

**Research Article**

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To Enhance Wellness with Mindful Yoga: A Pilot Randomized Controlled Trial

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***Corresponding author:** Chuk Ling Julian LAI, Department of Social and Behavioural Sciences, City University of Hong Kong, Hong Kong.**Received Date:** May 10, 2024**Published Date:** May 29, 2024**Abstract**

This study aims to examine the effectiveness of an 8-week mindful yoga program in reducing loneliness in healthy undergraduates in Hong Kong. 15 college students were recruited and randomly assigned to either the mindful yoga (YA, n = 8) or active control group (AC, n = 7) focusing on the training of flexibility and strength without an emphasis on mindfulness. Participants filled out an online questionnaire consisting of scales tapping loneliness, mindfulness (acceptance with judgment), and positive and negative affect before the commencement and after the end of training. Results indicated that loneliness was significantly reduced in the YA group from pre- to post-training, $t(4) = 2.16$, $p < 0.05$. However, no significant change in mindfulness was observed. Despite the limitation in sample size, the findings of this pilot study could serve as a preliminary basis to examine the effect of mindful yoga in clinical or sub-clinical populations.

Background of Study and Objectives

This study aims to (a) develop and implement a yoga (YA) program with an explicit mindfulness component, and (b) validate the effectiveness of the YA program in reducing loneliness and improving wellness in undergraduates in Hong Kong. The effectiveness of yoga in reducing stress [1] and improving wellness [2] in different age groups has been well documented, but the effect of yoga on loneliness has rarely been studied systematically. There is evidence suggesting that yoga could be an effective intervention for reducing loneliness because of its effect on the endocrine-immune processes closely associated with loneliness [3]. In addition, the effect of yoga on loneliness is also supported by recent evidence showing (1) an enhancing effect of yoga on mindfulness [4], and (2) an association between an increase in mindfulness and a reduction in loneliness [5]. However, data on the impact of yoga on loneliness is extremely scanty, especially that generated by randomized controlled trials with an active control group. This pilot study is designed to fill this gap by evaluating the effectiveness of mindful yoga in enhancing wellness using a randomized controlled trial with an active control group.

Methods

Fifteen Chinese college students were recruited through social media to take part in the study. They were randomly assigned to the training group (mindful yoga, n = 8) and an active control group (yoga with a focus on enhancing flexibility and strength, n = 7). Participants in both groups were required to attend 2 one-hour lessons each week for 8 eight weeks. They also filled out an online questionnaire before the beginning of the program and within one week after the end of the program. The questionnaire consisted of (1) the 4-item UCLA Loneliness Scale [6], (2) the 5-item Acceptance without Judgment subscale of the KIMS-Short [7], and the PANAS [8]. The Acceptance subscale of the KIMS-Short was scored in a nonacceptance direction, implying that higher scores are indicative of higher nonacceptance or lower acceptance. Positive and negative mood were operationalized by the 10 positive and 10 negative items of the PANAS, respectively. It was hypothesized that compared to participants in the active control group, participants in training group would exhibit a reduction in loneliness, negative mood, and nonacceptance, and an increase in positive mood. Due to the limited

sample size, the hypotheses were examined by comparing changes from pre- to post-intervention using paired-sample t-tests in each of the two groups. Details of the 8-week mindful yoga program are provided in the following.

Mindful Yoga Program

This is a beginner-friendly 8-week, twice a week, 1-hour each mindfulness yoga programme (total 16 hours) designed for university students in Hong Kong to support their well-being. Through movement and stillness, this program aims to cultivate mindfulness of the body, mental clarity and emotional regulation. Yoga is used as a means to cultivate mindfulness of body and movement, to support students to bring awareness into daily lives.

A similar format is followed each week, and the same asanas for the two classes in the same week to let participants slowly build familiarity towards the practice. Variations and progression are given between weeks to keep it engaging, especially as this is for young, healthy university students. As participants become more familiar with the sequence of yoga poses, from week 5, it stays the same. With experience built up in previous weeks, and with no further new poses to learn, this helps participants to attune to the body's moment-to-moment changes more closely. It opens up opportunities to observe and work with the mind. Maybe one would notice the mind got distracted; or become aware of judgment towards how one is performing in a pose. All of these become materials for practice. Each session has three main parts: (a) starts

with meditation or pranayama (yogic breathing), (b) followed by yoga sequence, and (c) ends with meditation. During the yoga practice, instead of placing a focus on achieving the external form or challenging poses, a friendly awareness of body (breath and posture) is emphasized to bring the attention inwards and to cultivate mindfulness. Paying attention to the body and its changes through the different yoga poses, it aims to cultivate mindfulness of the body, the First Foundation/Establishment of Mindfulness. This foundation also includes awareness of breath. This focus helps participants to bring the practice into different activities of daily life, including eating, opening a door, and talking [9]. Building on the first foundation of mindfulness, the programme also extends to mindfulness of the mind - how the mind state changes, moment-to-moment. The program focuses on two, out of the Four Foundations / Establishment of Mindfulness [9]: i. Mindfulness of the Body and ii. Mindfulness of the Mind.

For the yoga training group, in the first few weeks, the focus is more on a hatha style practice, meaning yoga poses are done separately, one and then followed by the next. It slowly prepares the students towards Hatha sun salutation, a basic sequence of poses connected by breath. In later weeks, it also becomes more vinyasa style, meaning a more seamless transition between different poses connected by the breath, as the students gain familiarity towards the practice. Details of the weekly training sessions are tabulated in the following [Table 1].

Table 1:

Week	(a) Meditation/Breathwork	(b) Yoga Sequence	(c) Meditation/Breathwork
1	5min Diaphragmatic breathing	Shoulder rolls; Flower in the wind; Table top (wrist warm-up); Cat-cow; Opposite hand and leg; Child's pose; Downward-facing Dog; Standing forward fold; Lateral stretch; High lunge; Warrior II; Baby cobra; Bridge pose; Half butterfly; Seated twist; seated forward fold; Supine twist; Happy baby	10min Body scan - breath and body awareness
2	5min Diaphragmatic breathing	Child's pose; Table top; Cat-cow; Opposite hand and leg; Downward-facing Dog; 3-legged Dog (right leg up); Low lunge (right leg forward); Lunge twist; Half split (repeat these poses on the left side) Downward-facing Dog; High lunge; Warrior II; Baby cobra; Bridge; Half butterfly; Seated forward fold; Supine twist; Happy baby	10min Body scan - body and mind awareness
3	5min Humming bee breath	Child's pose; Downward-facing Dog; 3-legged Dog (right leg up); Low lunge (right leg forward); Lunge twist; Half split (repeat these poses on the left side) Hatha sun salutation; High lunge; Warrior II; Tree; Bridge; Half butterfly; Seated forward fold; Supine twist; Happy baby; Savasana (corpse pose)	Nil
4	5min Humming bee breath	Mountain pose; Lateral stretch; Forward fold; Half forward fold; Hatha sun salutation; High lunge - Warrior II - Reverse warrior; Tree; Boat; Bridge; Half butterfly; Seated forward fold; Supine twist; Happy baby; Savasana (corpse pose)	Nil

5	5min Alternate nostril breathing	Mountain pose; Lateral stretch; Forward fold; Half forward fold; Hatha sun salutation; High lunge - Warrior II - Reverse warrior; Boat; Tree; Eagle; Bridge; Half butterfly; Seated forward fold; Thread the needle; Supine twist; Happy baby; Savasana (corpse pose)	5min sitting meditation
6	5min Alternate nostril breathing	Yoga content is the same as in week 5 but with less demonstration and more verbal instructions.	8min sitting meditation
7	5min sitting meditation		8min sitting meditation
8	5min sitting meditation		10min sitting meditation

On the other hand, to examine the specific effect of mindful yoga, the focus of the active control group is on stretching and strengthening, without an explicit emphasis on mindfulness. The following breathwork and yoga poses were used throughout the 8 weeks of practice: Ujjayi breath, sun salutations, different forms of forward fold, different forms of back bend, bird of paradise, crow pose, wheel pose, and supported handstand.

Results

A total of 10 participants (8 females and 2 males), 5 in each group completed the 8-week training and the online questionnaire in the 2 waves. Their data were included in subsequent analyses.

Nine of these participants were undergraduates and one had post-secondary education. The mean age was 21.70 (SD = 0.95). Paired-sample t-tests were run to examine changes from pre- to post-training in each of the two groups separately for each of the 4 outcome measures: (1) nonacceptance, (2) loneliness, (3) positive mood, and (4) negative mood. As can be seen in results summarized in Table 2, only a significant reduction in loneliness was observed in the training group. In addition, there is also a trend of an increase in positive mood in the active control group. T-tests for independent samples were also run for each of the outcome measures at pre- and post-training separately. None of the results of these tests was significant at $p = .05$.

Table 2: Means (SDs) of outcome measures.

Outcomes	Mindful Yoga			Active Control		
	Pre	Post	t	Pre	Post	t
1. Nonacceptance	15.20 (3.42)	12.80 (4.76)	0.71	13.60 (3.05)	12.00 (3.81)	0.6
2. Loneliness	8.20 (1.64)	6.00 (1.58)	2.16*	6.60 (1.34)	6.40 (1.52)	0.3
3. Positive mood	31.20 (5.81)	34.40 (4.10)	-0.78	29.6 (7.13)	33.8 (5.76)	-1.89 ^a
4. Negative mood	23.80 (8.70)	18.00 (3.32)	1.08	24.20 (9.26)	22.80 (5.36)	0.41

Note: *, $p = 0.049$, a, $p = 0.066$. SDs are in parentheses.

Conclusions

With a limited sample size of 10 healthy and young college students, the 8-week mindful yoga program was shown to be effective in reducing loneliness in participants of the yoga group. On the other hand, a trend of an increase in positive mood was observed in the active control group. This may be taken to suggest that wellness could still be improved by taking part in a yoga program without an explicit emphasis on mindfulness because the health benefits of positive moods have been well documented. Despite the significance of these findings, it is not clear how a reduction in loneliness was achieved because no change in acceptance, a major component of the mindfulness construct, was observed in either the training or active control group. The correlations between nonacceptance and loneliness were moderate but nonsignificant, probably due to the small sample size (pre-training, $r = .285$, post-training, $r = .556$). Further research with a more adequate sample size is warranted to address this important issue. The 8-week mindful yoga program, with the required details for implementation,

can serve as a foundation for extending mindful yoga to clinical and subclinical populations.

Conflict of interest

None.

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