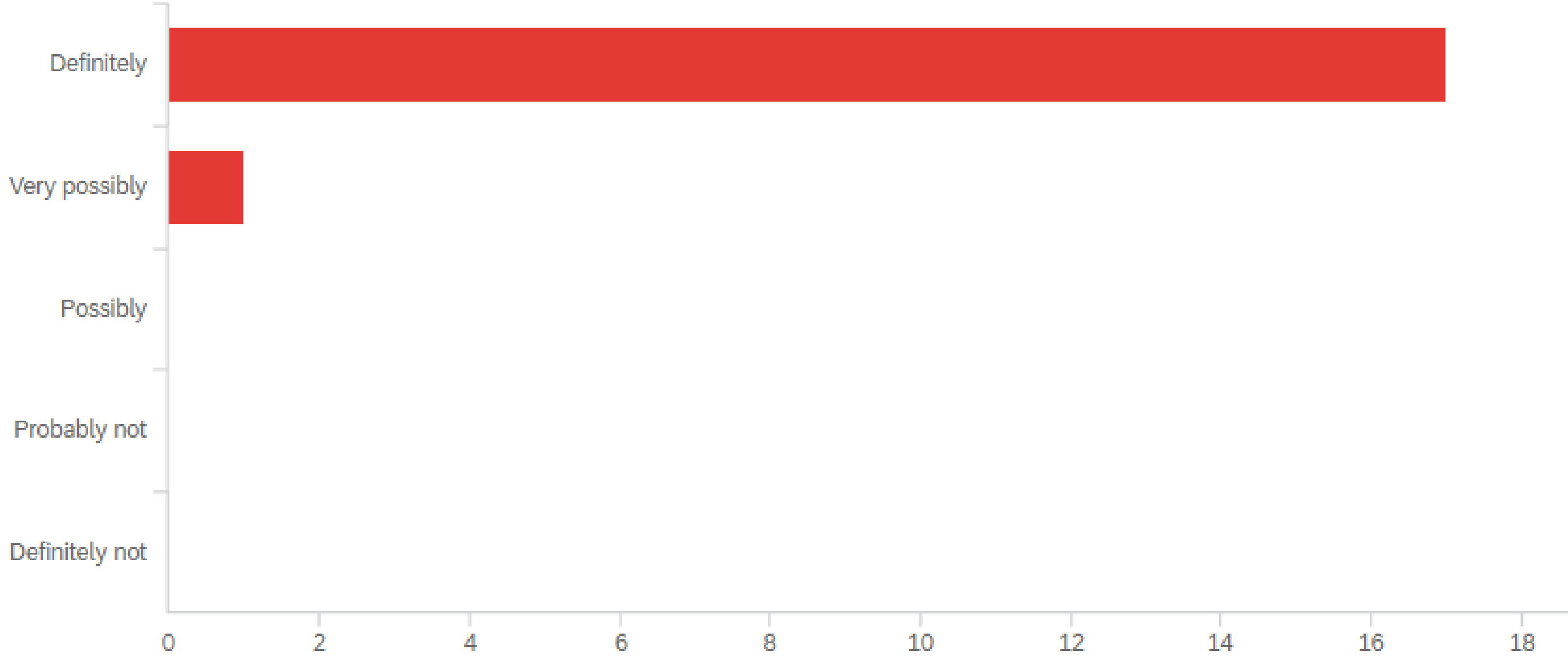


# Forest Therapy GMVs

- 19 walks since May 2023, 61 patients
- Feedback thus far has been positive
- Trainees are welcome to join
- Future opportunities: in person option, groups for pediatric, bedbound, non-English speaking patients
- Potential for collaboration

Q7 - Would you recommend the Virtual Forest Therapy Walk to others?

**94.4% of respondents said they would Definitely Recommend the Forest Therapy Walk to others.**



What did you like most or what did you find most helpful in this session?

---

Validation of the healing power of nature. A reminder to be more present on my nature walks engage my senses and look up. The tea sharing as an ending.

I like the different prompts. They were for the right amount of time.

Very grounding. I liked how Dr. Cheng framed the discussions as invitations and optional. Low pressure.

The way the meditation helped me to enjoy my body and environment again. After spending so many years in pain, it is a revelation to enjoy these things again!

I love the direction and guidance on what to do. How to do it and see Cheng in her guidance through each prompt of walking. Her feedback on our comments are almost helpful in us becoming more connected.

What did you like most or what did you find most helpful in this session?

---

Great introduction to forest therapy. I learned mindfulness practices that I now use in my walks.

The small group and the peaceful and calming practices. It felt like a safe space to be in community.

Finding the extraordinary in everyday spaces.

Just the fact of connecting with Nature and discovering that one doesn't need to be in an actual forest to do so.

This workshop really helped me to slow down- both in my mind and my body and to appreciate the nature around me in a different way than I have in the past. I have already incorporated some of the prompts into my daily walk.

I am very grateful for Dr. Cheng's gentle, clear and very kind approach to her practice and specifically to this forest therapy work!

# **Call to Action**

## **→ Invitation**

**Join us in reconnecting providers,  
patients, trainees, and all of us back to  
nature in a systematic way!**



**'Rewilding'** originates with progressive environmental conservation stemming from the idea of letting nature take care of herself by removing and reducing active management

World Health Organization (WHO) in their health promotion glossary of terms defines **well-being** as, "a positive state involving mental, physical and social' aspects experienced by individuals and societies

# Contact Us!

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**Stephanie Cheng: [stephanie.cheng2@ucsf.edu](mailto:stephanie.cheng2@ucsf.edu)**

**Amber Vermeesch: [ALVERMEESCH@uncg.edu](mailto:ALVERMEESCH@uncg.edu)**

# Thank You!

"Nature is not a place to visit. It is home."

~ Gary Snyder





# References

- Morrison KT, Jensen KM, Keniston A, McBeth L, Vermeesch AL & O'Connor KN. (2024). Evaluation of a Guided Nature and Forest Therapy Walk for Internal Medical Residents - A Brief Report. *Global advances in integrative medicine and health*, 13, 27536130241228181. <https://doi.org/10.1177/27536130241228181>
- Timko Olson ER, Hansen MM & Vermeesch AL. (2020). Mindfulness and Shinrin-Yoku: Potential for Physiological and Psychological Interventions during Uncertain Times. *International journal of environmental research and public health*, 17(24), 9340. <https://doi.org/10.3390/ijerph17249340>
- Vermeesch, AL, Ellsworth-Kopkowski A, Prather JG, Passel C, Rogers HH & Hansen MM. (2024). Shinrin-Yoku (Forest Bathing): A Scoping Review of the Global Research on the Effects of Spending Time in Nature. *Global advances in integrative medicine and health*, 13, 27536130241231258. <https://doi.org/10.1177/27536130241231258>
- White MP, Alcock I, Grellier J, et al. Spending at least 120 minutes a week in nature is associated with good health and wellbeing. *Scientific Reports*. 2019/06/13 2019;9(1):7730. doi:10.1038/s41598-019-44097-3