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Influence of pranic healing and mindfulness on respiratory function, physical endurance, and well-being: A randomized single-blind study among paramedical students

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Abstract

Background: In pranic healing, a naturopathic biofield (prana) therapy, wellness is achieved by balancing life energy, also known as prana. Studies confirm its effectiveness in lowering rates of depression and anxiety, along with improving sleep quality and functional health.

Objective: To evaluate the effects of mass pranic healing (MPH) on lung function and physical performance among paramedical students and to examine the influence of mindfulness on these outcome measures.

Method: In a four-week randomized controlled trial, 78 paramedical students (mean age 18.86 years) were randomly assigned to the MPH or sham pranic healing (SPH) groups. The study evaluated physical performance using the 1-minute sit-to-stand test, pulmonary function via spirometry, and mindfulness using the Cognitive and Affective Mindfulness Scale, both before and after the intervention. Statistical analyses included a linear mixed model and repeated measures analysis of variance. The experiences of participants were thematically analyzed.

Results: MPH showed a favorable change in physical performance over time (η^2 = 0.12), while SPH showed no change. After adjusting for gender and height, baseline mindfulness significantly moderated treatment-related changes in forced expiratory volume in one second. At high baseline mindfulness (mean + 1 standard deviation), SPH declined by approximately 130 mL while MPH improved by approximately 20 mL, producing a 150 mL between-group difference in change. Qualitative feedback showed that MPH participants reported improved physical and psychological health.

Conclusion: MPH showed favorable changes in physical endurance, MPH, mindfulness levels, and lung function. The study found synergistic benefits of pranic healing and mindfulness in promoting respiratory health, physical vitality, and well-being among paramedical students.

Keywords: Biofield; Energy medicine; Traditional healing; Holistic health; Mind–body healing; Pranayama

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1. Introduction

Biofield (prana) science explores the complex energy-based regulation of living systems, integrating bio-electromagnetic and subtle energy interactions to advance energy medicine.[1] These subtle energy interactions are fundamental to many holistic treatments that integrate mind, body, and spirit, thereby emphasizing the contributions of Complementary and Alternative Medicine to public health.[2] According to a clinical research review, combining pranic healing (PH) with standard medical practices enhances both physical and psychological well-being, proving beneficial for musculoskeletal conditions, pain, and respiratory problems.[3] The World Health Organization report on Complementary and Alternative Medicine interventions in 2005 references the application of PH, a therapy using prana.[4]

By modulating the human energy field, complementary therapy PH influences physiological and psychological processes, affecting the body and mind.[5] PH may alleviate lower urinary tract symptoms, improve respiratory health, and reduce pain.[6,7] Participants frequently described sensations including tingling, warmth, coolness, magnetic pull, vibrations, and lightness during PH-related sessions.[6,8] These somatic sensations are perceived as markers of energy flow, subsequently leading to an elevated state of well-being. PH appears effective in mitigating mild to moderate depression and middle insomnia,[9] improving emotional well-being. Individuals engaged in mass PH (MPH) techniques showed significant improvements in quality of life, relaxation, cognitive function, and positive well-being.[10,11]

In Panchakosha theory, the Pranamaya Kosha represents the prana layer that links and influences both the physical body (Annamaya Kosha) and the mental–emotional layer (Manomaya Kosha).[12] According to Nanjundaswamy *et al.*,[6] PH practitioners perceived that changes in the activity of subtle energy centers (chakras), a core concept in PH and several other prana therapies, were associated with improvements in participants' physical and psychological states. When compassionate intention is directed toward a person remotely, it corresponds with detectable shifts in that person's autonomic nervous system responses.[13,14] Based on the research evidence, PH supports a multi-layered mind–body interaction. Beyond addressing disease, it supports students' mental and emotional well-being. Group pranic energy techniques not only enhance participant outcomes but also allow efficient collection and analysis of large datasets, making them valuable for both clinical and research settings.[8,10,11]

In PH, the initial state of awareness can develop into mindfulness, characterized by sustained present-moment attention to bodily sensations, perceived energy flow, temperature variations, and mental states. The experience features calm, reduced stress, positive feelings, and better clarity, focus, and awareness.[8,15] Studies on the mind–body relationship suggest that mindfulness training is positively associated with lung function, asthma-related quality of life, and enhanced physical endurance in athletes.[16,17] Muscular endurance in young, active people was also connected to lung function.[18] In addition, PH has been observed to positively affect functional health improvements in prison inmates,[10] which validates its role in holistic mind–body regulation. Patients undergoing PH have also reported bodily sensations and perceived pranic energy experiences during treatment, suggesting embodied experiences that may accompany the healing process.[6] Such experiences may be partly explained by mindfulness-related enhancements in interoceptive awareness and present-moment body attention, as proposed in the mind–body intervention literature.[19]

Medical students are vulnerable to mental health challenges, such as depression, anxiety, and stress.[20] Restrictive lung disease, which hindered inhalation, was prevalent among the majority of recovered health science students who had COVID-19.[21,22] Previous studies have reported beneficial effects of PH in clinical populations, including individuals with chronic obstructive pulmonary disease (COPD).[7] Within the theoretical framework of PH, prana is believed to be derived primarily from three natural sources: air, the sun, and the ground, with the lungs regarded as a principal route for the absorption of air prana.[23] Recent studies on prana have increasingly focused on healthy populations, thereby enabling the investigation of the physiological, psychological, and mind–body effects of prana-based interventions.[3] Within health psychology, mindfulness has been associated with enhanced interoception, attentional regulation, and psychophysiological functioning, suggesting that individual differences in baseline mindfulness may influence responsiveness to PH.

We examined co-primary outcomes of pulmonary function (forced vital capacity [FVC], forced expiratory volume in one second [FEV_1]) and physical endurance (1-min sit-to-stand test [STST]), explored mindfulness as a moderator of lung function changes, and assessed secondary qualitative outcomes related to participant experiences following the interventions.

2. Materials and methods

2.1. Methods

We used a randomized controlled, mixed-methods, single-blind design and conducted the study in February–March

2023. The study involved relatively healthy paramedical students from a nursing college, situated in the southern district of Karnataka, India. The study's participants were paramedical students, both male and female, selected according to the following criteria: Participants were aged 18 to 26 years. Participants were excluded if they had been diagnosed with diabetes, chronic respiratory disease, uncontrolled hypertension, heart disease, severe musculoskeletal disorders, recent abdominal surgery, were on prescribed medications that could alter respiratory functions, were pregnant, were unable to perform all study-related procedures, or had withdrawn consent.

The study details were presented to all paramedical students during a gathering in the mini auditorium, where the procedures were explained verbally. Following screening, consent, and pre-assessments, the investigators randomly assigned eligible students to two groups using the fishbowl method, with a coin toss determining treatment (Group A or Group B). This trial involved blinding the outcome assessor. During the intervention, individuals in each group were assigned to separate rooms and instructed not to share their experiences with members of their own or the other group. The open-ended questionnaire served as the medium for sharing their experiences. Psychologists administered the psychological questionnaire. A trained nurse reviewed medication history, past diagnoses, physiological assessments, and the sit-to-stand test before assigning participants to the two groups. Spirometry technicians, trained under the Burden of Obstructive Lung Disease study, performed lung function assessments before and after the intervention under the supervision of a pulmonologist and adhering to international standards to ensure uniformity. Measurements were performed on two consecutive days, from 10:00 AM to 12:00 PM. Post-tests were conducted after four weeks. This trial was designed and reported in accordance with the Consolidated Standards of Reporting Trials 2025 guidelines.

2.1.1. Sample size calculation

Since no prior trials reported the effect of Pranic Healing on lung function in healthy individuals, we assumed target outcome rates of 5% in the sham pranic healing (SPH) group and 25% in the MPH group. Using a 95% confidence level and 80% power, the Fleiss method estimated a total sample size of 98, which was inflated by 20% for attrition, resulting in a final sample size of 120.[24]

2.1.2. The intervention and comparator agent

Participants were assigned to either the MPH group or the SPH group, with both groups following a similar session schedule and participant setup but differing in the delivery of energy healing:

- Mass pranic healing: The attendees were seated with their eyes closed and their palms facing upwards, during which PH facilitators from World PH Foundation, India, used techniques from advanced PH and pranic psychotherapy.[23,25] The MPH group practiced abdominal deep breathing and hand sensitization before sessions. Sessions were conducted twice a week for a month, with each 30-minute session featuring healers positioned 2 m from the participant group.
- Sham pranic healing: Participants were seated in a manner akin to that of MPH, but received no energy healing. The sessions took place biweekly for four weeks.

2.2. Tools

2.2.1. Demographic details

Data collected included age, gender, course of study, academic year, location, and religious affiliation.

2.2.2. Pulmonary function test

Spirometry, a pulmonary function test, was performed using the Easy-One Diagnostic Spirometry System, which was produced by NDD Medical Technologies, Switzerland.

2.2.3. Cognitive and Affective Mindfulness Scale-Revised

The Cognitive and Affective Mindfulness Scale-Revised provided a single-dimensional measurement of mindfulness. The overall score showed acceptable internal consistency for this brief measure, as shown by Cronbach's alpha value of $\alpha = 0.76$.[26]

2.2.4. One-min sit-to-stand test

The STST is a widely used functional measure reflecting lower limb strength, muscular endurance, and cardiorespiratory fitness. Leg strength and functional capacity were assessed using a standardized chair (46 cm height, no armrests). Participants sat with their feet hip-width apart and their arms relaxed or on their hips. A one-minute test required participants to do sit-to-stand repetitions without arm assistance, requiring full knee extension. Cycles that were unfinished were excluded.[27]

2.2.5. Perceived Stress Scale-10

Perceived Stress Scale-10 is a widely recognized and validated tool for measuring an individual's perceived stress levels.[28] It is a self-report measure of global perceived stress, with total scores ranging from 0 to 40, where higher scores indicate greater perceived stress.

2.2.6. Participant assessments and qualitative inquiry

Vital signs and anthropometric characteristics were assessed for all participants. Blood pressure, peripheral oxygen saturation (SpO_2), and pulse rate were measured using electronic devices. Height and body weight were recorded, and body mass index (BMI) was calculated from the measured height and weight. In addition, open-ended questions were used to explore participants' experiences during the MPH and SPH sessions.

2.2.7. Ethical considerations

This study was approved by the Independent Ethics Committee, World PH Foundation, India, vide approval number 5/2022/29/12/2022, dated January 3, 2023, and subsequently registered with the Clinical Trial Registry of India (CTRI/2023/01/048991) on January 13, 2023. All procedures were performed in compliance with applicable guidelines and regulations, including those of the Indian Council of Medical Research.

2.3. Statistical analysis

2.3.1. Quantitative analysis

Demographic information was presented as percentages, and data distribution was evaluated via the Shapiro–Wilk test. Descriptive statistics were used to analyze the baseline data. We analyzed the effects of MPH on outcome variables using repeated-measures analysis of variance and a linear mixed model with an unstructured covariance matrix to account for repeated measures. Linear mixed-effects models were used to examine whether baseline mindfulness moderated the effect of MPH versus SPH on pulmonary function over time. The models included treatment group, time, and their interaction as fixed effects, while adjusting for gender and height. To facilitate interpretation of significant moderation effects, estimated marginal means were computed at low (−1 standard deviation [SD]), mean, and high (+1 SD) levels of baseline mindfulness. To explore links between outcome variables and MPH experiences, Spearman's correlation analysis was used.

2.3.2. Qualitative analysis

Data from the sessions were analyzed using qualitative methods, employing a hybrid approach in which predefined energy-related (pranic energy sensations [PESs]) experiences were examined deductively, while emergent experiences were analyzed inductively using Braun and Clarke's reflexive thematic analysis.[29] Five critical questions guided the deductive analysis, informed by predefined themes from previous PH investigations, to align with established theories and analyze patterns in PESs. Three independent researchers categorized responses in Excel, allowing themes to emerge inductively. The first author initially categorized responses, followed by review, validation, and finalization through discussion to ensure accuracy and consensus. Coding decisions were independently reviewed and finalized through consensus discussions among researchers. Formal inter-coder reliability statistics were not calculated due to the exploratory thematic approach. Deductive analysis was limited to predefined PES categories, whereas emergent experiences were analyzed inductively.

3. Results

3.1. Participant flow and study characteristics

We selected participants from a single institution to reduce potential confounding factors such as differences in educational environments, stress levels, or lifestyle. Although the calculated sample size was 120, only 80 students agreed to participate because of internship obligations; one participant was later excluded after self-reporting tuberculosis. The randomization process assigned 40 students to the MPH group; 39 to the SPH group, with one participant lost to follow-up. The study's final sample comprised 78 participants, with a mean age of 18.86 years. (Figure 1). One participant did not complete the post-test pulmonary function test and was therefore excluded from the analysis of that outcome. Analyses were conducted using a per-protocol approach, including only participants who completed the intervention and outcome assessments.

Table 1 presents an overview of the demographic characteristics of paramedical students, categorized into two groups: SPH and MPH. Gender distribution differed significantly between groups ($p = 0.037$). No significant differences were seen in other variables. Table S1 shows no significant differences in baseline variables between the MPH and SPH groups.

3.2. Effects of mass pranic healing on sit-to-stand performance

A paired t-test revealed a significant increase in sit-to-stand counts among participants in the MPH group ($t = -2.286$, $p = 0.028$), with mean scores improving from 37.58 ± 7.06 at baseline to 40.35 ± 8.96 post-intervention. In contrast, the SPH group showed no significant change ($t = 0.889$, $p = 0.389$), with mean scores decreasing slightly from 38.87 ± 10.93 at baseline to 37.61 ± 8.91 post-intervention. Post-test difference in sit-to-stand count was not significantly different ($t = -1.35$, $p = 0.179$). In repeated-measures analysis of variance, the intervention had a statistically significant effect over time on sit-

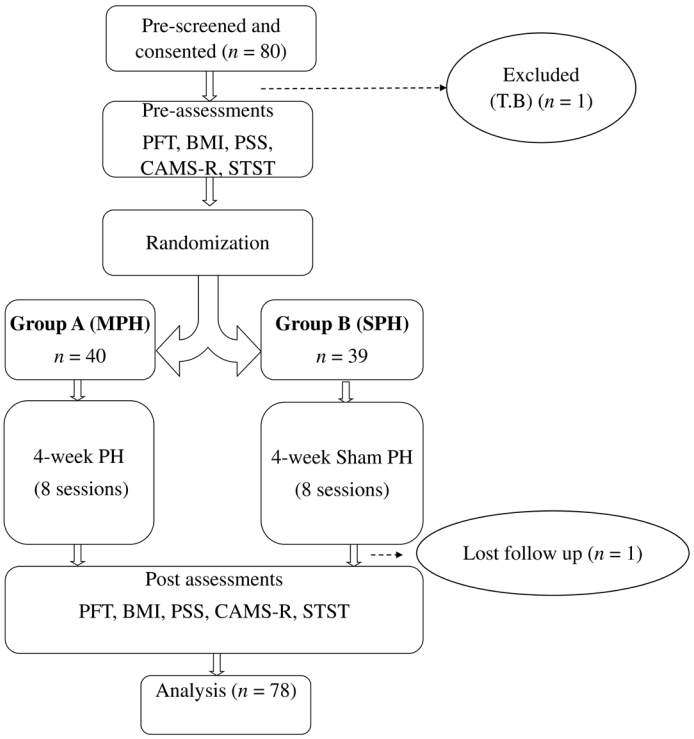


Figure 1. Flowchart for participant recruitment
Abbreviations: BMI: Body mass index; CAMS-R: Cognitive and Affective Mindfulness Scale- Revised; MPH: Mass pranic healing; PFT: Pulmonary function test; PH: Pranic healing; PSS: Perceived Stress Scale-10; SPH: Sham pranic healing; STST: 1-min sit-to-stand test; T.B: Tuberculosis.

Table 1. Demographic details of study participants

Variables	Categories	Group				Total	%	Statistics
		SPH	%	MPH	%			
Gender	Male	17	44.70	9	22.50	26	33.33	$\chi^2 = 4.336$, $p = 0.037$
	Female	21	55.26	31	77.50	52	66.67	
Course	DMLT	7	18.42	7	17.50	14	17.95	$\chi^2 = 0.232$, $p = 0.972$
	DHI	5	13.16	4	10.00	9	11.54	
	DGMN	20	52.63	22	55.00	42	53.84	
	DMIT	6	15.79	7	17.50	13	16.67	
Year	1st year	31	81.58	33	82.50	64	82.05	$\chi^2 = 0.011$, $p = 1.000$
	2nd year	7	18.42	7	17.50	14	17.95	
Locality	Urban	18	47.36	19	47.50	37	47.44	$\chi^2 = 0.000$, $p = 0.991$
	Rural	20	52.63	21	52.50	41	52.57	
Religion	Hindu	37	97.37	40	100	77	98.72	$\chi^2 = 0.011$, $p = 1.000$
	Muslim	1	2.63	0	0	1	1.28	

Abbreviations: DGMN: General Nursing and Midwifery; DHI: Diploma in Health Informatics; DMIT: Diploma in Medical Imaging Technology; DMLT: Diploma in Medical Laboratory Technology; MPH: Mass pranic healing; SPH: Sham pranic healing.

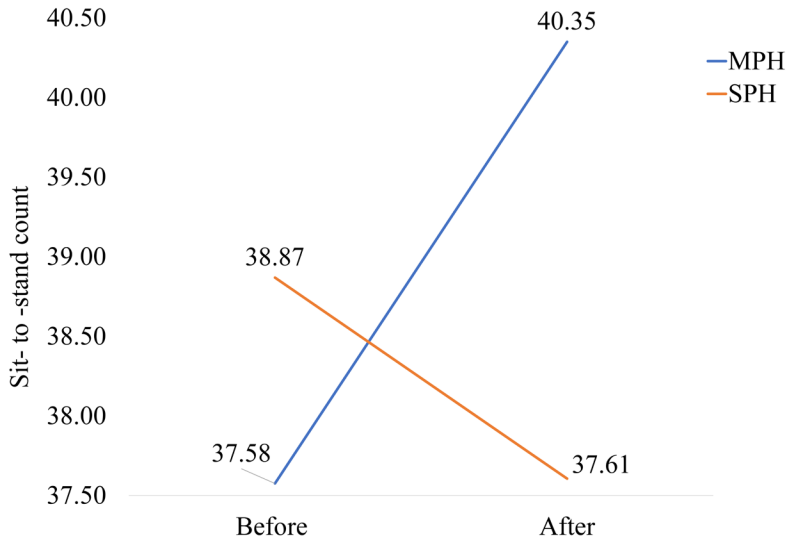
to-stand count ($F_{(1,76)}$ = 4.704, p < 0.05, 1−β = 0.57, η^2 = 0.06). Pairwise comparisons with Bonferroni correction after treatments were inconclusive across the MPH group (F = 1.837, p = 0.179, 95% confidence interval [CI] [−1.289, 6.778]). The MPH group showed a significant change over time ($F_{(1, 39)}$ = 5.225, p < 0.05, 1−β = 0.61, η^2 = 0.12), suggesting a differential improvement in STST performance. In contrast, the SPH group did not show a statistically significant change over time ($F_{(1,37)}$ = 0.791, not significant, 1−β = 0.14, η^2 = 0.02) (Figure 2). The linear mixed model for STST performance revealed a significant time × treatment interaction ($F_{(1, 76)}$ = 4.704, p = 0.033), confirming that the MPH group improved at a significantly different rate than the SPH group.

3.3. Baseline mindfulness as a continuous moderator of treatment effects on pulmonary function

3.3.1. Forced expiratory volume in one second

For FEV_1, there were no significant effects of time, $F_{(1,72.04)}$ = 0.12, p = 0.730, η_p^2 = 0.002, treatment, $F_{(1,71.71)}$ = 0.34, p = 0.559, η_p^2 = 0.005, or baseline mindfulness, $F_{(1,71.75)}$ = 2.71, p = 0.104, η_p^2 = 0.04. Gender remained a significant fixed factor ($F_{(1,72.02)}$ = 6.84, p = 0.011, η_p^2 = 0.09), while height remained a significant covariate ($F_{(1,71.87)}$ = 33.87, p < 0.001, η_p^2 = 0.32). A significant time × treatment interaction was observed, $F_{(1,72.04)}$ = 10.78, p = 0.002, η_p^2 = 0.13, indicating differential changes in FEV_1 between the MPH and SPH groups over time. Neither the time × mindfulness interaction, $F_{(1,72.06)}$ = 0.004, p = 0.949, η_p^2 < 0.001, nor the treatment × mindfulness interaction, $F_{(1,71.74)}$ = 0.29, p = 0.590, η_p^2 = 0.004, was significant. However, the time × treatment × baseline mindfulness interaction was significant, $F_{(1,72.06)}$ = 11.69, p = 0.001, η_p^2 = 0.14, indicating that baseline mindfulness significantly moderated the treatment-related changes in FEV_1 over time.

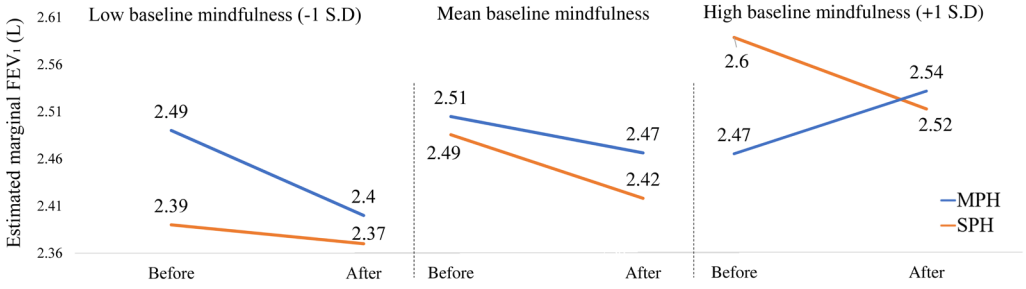
Estimated marginal means showed that the treatment effect varied according to baseline mindfulness (Figure 3). At low baseline mindfulness (mean −1 SD), both groups exhibited declines in FEV_1, with a greater decline in the MPH group (ΔΔ = −70 mL). At the mean level of mindfulness, the decline was smaller in the MPH group than in the SPH group (ΔΔ = +30 mL). Among participants with high baseline mindfulness (mean +1 SD), the SPH group declined from 2.60 L (95% CI [2.44–2.77]) at baseline to 2.47 L (95% CI [2.31–2.64]) post-intervention, a reduction of 130 mL. In contrast, the MPH group showed a slight improvement from 2.52 L (95% CI [2.39–2.66]) to 2.54 L (95% CI [2.40–2.67]), representing an increase of 20 mL. This resulted in an estimated between-group difference in change of 150 mL. This pattern indicates that the beneficial effect of MPH increased with higher baseline mindfulness.



Time $_{(MPH)}$: $F_{(1,39)}$ = 5.225*, 1-β = 0.61, η^2 = 0.12, Time $_{(SPH)}$: $F_{(1,37)}$ = 0.791^{ns}, 1-β = 0.14, η^2 = 0.02, Time x treatments: $F_{(1,76)}$ = 4. 704*, 1-β = 0.57, η^2 = 0.06

*p < 0.05, not significant

Figure 2. Time-based changes in sit-to-stand performance for mass pranic healing (MPH) and sham pranic healing (SPH)



Time × treatment × baseline mindfulness, $F_{(1, 72.06)} = 11.69$, $p = 0.001$, $\eta_p^2 = 0.14$

Figure 3. Interaction of treatment, time, and baseline mindfulness on estimated marginal FEV_1
Abbreviations: FEV_1: Forced expiratory volume in one second; MPH: Mass pranic healing; SD: Standard deviation; SPH: Sham pranic healing.

3.3.2. Forced vital capacity

For FVC, there were no significant main effects of time, $F_{(1,72.16)} = 2.42$, $p = 0.125$, $\eta_p^2 = 0.003$, treatment, $F_{(1,72.02)} = 0.54$, $p = 0.463$, $\eta_p^2 = 0.01$, or baseline mindfulness, $F_{(1,72.04)} = 0.83$, $p = 0.367$, $\eta_p^2 = 0.01$. Gender remained a significant fixed effect, $F_{(1,72.15)} = 6.86$, $p = 0.011$, $\eta_p^2 = 0.09$, whereas height remained a significant covariate, $F_{(1,72.03)} = 33.39$, $p < 0.001$, $\eta_p^2 = 0.32$. Neither the time × treatment interaction, $F_{(1,72.16)} = 2.82$, $p = 0.097$, $\eta_p^2 = 0.04$, nor the time × mindfulness interaction, $F_{(1,72.17)} = 1.63$, $p = 0.206$, $\eta_p^2 = 0.02$, was statistically significant. Similarly, the treatment × mindfulness interaction was not significant, $F_{(1,72.04)} = 0.46$, $p = 0.502$, $\eta_p^2 = 0.01$. The time × treatment × baseline mindfulness interaction did not reach statistical significance, $F_{(1,72.17)} = 3.45$, $p = 0.067$, $\eta_p^2 = 0.05$ (Table S2).

3.3.3. Sensitivity and supplementary analysis

We performed sensitivity analyses because gender differed significantly. We included gender as a covariate and moderator while retaining height as a covariate.

For FVC, neither the time × treatment interaction, $F_{(1,72.26)} = 2.19$, $p = 0.143$, $\eta_p^2 = 0.03$, nor the time × treatment × gender interaction, $F_{(1,72.27)} = 0.10$, $p = 0.757$, $\eta_p^2 = 0.001$, was statistically significant. These findings indicate that, although gender and height were significantly associated with overall FVC values, gender did not moderate the treatment-related changes in FVC over time (Table S3).

For FEV_1, significant main effects were observed for time, $F_{(1,72.16)} = 8.01$, $p = 0.006$, $\eta_p^2 = 0.10$, gender, $F_{(1,73.00)} = 9.04$, $p = 0.004$, $\eta_p^2 = 0.11$, and height (covariate), $F_{(1,72.84)} = 31.04$, $p < 0.001$, $\eta_p^2 = 0.30$. The time × treatment interaction was not significant, $F_{(1,72.16)} = 1.51$, $p = 0.223$, $\eta_p^2 = 0.02$. Neither the time × gender interaction, $F_{(1,72.16)} = 0.09$, $p = 0.767$, $\eta_p^2 = 0.001$, nor the treatment × gender interaction, $F_{(1,72.87)} = 1.13$, $p = 0.291$, $\eta_p^2 = 0.02$, was significant. Importantly, there was no evidence of a time × treatment × gender interaction, $F_{(1, 72.16)} = 0.22$, $p = 0.637$, $\eta_p^2 = 0.003$, indicating that gender did not moderate the treatment-related changes in FEV_1 over time. These findings indicate that the intervention effects on pulmonary function were consistent across male and female participants, suggesting that the primary findings were robust to gender (Table S3).

Notably, the significant time × treatment interaction remained after adjusting for gender ($F = 2.55$, $p = 0.115$) and height ($F = 1.69$, $p = 0.198$), neither of which was a significant predictor of STST performance. Post-intervention pairwise comparisons showed a mean difference of 3.37 repetitions between the MPH and SPH groups, although this difference was not statistically significant. A sensitivity analysis further examined whether the intervention effect differed by gender. The time × treatment × gender interaction did not reach statistical significance, $F_{(1,74)} = 3.70$, $p = 0.058$. Consistent with this finding, Bonferroni-adjusted post hoc comparisons did not identify any significant gender-specific differences in treatment-related changes in STST performance. Removing height from the model did not materially alter this finding, indicating that the absence of a significant gender moderation effect was robust regardless of adjustment for height. These findings indicate that the beneficial effect of MPH on STST performance was not significantly modified by gender (Table S3).

Linear mixed-effects models without covariate adjustment indicated a significant overall reduction in FVC ($F = 6.09$, $p = 0.016$, $\eta_p^2 = 0.08$, $1 - \beta = 0.68$) and FEV_1 ($F = 11.72$, $p = 0.001$, $\eta_p^2 = 0.14$, $1 - \beta = 0.92$) over the intervention period. However, the time × treatment interactions were not statistically significant for either FVC ($F = 2.94$, $p = 0.090$, $\eta_p^2 = 0.04$, $1 - \beta = 0.39$) or FEV_1 ($F = 1.36$, $p = 0.247$, $\eta_p^2 = 0.02$, $1 - \beta = 0.21$) (Figure S1).

3.4. Secondary exploratory outcomes

3.4.1. Qualitative thematic analysis

The core themes of this study included energy-related experiences, overall well-being, and barriers associated

with both interventions (Table 2). Participants' subjective energy-related experiences increased progressively across sessions, with perceived energy sensations and thermal awareness showing the most notable increases over time. (Figure S2).

The analysis highlights significant differences in benefits between MPH and SPH. The MPH group showed a significantly higher percentage of comprehensive well-being (CWB) (75.00%) than the SPH group (31.58%) (χ^2 = 16.93, $p < 0.001$). Mental benefits were more prevalent in MPH (55.00%) than SPH (28.90%) (χ^2 = 5.42, $p < 0.05$), and physical benefits were significantly greater in MPH (40.00%) than SPH (5.26%) (χ^2 = 13.25, $p < 0.001$). However, challenges were reported at similar rates (MPH: 50.00%, SPH: 52.63%) with no significant difference (χ^2 = 0.054, $p > 0.05$). These findings suggest that MPH offers superior mental and physical benefits, though both groups faced challenges (Table 3).

Table 2. Qualitative thematic analysis of experiences during MPH

Category	Subcategory	Elements
Generic category: energy experiences		
Subcategory-1: Pranic energy sensations (PES)	Physical sensations of energy	"Tingling sensation in the hands," "body was shaking a lot," "sometimes felt electricity movement in the body," "pricking sensation"
	Magnetic sensation of energy	"Feeling magnetic," "attraction between hands"
	Awareness of temperature variation	"The body was heated," "hands and feet became hot during the sitting"
	Awareness of the presence of energy	"Some energy," "something moving inside my body and hands and legs," "some experience between the hands"
Core category: Comprehensive well-being and barriers		
Subcategory-1: Mental benefits	Peace and calmness	"Mind was peaceful"
	Improved mental clarity and concentration	"Good concentration," "controlled the thoughts," "forgetfulness has decreased"
	Relaxation	"Relaxation"
	Emotional well-being	"Felt happy," "tension has reduced," "anger has reduced," "fear was there before and felt peaceful after the session," "tensions vanished"
Subcategory-2: Physical benefits	Improved sleep	"Sleeping well after the healing has been introduced," "sleep has increased seemingly," "I was not getting sleep earlier, now I am getting good sleep"
	Enhanced breathing	"Able to breathe well," "breathing has become easy," "breathing problem has reduced"
	General well-being	"Very useful," "I was feeling that there were changes in the body," "feel better physically, I am well"
Subcategory -3: Barriers	Presence and absence of barriers	"Burning sensation in the eyes," "sleep, hunger, dejection," "we have so many thoughts. For that reason, we have not attended correctly," "pain or headache," "no significant challenges" or "no obstacles"

Table 3. Benefits and challenges reported after MPH and SPH practice

Perceived benefits and challenges	MPH (n = 40)	%	SPH (n = 38)	%	Statistics
Comprehensive well-being	30	75.00	12	31.58	$\chi^2 = 16.93^{***}$
Mental benefits	22	55.00	11	28.90	$\chi^2 = 5.42^{*}$
Physical benefits	16	40.00	2	5.26	$\chi^2 = 13.25^{***}$
Challenges to practice	20	50.00	20	52.63	$\chi^2 = 0.054$

Notes: $^{*}p < 0.05$; $^{***}p < 0.001$.
Abbreviations: MPH: Mass pranic healing; SPH: Sham pranic healing.

3.4.2. Associations between perceived energy sensations and psychological, physiological, and well-being measures

At the pre-MPH assessment, a significant negative correlation was observed between perceived stress and mental well-being ($\rho = -0.335$, $p < 0.05$) (Table 4), suggesting that higher perceived stress was associated with lower mental well-being. A significant positive correlation was found between mindfulness and tingling sensations ($\rho = 0.314$, $p < 0.05$), indicating that participants with higher mindfulness scores were more likely to report tingling sensations. Baseline BMI showed significant negative correlations with tingling ($\rho = -0.433$, $p < 0.01$) and heaviness sensations ($\rho = -0.369$, $p < 0.05$), suggesting that participants with a higher BMI were less likely to experience these sensations. There is a trend in the relationship ($\rho = -0.307$, $p = 0.054$) between mindfulness and the presence of at least one pranic energy sensation.

For the post-MPH assessment, a significant negative correlation was observed between perceived stress and heaviness sensations ($\rho = -0.392$, $p < 0.05$), indicating that higher perceived stress was associated with fewer reported sensations of heaviness. A significant positive correlation was found between STST and pulling sensations ($\rho = 0.359$, $p < 0.05$), suggesting that participants reporting pulling sensations tended to have higher STST scores. In addition, BMI demonstrated significant inverse correlations with tingling ($\rho = -0.425$, $p < 0.01$) and heaviness sensations ($\rho = -0.347$, $p < 0.05$), indicating that participants with a higher BMI were less likely to experience these sensations following MPH.

4. Discussions

This study examined the comparative effects of MPH and SPH on lung function and physical performance, while also exploring the role of mindfulness as a potential influencing factor among paramedical students. The MPH group's sit-to-stand improved, whereas the SPH group declined. Although modest in magnitude, both groups showed a significant reduction in FVC and FEV_1 over the one-month period. The MPH group showed a positive correlation: participants with higher mindfulness levels experienced greater improvements in FEV_1. Through qualitative analysis, we found specific themes in the experiences of those who underwent MPH and SPH.

4.1. Mass pranic healing effect on physical endurance

The STST reflects lower limb strength and fitness. A significant treatment-by-time interaction and an overall time effect in STST were evident in the MPH group, whereas no significant changes in STST were observed in the SPH group. This finding suggests that MPH contributed ($\eta^2 = 0.12$) to advancements in functional performance over time among paramedical students. We also found that gender and height did not significantly influence performance in the sit-to-stand test. Within PH theory, the Muladhara Chakra is traditionally associated with physical stability and strength and has been conceptually linked to the inferior hypogastric plexus.[30] The study rebalanced and energized the Muladhara Chakra as per the PH protocol to affect the musculoskeletal system.[23] This theoretical framework offers one possible explanation for the observed functional improvements; however, the present study did not directly

Table 4. Correlation of outcome variables and qualitative experiences

Variables	Tingling	Heavy	Pulling	MB	PB	CWB	PPES
Pre-treatment measures							
PSS	0.072	−0.035	0.180	−0.335*	0.202	−0.090	0.157
STST	−0.090	0.087	0.073	0.120	0.024	0.216	−0.107
Mindfulness	0.314*	−0.135	0.156	−0.092	−0.207	−0.238	0.307
BMI	−0.433**	−0.369*	−0.274	0.022	−0.013	0.023	−0.292
Post-treatment measures							
PSS	−0.077	−0.392*	0.129	−0.147	0.069	−0.109	−0.095
STST	0.099	−0.126	0.359*	0.111	0.206	0.197	0.029
Mindfulness	−0.013	0.193	0.114	−0.085	0.051	−0.044	0.206
BMI	−0.425**	−0.347*	−0.240	0.026	−0.011	0.021	−0.226

Notes: *$p < 0.05$; **$p < 0.01$.

Abbreviations: BMI: Body mass index; CWB: Comprehensive well-being; MB: Mental benefits; PPES: Presence of at least one pranic energy sensation; PSS: Perceived stress scale; STST: Sit-to-stand test; PB: Physical benefit.

assess chakra activity or the physiological mechanisms underlying these effects. Previous studies have reported increased locomotor activity in zebrafish following PH interventions[31] and functional health improvements among prison inmates receiving PH-based programs.[10] Although these findings are consistent with the possibility that PH may exert biological and functional effects, they do not establish the underlying mechanisms or permit causal inferences regarding the improvements observed in the present study. Further mechanistic research is required to evaluate these proposed explanations.

Prior research on prana and spiritual healing shows functional benefits, similar to how PH improves physical endurance in the current findings. Participants in the prana treatment group showed better hand function and mood, and those receiving spiritual healing had gains in physical function, energy, vitality, and physical activity. Improvements in joint mobility have been documented following diverse prana healing treatments,[31-33] thus confirming the contribution of PH and related methodologies to enhanced physical endurance and functional capacity. Acupuncture-based treatments substantially improve the six-minute walk distance, Borg Scale scores, FEV_1, and FVC in COPD patients.[34] According to Mahesh *et al.*,[7] patients with COPD who received PH showed a trend towards increased six-minute walk distance. Collectively, these findings suggest MPH may exert multidimensional effects on physical performance, warranting further investigation into its underlying neuromuscular and bioenergetic mechanisms.

4.2. Impact of mass pranic healing and mindfulness on respiratory health

Over the one-month course, we observed a minor, declining trend in both groups concerning FVC and FEV_1. However, the moderation analysis showed that treatment-related changes in FEV_1 varied by baseline mindfulness. At low baseline mindfulness (mean −1 SD), both the SPH and MPH groups exhibited declines in FEV_1, with a greater decline in the MPH group ($\Delta\Delta = -70$ mL). At the mean level of baseline mindfulness, the decline was smaller in the MPH group than in the SPH group ($\Delta\Delta = +30$ mL). At high baseline mindfulness (mean +1 SD), the SPH group showed an estimated decline of 130 mL, whereas the MPH group demonstrated a slight improvement of 20 mL, resulting in an estimated between-group difference in change of 150 mL. These model-based estimates indicate that the treatment effect increased with baseline mindfulness; however, it remained below the threshold traditionally considered clinically meaningful in bronchodilator reversibility testing.[35] Moreover, these criteria were developed for patients with obstructive airway diseases and are not directly applicable to healthy individuals. Thus, the observed differences are more appropriately interpreted as reflecting short-term physiological variation than clinically important improvements in pulmonary function. These findings nevertheless suggest that psychophysiological variability may influence individual responsiveness to PH, with its effects potentially manifesting differently across individuals.[34] This interpretation is consistent with previous research reporting improved FEV_1 among patients with COPD receiving PH,[7] although direct comparisons should be made cautiously because the present study involved healthy young adults with normal baseline pulmonary function. In this population, clinically important declines in lung function would not ordinarily be expected over one month. Short-term fluctuations in pulmonary function may instead reflect seasonal variation, humidity, air pollution,[36] and lifestyle factors such as physical activity, sleep, and diet.[37] In addition, mindfulness and psychological stress have been associated with respiratory function, and transient autonomic nervous system activation or stress-related breathing patterns, including shallow breathing or breath-holding, may contribute to minor variations in FEV_1 or FVC, although direct mechanistic evidence linking psychological states to meaningful changes in pulmonary function remains limited.[38,39]

Evidence from this investigation implies that engaging in mindfulness during MPH may mitigate the decline of lung capacity. A marginal reduction in pulmonary function was observed in most subjects; however, individuals possessing high mindfulness displayed notable advancements, possibly due to enhanced autonomic regulation and superior respiratory control. Mindfulness training has been proven to improve diaphragmatic breathing, alleviate stress-induced bronchoconstriction, and enhance respiratory muscle strength,[40] which could account for this effect of mindfulness during MPH. Neither MPH nor SPH produced significant individual changes in perceived stress or mindfulness over time.

4.3. Thematic patterns of pranic energy sensations and well-being

Students reported various PESs, including sensations of tingling, warmth, and energy movement, alongside other energy experiences, which were categorized through a deductive approach as awareness of physical, magnetic, presence of energy, and awareness of temperature variations. Inductive themes encompassed CWB and barriers to practicing the interventions. These findings were consistent with past research on PH and PH techniques like Sensitizing the Hands Practice, Meditation on Twin Hearts and Energising the Prana Technique.[8,41,42] Sensitizing the Hands Practice and Energising the Prana

Technique training improve one's ability to sense diverse pranic energies and foster positive experiences.[42] Practicing Meditation on Twin Hearts resulted in energy, awareness, and positive feedback. According to Nanjundaswamy *et al.*,[6] individuals undergoing PH for urinary tract symptoms demonstrated enhanced sleep and reported PESs and enhanced well-being, coupled with healers observing balanced chakra assessments.

The MPH participants reported more positive effects, pointing to the possibility of holistic health promotion, which was in line with physical and mental health wellness via energy healing modalities.[3] Analysis of qualitative data from the MPH group demonstrated marked progress in well-being, encompassing both psychological and physical advantages. A personalized inquiry into health status was performed at the initial and final assessments. Adverse events were monitored in participants during the intervention via verbal reporting in group settings, with no instances recorded. Post-session qualitative review identified transient symptoms, including headache (MPH: paramedical student [P]15, nursing student [NS]22; SPH: P3, P34), giddiness (MPH: P25, NS16; SPH: P1, P4), body pain (MPH: NS16, P15), and eye burning (MPH: NS2). No serious adverse events occurred, and all reported symptoms were transient and resolved without medical intervention.

4.4. Association between pranic energy sensations and psychological and physiological measures

There was a correlation between students' experiences and primary outcomes before and after MPH. Significant correlations were observed post-intervention, indicating associations between MPH-related experiences, perceived stress, , and BMI. These findings support the interpretation that MPH does not function independently but interacts with pre-existing psychological and physiological states, influencing both subjective energy experiences and overall well-being outcomes.[43] State mindfulness influences cognition, emotions, brain function, and distress. Focused attention on somatic experiences along with a meta-cognitive, observational perspective may facilitate the development of mindfulness during prana practice. When maintained, this focused attention can further heighten sensitivity to subtle pranic energy experiences, reinforcing present-centered awareness and potentially deepening mindfulness. Transitioning from random thinking, the experience of PES or heightened awareness of physical and mental phenomena supports the attainment of dharana, characterized by deep, sustained concentration.[44] According to research, the repetitive practice of state mindfulness is correlated with the cultivation of trait mindfulness, as frequent engagement in the state can lead to its development over time.[45] The current study offers a preliminary explanation of the bidirectional influence of PESs and well-being in the context of mind–body connection.

5. Conclusion

Baseline mindfulness moderated changes in FEV_1, suggesting that higher mindfulness may enhance responsiveness to Meditation on Twin Hearts (MPH). MPH was associated with improvements in physical endurance and more positive physical, psychological, and Prana-related experiences than SPH. These preliminary findings suggest potential synergistic benefits of MPH and mindfulness for respiratory health, physical vitality, and well-being; however, they should be interpreted cautiously and require confirmation in larger, multicentre studies.

Our study's strengths include a randomized controlled design comparing MPH and SPH, with mindfulness-based subgroup analysis and objective measures like lung function, enhancing validity. The group-based nature of MPH is more economical per person, supports preventive, large-scale wellness programs, and reduces overall implementation costs.

The limitations of this study include a small sample, short duration, and limited follow-ups, restricting detection of subtle or long-term effects. Larger, extended studies are recommended. Participants were recruited using convenience sampling from a single institution, which may limit the generalizability of the findings. While the main analyses showed significant intervention effects, some non-significant results may reflect limited statistical power. These findings should be viewed with caution; the sample size may have limited detection of small to moderate effects, increasing the risk of a Type II error. However, random allocation of participants helped maintain internal validity and reduce selection bias between study groups. The study did not include a formal blinded assessment of participants' perceived group affiliation.

Integrating MPH, which serves many people at once, is ideal for schools, colleges, offices, or group settings. It complements mental health promotion by enhancing self-awareness, encouraging physical activity, and supporting overall well-being—offering added benefits to collective health.

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Conflict of interest

The authors (VV, SNJ, RN) are employed with the World Pranic Healing Foundation India Research Centre. However, the funding organization had no role in the design or conduct of the study, data collection, data analysis, interpretation of the results, preparation of the manuscript, or the decision to submit the manuscript for publication. The authors declare that they have no financial or personal conflicts of interest that could have influenced the work reported in this manuscript.

Author contributions

Conceptualization: All authors
Data curation: All authors
Formal analysis: Vinu Vijayakumar, Mahesh Pudukudru Anand
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Supervision: Mahesh Pudukudru Anand, Srikanth Nagaraja Jois
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Writing– review & editing: All authors

Ethics approval and consent to participate

This study was approved by the Independent Ethics Committee, World Pranic Healing Foundation, India, vide approval number 5/2022/29/12/2022, dated January 3, 2023, and subsequently registered with the Clinical Trial Registry of India (CTRI/2023/01/048991) on January 13, 2023. All procedures were performed in compliance with applicable guidelines and regulations, including those of the Indian Council of Medical Research. Written consent was obtained from all participants in the study. Trial Registration Number CTRI/2023/01/048991 was registered on January 13, 2023 (https://ctri.nic.in/Clinicaltrials/pmaindet2.php?EncHid=NzkzMjc=&Enc=&userName=).

Consent for publication

All participants provided written informed consent before inclusion in the study. Participants consented to the publication of anonymized findings from this research in scientific journals. Participants were informed that no identifying personal information would be disclosed and that participation was voluntary, with the option to withdraw before publication without consequence.

Availability of data

To protect participant confidentiality, research data are not publicly available; however, anonymized data are available from the corresponding author upon reasonable request.

Further disclosure

No generative artificial intelligence (AI) tools, including ChatGPT, were used in the preparation, writing, analysis, interpretation, or submission of this manuscript. ProWritingAid was used solely for spell-checking and minor language corrections.

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