

Supporting Wellness, Resilience, and Community With Forest Therapy

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Abstract

Background: Physician burnout has reached epidemic proportions. Although burnout is rooted in systems, practices for physician wellbeing and community can address exhaustion, burnout, and isolation. Inspired by the Japanese practice *shinrin-yoku*, forest therapy/bathing (FT) is a nature immersion practice that improves wellbeing in a group setting.

Objective: This program offered guided FT experiences to frontline faculty physicians in the Department of Medicine and evaluated potential for impact on burnout, resilience, and community.

Methods: Faculty physicians were recruited via email invitations to a free Forest Therapy group experience in the Arnold Arboretum in Boston, MA. Participants completed pre-and post-course surveys and evaluated its value as a community experience. Surveys measured burnout, resilience, and qualitative feedback on the experience.

Results: Twenty-seven faculty completed the baseline survey, twenty-three faculty participated, with 19 survey respondents. At baseline, 85% reported feeling burned out at least once a month. 46% reported feeling burned out more than a few times a month. 83% of participants responded that forest therapy could help them with the feeling of being burned out from work. Post-intervention, 100% of participants rated the experience as very or extremely valuable. 96% of participants reported they were interested in more frequent forest therapy sessions. 100% of participants would recommend this practice to other faculty. 70% of respondents reported the program could help them with burnout. Despite high baseline resilience, 94% of participants reported that forest therapy could help with stressful events and setbacks. Post-intervention, participants reported feeling relaxed, at peace, and calm.

Conclusion: This pilot demonstrates feasibility and acceptability for physicians of FT. Participants would consider recommending FT to their colleagues, and agreed that FT can help with wellbeing, and expressed enthusiasm for the community experience. This program may also be successfully incorporated into programs for leadership, teambuilding, and support after adverse events.

Keywords

burnout, integrative medicine, lifestyle medicine, nature, resilience, Shinrin-Yoku

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Introduction

The need to support physician wellbeing has never been more acute. While variability in burnout measurement tools precludes precise measures of prevalence, studies of burnout prevalence prior to the COVID-19 pandemic burnout were estimated to range from 40% to as high as 80%.¹ The COVID-19 pandemic added unprecedented stressors,

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particularly on frontline physicians. These additional stressors include risking one's own health and the health of one's family, watching scores of patients succumb to the virus, and frustrations with disorganized approaches to the public health response for controlling the pandemic.² As the pandemic unfolded and changed the landscape of health care, burnout rates continued to rise, as shown by a study finding that 62.8% of US physicians exhibited at least one symptom of burnout in 2021, compared with 38.2% in 2020, 43.9% in 2017, 54.4% in 2014, and 45.5% in 2011.³

*Shinrin-Yoku*⁴ began in Japan in the 1980s, as a national response to a spike in population stress-related chronic diseases such as heart disease, hypertension, diabetes, depression, and suicide. The Health Ministry attributed this spike to the shift from a rural, agrarian economy to an urban and technological work environment. In response, Japanese leaders created hundreds of certified trails for people to "bathe" in during the workday. *Shinrin-Yoku* translates to "bathing in the atmosphere of the forest," or "forest bathing." Four decades of ensuing research have shown that forest bathing can reduce stress, heart disease, hypertension, as well as improve attention, boost immunity, lift mood, and heal trauma.⁵

Forest Therapy,⁶ inspired by *Shinrin-Yoku*, is a western immersion practice in which trained guides offer structured invitations in a standard sequence that bring participants into their senses, into partnership with the forest, and that supports healing and wellbeing. Trained guides set a slow pace and invite people to become deeply attuned to their sensory experiences. People experience the pleasures of the senses in the forest and derive profound benefits from deepening one's relationship with the rest of the natural world. Forest bathing for a group of faculty or team also fosters a community in which people experience themselves as part of the ecosystem, in partnership, and interconnected.

This formal pilot study was to explore Forest Therapy as a basis for further inclusion of Forest Therapy in programs to reduce burnout, enhance wellbeing, support resilience, and provide a space for community. Our goals were to assess baseline measures of burnout and resilience among a group of volunteer frontline faculty physicians, offer a forest therapy experience, and assess the acceptability and feasibility of a forest therapy experience for burnout, resilience and community by determining whether participants believed this could be helpful for burnout and resilience, enhance community, and whether they would recommend this to their colleagues.

Encouragement for the present study was based on prior successes with physicians. Before this study, Dr Abookire offered guided forest bathing to incoming BWH Internal Medicine Interns who self-identified as under-represented in medicine in the summer of 2020. After very positive feedback, additional forest bathing sessions were offered over the summer to residents during a clinical rotation in Internal Medicine. This has since become a regular program,

described separately. Some comments and reflections made during those sessions follow:

"I found it refreshing, relaxing, and thought-provoking and I thoroughly enjoyed the experience!"

After the walk, I felt more relaxed, full of new ideas and memories, more connected to the landscape and happier."

"I spent time with a fern, who reminded me of one of those people who inhabit the world with a generous ease that is contagious."

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

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

Methods

This program was co-led by two physicians in the Brigham and Women's Hospital (BWH) Department of Medicine. One (SAA) is a senior health care executive and trained Forest Therapy Guide, certified by the Association of Nature and Forest Therapy. The Director of Faculty Wellbeing for the Department of Medicine (NAS) at BWH led the program implementation and analysis. A project manager (SGA) coordinated communications with the medical staff, data collection, and logistics. Pilot program funding was provided by Brigham and Women's Physician Organization. As a quality improvement project, this project was considered exempt from IRB approval.

A free Forest Therapy session was offered to all frontline faculty physicians in the Department of Medicine, which included physicians serving patients on 1) inpatient units, 2) observation units, 3) urgent care, and 4) ambulatory sites for COVID-10 evaluation, testing, or care. A series of emails were sent to these physicians, with a brief description of Forest Therapy and inviting them to sign up for a session. Guided Forest Therapy sessions lasting 1½ to 2 hours were offered as free, voluntary wellbeing initiatives on Wednesdays and Sundays between June and September 2021. These sessions were held at the Arnold Arboretum, a 281 acre preserve in the heart of Boston Massachusetts.

One week prior to the experience, participants were emailed a link to complete a pre-course survey that measured burnout and resilience scores. In addition to brief demographics, the baseline pre-survey assessed burnout with questions derived from the Maslach burnout inventory.⁷⁻⁹ Baseline Resilience questions were derived from the Brief Resilience Scale developed by Smith et al.¹⁰

Post-experience surveys were sent out immediately after the course, and participants were given two weeks to complete them. The post experience surveys included all the questions on the pre-experience survey but were framed differently. Since measures of burnout and resilience evaluate conditions that are more long term than a mood state and

therefore unlikely to be altered by one Forest Therapy experience, the post-experience surveys after the Forest Therapy session asked participants 1) whether Forest Therapy could help them with the same burnout questions they had responded to on the pre-survey, 2) whether Forest Therapy could help them bounce back after adversities with the same questions on the resilience portion of the pre-survey, 3) to rate their overall evaluation of this experience, 4) to rate their desire for more of this experience, 5) to rate their likelihood to recommend it to their colleagues, and 6) offer open-ended testimonials about their experience in response to: “If you were to recommend this walk to others, what would you say?”

Results

Twenty-seven faculty members completed the baseline survey. Twenty-three frontline faculty physicians participated in the Forest Therapy experience, and nineteen participants completed the post-experience survey.

Almost half of participants were between the ages of 41 and 50 years. A majority of participants (51%) had been practicing medicine for 20 years or less (Table 1).

At baseline, 85% (22/26) reported feeling burned out at least once a month, and 46% (12/26) reported feeling burned out more than a few times a month. (Figure 1) Eighty-three% of respondents agreed or strongly agreed that forest therapy could help them with the feeling of being burned out from work (Figure 1).

Although there was a range of responses to the question of whether participants felt drained and not wanting to face more work in the pre-survey, 70% (14/20) in the post-survey believed that forest therapy could help them with that feeling (Figure 2).

Responses to pre-survey questions about resilience showed that participants did not agree that they have a hard time making it through stressful events. Yet, 100% of participants in the post-survey somewhat or strongly agreed that forest therapy could help them make it through stressful events (Figure 3).

Similarly, although respondents did not agree that it “is hard for me to snap back when something bad happens,” 94% (17/18) of respondents somewhat or strongly agreed that forest therapy could help them with this (Figure 4).

Participants’ overall evaluation ratings were highly positive. One hundred% of respondents rated the experience extremely valuable or very valuable. Almost all participants (96%) were interested in having this experience more often, and all participants (100%) stated that they would recommend this experience to other physicians (Figure 5).

Respondents were invited to add a testimonial about their experience. Examples of testimonials include:

“This was an energizing and rejuvenating program that develops mindfulness and being present in the moment. Being out in the forest with others and breathing in the fresh air did wonders to

Table 1. Demographics of Participants.

Age	31-40	5
	41-50	12
	51-60	6
	61-70	2
	Over 70	2
	Gender	Male
	Female	15
Years in Practice ^a	<10 years	7
	11-20 years	7
	21-20 years	5
	>30 years	4

^aMissing data due to incomplete survey completion

replenish a sense of joy and peace and being able to appreciate beauty. It was like a mini vacation. Highly recommended!”

“It was wonderful to be in nature with colleagues – old friends and new acquaintances.”

“Give your brain the medicine it needs.”

“It is so great to get to be with my colleagues in this way.”

“This is a great community building experience. Can we do this regularly?”

Among the faculty physicians who participated, several who were also senior hospital leaders commented at the close of the forest therapy experience that this practice offered an excellent opportunity for community building among faculty.

Discussion

Approaches to support physician wellbeing often include encouragement for individual behaviors such as yoga, nutrition, and sufficient sleep. However, physician burnout is intertwined with the burnout of the systems in which we work. The wellbeing of physicians working in the complex system of health care and the health of the organizational systems are inextricably tied together; the system as a whole – organizational and individual wellbeing – must be addressed in a coordinated approach that acknowledges this interrelationship. An ideal approach to wellbeing may include benefits to people as individuals, in a manner that also offers community and a sense of belonging within a larger system.

The scope of health benefits of forest bathing/forest therapy and of time in nature have been increasingly documented over four decades of research. After a walk in the woods, level of the stress biomarker cortisol decreased, compared with people who walked in a laboratory setting.¹¹

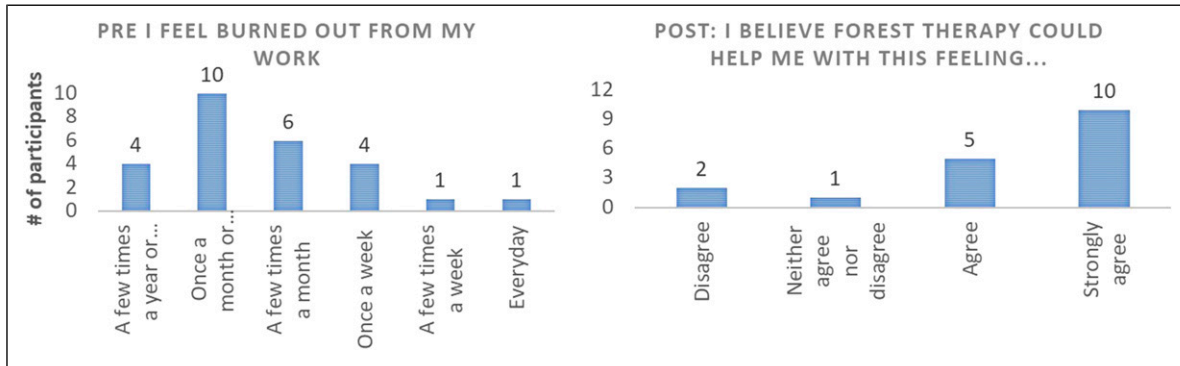


Figure 1. Burnout from Work. The pre-intervention survey showed that 85% of participants reported feeling burned out at least once a month, and 46% reported feeling burned out more than a few times a month. 83% of respondents agreed or strongly agreed that forest therapy could help them with the feeling of being burned out from work.

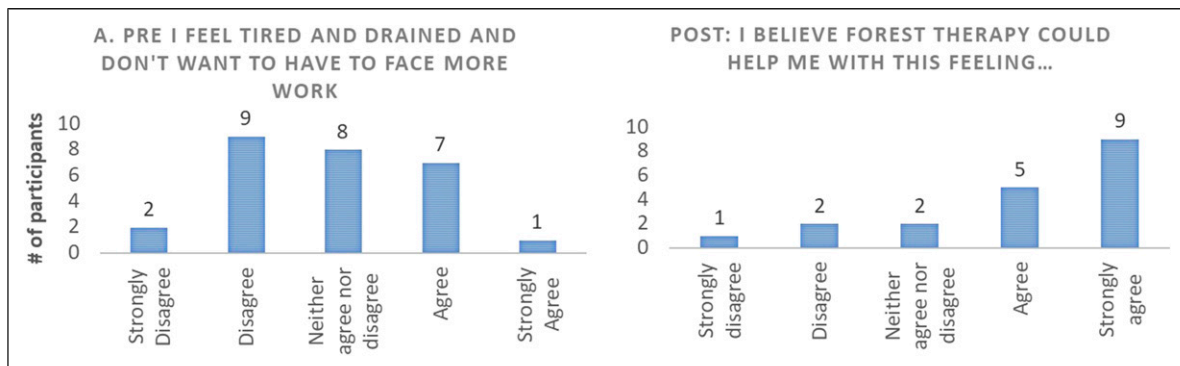


Figure 2. Feeling tired and drained comparison: Pre and Post Forest Therapy. Although participants varied widely on whether they felt drained and not wanting to face more work in the pre-intervention survey, 70% reported in the post-intervention survey that they believed forest therapy could help them with that feeling.

Blood pressure is reduced, and the amount of green space in residential areas is associated with a lower prevalence of diabetes.¹² When inhaling the smells of the forest, people take in volatile essential tree oils called phytoncides that have antimicrobial qualities and have also been shown to boost immunity by increasing the numbers of natural killer cells; this boost lasted for more than a month after the forest trip.¹³ Viewing forest landscapes has been shown on functional MRI to be associated with changes in right prefrontal cortical activity that is linked to physiological relaxation.¹⁴

Beyond the physical health benefits of nature immersion, research has also shown that time in nature enhances mental health. Psychological improvements have been documented in the literature at an increasing pace.¹⁵ Additional studies demonstrate that exposure to natural tree oils helps lift depression and reduce anxiety.¹⁶ Access to nearby greenspace has been shown to be protective against inadequate sleep,¹⁷⁻¹⁹ and animal studies suggest that tree oils enhance the quality of sleep.²⁰ A small study published decades ago compared outcomes for patients recovering from gallbladder surgery who were in a room with a natural outdoor view vs a room

with a view of a brick wall. Those who could see nature recovered more quickly and required less powerful pain medication than those who could not see nature.²¹ A study that evaluated the Profiles of Mood States of 53 women before and after a program of forest therapy compared with an urban environment found significantly reduced tension, depression, anger, fatigue, and confusion from the forest therapy program.²² A forest therapy program in Korea relieved psychosocial stress in a study of 20 women working in health care or counseling services.²³ Forest bathing has also been shown to improve cognitive performance and restore a person's capacity for clear focus and attention.²⁴⁻²⁶

A recent study in the United Kingdom of nearly 20,000 people showed that spending at least 120 minutes a week in nature improved self-reported health and well-being. It did not matter whether the 120 minutes was one long immersion experience or several shorter times spent in nature.²⁷ The results of our study are consistent with this earlier finding.

One powerful advantage of Forest Therapy is that while it enhances the wellbeing of participants, it also expands our

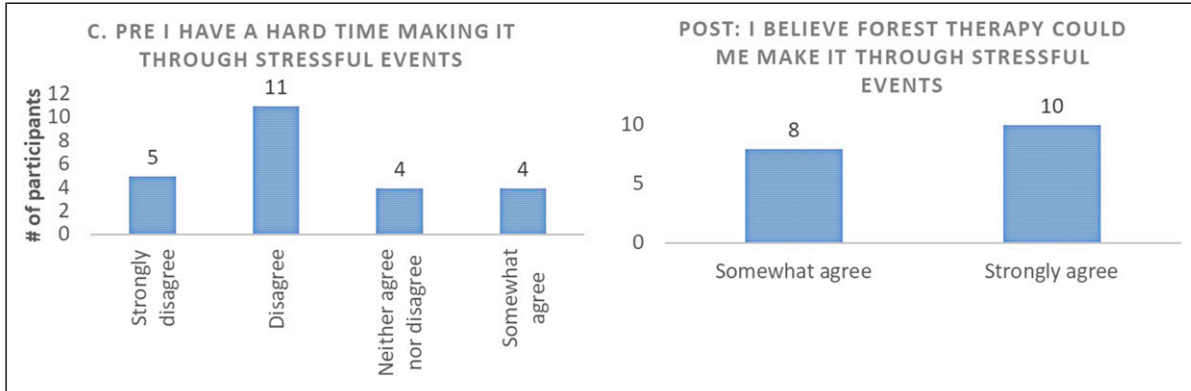


Figure 3. Making it through stressful events comparison: Pre and Post Forest Therapy. Participants did not agree that they have a hard time making it through stressful events in the pre-intervention survey. Nevertheless, 100% of respondents in the post-intervention survey somewhat or strongly agreed that forest therapy could help them make it through stressful events.

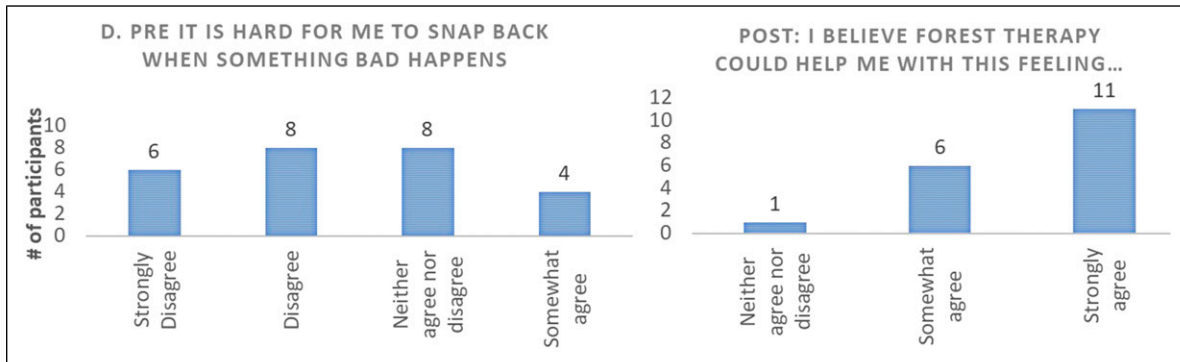


Figure 4. Snapping back comparison: Pre and Post Forest Therapy. In the pre-intervention survey, respondents did not agree that it “is hard for me to snap back when something bad happens,” and still 94% (17/18) of respondents somewhat or strongly agreed that forest therapy could help them with this.

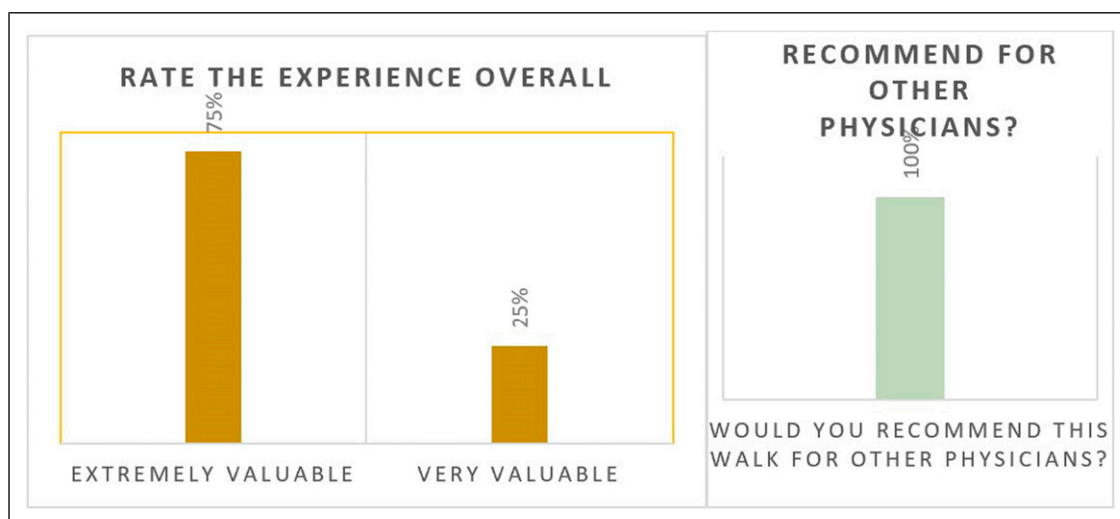


Figure 5. Overall Ratings by Physicians. Participants’ overall evaluation ratings were highly positive. 100% of respondents rated the experience extremely valuable or very valuable. Almost all participants (96%) were interested in having this experience more often, and all participants (100%) stated that they would recommend this experience to other physicians.

awareness of participating in a cooperative, reciprocal ecosystem, which we can emulate and advance in our healthcare delivery systems. Forest Therapy weaves together individual wellbeing with empowerment and agency in a complex system. By experiencing ourselves amidst the beauty of the ecosystem of the forest, we are exposed to an intuitive understanding of the community of the forest, the ways in which the trees, shrubs and grasses live in harmony, and our place in that community. The richness of this experience can lay the foundation for promoting an understanding of healthy ecosystems, and how we might emulate that in healthcare.

In our study, physicians rated themselves overall at baseline as experiencing burnout, but rated themselves overall as resilient. This is consistent with prior findings that physicians generally exhibit high levels of resilience, along with substantial rates of burnout.²⁸ Even with baseline levels of resilience, however, physicians suffer after adverse events, and our findings suggest a particular opportunity to support physicians in their healing process after adversity.

This study has several limitations. Although the pre-survey and post-survey questions were directly correlated, the post-survey asked physicians to rate their beliefs that Forest Therapy could help with the feelings of burnout and resilience, rather than being a direct before and after comparison of those feelings. Also, participation was voluntary which may have included the bias of self-selection among the physicians who participated.

Conclusion

This pilot program demonstrates the potential of Forest Therapy as a positive wellbeing activity for frontline physicians. Participants stated that they would recommend Forest Therapy to their colleagues, and that they believed that Forest Therapy can help with wellbeing burnout, and resilience. Post intervention, participants reported feeling relaxed, at peace, and calm. Affirmation by faculty physicians that forest therapy can help with burnout highlights the promise of this simple, yet deep nature experience. This study establishes the foundation that forest therapy has a role to play in programs to reduce physician burnout.

Future Directions

Next steps include expanding the program to additional departments and providers. Future studies should focus on the frequency of this experience that is necessary to support sustained wellbeing and reduce burnout. An additional focus will be to explore the use of Forest Therapy as a specific component of healing for providers after adverse events.

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Declaration of Conflicting Interests

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