# Recommendations for implementation of yoga and mindfulness on campus for clinically based medical students at the University of Otago

Bree-Anna Langton, Mark Huthwaite

### Abstract

### Background

Medical students commonly experience high levels of psychological distress and burnout. Yoga and mindfulness interventions have shown promise in mitigating these issues, yet their integration and acceptability in the medical school setting remains underexplored.

### **Materials and Methods**

This study involved three phases. Phase 1 surveyed medical students (years 4-6) at the University of Otago, Wellington campus, using a questionnaire to assess their attitudes towards and preferences for yoga and mindfulness interventions. Phase 2 gathered insights from experienced yoga teachers and student-teachers on methods for implementing these interventions in medical education. The data was collected through electronic distribution of questionnaires. In phase 3 the data was analysed to develop recommendations for initiatives at the University of Otago, Wellington.

### Results

A high acceptance rate (70.5%) among medical students was observed regarding the likelihood of participating in yoga or mindfulness classes if provided by the medical school. Three key recommendations emerged from the experienced yogi survey: integrating yoga and mindfulness into the curriculum, offering low-cost yoga classes, and establishing a dedicated mindfulness space on campus.

### Conclusions

The study underscores strong interest among medical students for integrating yoga and mindfulness interventions into their curriculum and campus life. These findings support the feasibility and potential benefits of incorporating such programmes to promote mental well-being and prevention of burnout among medical students.

### Introduction

Medical students commonly experience high levels of academic and psychological stress during their training, which has a broad range of consequences both physically and psychologically.<sup>1</sup> The numerous demands of medical education, including the heavy workload and the stressful nature of the healthcare environment, tend to increase rates of burnout, reported to range from 45% to 71%.<sup>2</sup> This, in turn, can reduce the effectiveness of the student-patient interaction. The incidence of burnout steadily increases over the final years of undergraduate medical training and continues into internship.<sup>3</sup> A decrease in empathy secondary to burnout has also been shown to correlate with a temporary rise in suicidal ideation among students.<sup>4</sup> Furthermore, general unwellness in medical students has implications for patient care and safety.<sup>3</sup>

Research indicates that medical students tend to have higher levels of psychological distress and psychological morbidity, including depression and anxiety, compared to their non-medical counterparts.<sup>2</sup> Enduring psychological distress can adversely affect the development of medical students' knowledge, skills, and professional behaviour. Feelings of inadequacy can arise when ability to establish rapport with patients is compromised. These factors of psychological distress have been associated with a sense of dissatisfaction which can continue into future clinical practice.<sup>5</sup>

Yoga has been used as an anxiolytic tool for many centuries and there is evidence to suggest that yogic practices and other forms of meditation are effective in reducing stress among medical students.<sup>1,5-9</sup> Due to heterogeneity in study designs and small participant sample sizes, many of these studies have limited generalisability to the New Zealand medical student cohort. Most of these studies have been conducted in India or the United States of America, so the cultural variation between countries should be considered.

Studies conducted in North America and elsewhere have shown significant improvements in participants' symptoms of anxiety, insomnia, social dysfunction, and depression following short-term yoga interventions.<sup>8</sup> A pilot study evaluating a 10-week yoga intervention, reported reductions in stress, depression, and anxiety levels among medical students, suggesting complementary benefits to traditional stress management approaches.<sup>10</sup> Integrating mind-body training into medical school curricula has shown promise in reducing stress levels among clinical students, indicating the feasibility and acceptability of such interventions.<sup>11</sup> Another study focused on a restorative yoga programme for medical students during academic stress periods, demonstrating significant improvements in relaxation and stress reduction, particularly in relation to decision-making.^{\rm 12}

# Mind-body courses incorporating conscious breathing, yoga, and mindfulness have been found to enhance emotional regulation and cognitive functions such as executive functioning and information processing speed among medical students.<sup>4,6</sup> Research on yogic meditation sessions and mindfulness-based stress reduction programmes has demonstrated improvements in cognitive performance, emotional well-being, and stress management skills among medical students.<sup>1,3,13</sup> One study investigated the correlation between yoga and meditation practices and physiological stress markers among medical students, showing decreased serum cortisol levels and improved heart rate variability, indicating enhanced autonomic nervous system balance.<sup>14</sup> This is particularly beneficial for medical students as reduced autonomic arousal and increased parasympathetic tone help manage emotional responses and disorders related to stress.

A recent systematic review highlighted the efficacy of mindfulness-based interventions in improving mental health outcomes, stress symptoms, well-being, and self-compassion among medical students.<sup>15</sup> The social aspect of group-based yoga may be a major contributing factor, as having structured course content and peer support were cited as critical factors to achieving the aforementioned benefits in the review. Another systematic review and meta-analysis demonstrated yoga's comprehensive benefits in enhancing cardiovascular and respiratory function, and reducing stress, anxiety, and depression among medical and dental students.<sup>16</sup>

Yoga is a low cost, safe and efficacious tool to assist medical students. The practices that are safely used for increasing the wellbeing of the student community include asana, pranayama, dhyana, and mindfulness. The possible mechanisms involved with the beneficial effects of yoga among medical students include autonomic balance, relaxation, better emotional status, and self-care behaviour.<sup>7</sup> Barriers to access and participation in yoga include the heavy workload of the medical curriculum, time restraint and insufficient facilities.<sup>9</sup>

Given the significant implications of burnout and psychological distress among medical students, there is a clear need for effective interventions to mitigate these challenges. Yoga and mindfulness have emerged as potential interventions to address stress and promote well-being in medical education. While the literature provides evidence of the effectiveness of yoga and mindfulness in reducing stress among various populations, including medical students, there is a gap in the literature regarding the acceptability of these interventions specifically among medical students.<sup>1,5-9</sup>

The acceptability of yoga and mindfulness interventions among medical students is a critical consideration for their implementation in medical school. While there is anecdotal evidence suggesting positive attitudes towards these practices among medical students, empirical research exploring their acceptability is limited. Furthermore, potential methods of implementing yoga and mindfulness into the medical curriculum remain underexplored in the literature.

The aims of this study are to:

- 1. Assess medical students' acceptability of yoga or mindfulness interventions;
- 2. Assess potential methods of implementing yoga or mindfulness interventions into medical school.

This research seeks to provide insight into the potential benefits of integrating yoga and mindfulness practices into medical education in New Zealand, ultimately contributing to the development of strategies for enhancing the well-being of medical students. Recommendations on yoga and mindfulness intervention implementation will be made based on the result from the study analysis.

Assumptions made when initiating this research are based on the premise that integrating yoga and mindfulness into medical education could offer valuable benefits in addressing the stress and well-being of medical students.

### Methods

### PARTICIPANTS

Participants in this study were from two groups: medical students at the University of Otago, Wellington campus, and experienced yoga teachers and student-teachers on a Yoga Teacher Training Course (YTT-200 hours), collectively referred to as 'yogis' in this study. For phase 1, all medical students in years 4-6 were invited to participate. Phase 2 involved three experienced yoga teachers and seven yoga student-teachers.

### PROCEDURE

**Phase 1:** a questionnaire was constructed to assess medical students' experiences and ideas around yoga and mindfulness (Appendix 1). The questionnaire was distributed via student emails, with reminders posted on class Facebook pages. Data collection took place over a two-week period. Students who participated in the questionnaire went in the draw to win a small gift.

**Phase 2**: a separate questionnaire was developed for experienced yogis to gather their insights on the implementation of yoga and mind-fulness in the medical school setting (Appendix 2). The questionnaire was distributed electronically to participants over a one-week period. **Phase 3**: utilising the data collected, recommendations were developed for initiatives to commence at the University of Otago, including a cost-benefit analysis.

This research has University of Otago category B ethics approval.

### INSTRUMENTATION

The questionnaire used in phase 1 comprised items designed to assess medical students' experiences with yoga and mindfulness and the likelihood they would participate in a university-led initiative. Demographic questions were included. The questionnaire could be completed in te reo Māori or English.

The questionnaire used in phase 2 aimed to gather insights from experienced yogis on effective strategies for implementing yoga and mindfulness in the medical school context. It included questions about the best type of yoga, potential benefits for medical students, and recommendations for integration.

### DATA ANALYSIS

Quantitative data from phase 1 was analysed using statistical analysis in Microsoft Excel to summarise participants' responses. Qualitative data from open-ended questions in phase 2 were analysed using content analysis.<sup>17</sup>

### Results

### PHASE 1: MEDICAL STUDENT SURVEY

This section of the results focuses on the first aim of the study: assess medical student acceptability of a yoga or mindfulness intervention.

Three hundred and eleven surveys were sent out via email to 102 4th year, 100 5th year and 109 6th year medical students. Of these 68 students who responded (response rate of 22%) and consented to participate in this survey, 28 (41.2%) were in their 4th year, 20 (29.4%) were in their 5th year, and 20 (29.4%) were in their 6th year. All 68 opted to complete the questionnaire in English. Table 1 displays the ethnic distributions of participants. For those that stated multiple ethnicities, the prioritised ethnicity was recorded.<sup>18</sup>

### Table 1: Medical student respondents ethnic distribution

Number of medical students
n = 68 (22%)
32 (47%)
18 (26%)
3 (4%)
12 (18%)
1 (1%)
2 (3%)

Almost all participants (97%) answered that they had practised some form of mindfulness or meditation in the past, while 75% had practised some form of yoga. Nearly three-quarters (70.5%) stated a moderate to high likelihood that they would utilise yoga or mindfulness classes if the medical school were to provide it. Only five respondents (7.4%) indicated a low likelihood that they would attend a yoga or mindfulness initiative provided by the medical school.

### PHASE 2: EXPERIENCED YOGI SURVEY

This section of the results focuses on the second aim of the study: assess potential methods of implementing yoga or mindfulness interventions into medical school.

A total of 10 surveys were distributed. The survey was completed by seven student yoga teachers and three experienced yoga teachers. There was a large range of experience teaching yoga ranging from 4 to 40 years. The median was 10 years of experience, the mean 13.6 years, and as a collective they had 136 years of experience in the yoga field. Their ethnic groups are displayed in Table 2.

### Table 2: Ethnic distribution of yogi participants

Ethnicity	Number of yogis n = 10 (100%)
Pākehā/NZ European	4 (40%)
European	2 (20%)
Pacific	1 (10%)
Asian	1 (10%)
Latin American	1 (10%)
Middle Eastern	1 (10%)

Arising from the question regarding the benefits of yoga in their personal lives, nine themes emerged:

- 1. Improved patience;
- 2. Improvement in concentration and focus;
- 3. Improvement in the mind-body connection;
- 4. Improved self-confidence and self-belief;
- 5. Better emotional regulation and management;
- 6. Improved mindfulness;
- 7. Reduction in stress and anxiety;
- 8. Improved physical health including injury management and prevention, and flexibility; and
- 9. The relaxing and calming effect of regular yoga practice.

When asked what they considered the best types of yoga for stress and anxiety management and what types of yoga they would recommend for medical students, the most common response was Yin Yoga (60% of participants). All the participating yogis (100%) agreed that medical students could benefit from yoga practice, with 60% of them noting that any yoga would be beneficial regardless of the type. The results for the best type of yoga for medical students are displayed in Table 3.

# Table 3: Yogi's suggestions for types of yoga that may benefit medical students

Type of yoga	Number of yogi's
	n = 10 (100%)
Yin Yoga	6 (60%)
Restorative	1 (10%)
Vinyasa	2 (20%)
Ashtanga	1 (10%)
Bikram	1 (10%)
Nidra	1 (10%)
Pranayama	3 (30%)
Mindfulness	1 (10%)
All Types	6 (60%)

The yogis identified the following potential benefits of yoga practice for medical students:

- 1. The calming and relaxing effects;
- 2. Improving concentration and focus;
- 3. Improving self-confidence;
- 4. Improving the mind-body connection;
- 5. Providing a time and space for themselves;
- 6. A method to reduce stress and anxiety; and
- 7. Improving empathy with patients.

The findings are displayed in Graph 1.

Graph 1: Frequency graph of yogi's responses to the potential benefits of yoga



Themes of potential benefits for medical students

When asked for ideas for implementing yoga and mindfulness on the medical school campus the following six themes emerged:

- 1. Offering free yoga classes for students;
- 2. Offering yoga and mindfulness workshops;
- 3. Offering a quiet space to practice yoga and mindfulness;
- 4. Providing guided meditation between lectures;
- 5. Offering yoga as a selective/elective subject; and
- 6. Offering a weekend yoga retreat for rest and rejuvenation.

The most common themes were offering free yoga classes followed by setting aside a quiet mindfulness space for students and offering yoga-based workshops. The results are displayed in Graph 2.

Graph 2: Frequency graph of yogi's recommendations for implementation of yoga by theme



Themes of potential recommendations for medical school

### Discussion

The first phase of this research was to investigate the acceptability of yoga and mindfulness for clinically based medical students at the University of Otago, Wellington. The results demonstrate a moderate to high likelihood that medical students would utilise yoga and mindfulness if the opportunity and means were provided to them at medical school. There is no previous literature that has investigated the acceptability of yoga among medical students in New Zealand. Although a systematic review regarding mindfulness and physical exercise for medical students was conducted in Auckland, all the studies included in the analysis were conducted overseas.<sup>19</sup>

In the second phase of this study, all the experienced yogis surveyed considered that yoga practice would be beneficial for medical students. Seven potential benefits of yoga were identified, including calming and relaxing effects, improved concentration, improved self-confidence, improved mind-body connection, stress reduction, anxiety reduction, and empathy enhancement. These findings closely resonate with the body of literature discussed in the introduction. The main benefits of yoga and mindfulness discussed in the literature include stress reduction, symptom improvement of anxiety, insomnia, and depression, improved relaxation, enhanced cognitive function, and improved autonomic function including cardiovascular and respiratory benefits with reduced serum cortisol levels.<sup>1,4-10,12,14-16</sup> The exceptions to this are the two themes of self-confidence and empathy enhancement. There is no evidence for these benefits discussed in the literature for medical students.

There are several ways yoga and mindfulness could be implemented in the medical school environment. The experienced yogis' survey produced the following recommendations: offering mindfulness and yoga workshops, providing free or low-cost yoga classes, and establishing a designated space for mindfulness and yoga practice. The literature aligns with the first recommendation of providing a yoga or mindfulness intervention at medical school. There was no evidence established in the literature for the latter two recommendations.

Thompson et al. suggested a restorative yoga programme during exam periods.<sup>12</sup> This study involved a 45-minute restorative yoga practice by a certified instructor once a week for six weeks. Another study investigated a 10-week yoga intervention that involved 90-minute weekly sessions.<sup>10</sup> However, these interventions were extracurricular and not implemented into the medical school curriculum itself. Integrating mind-body training into the curriculum was investigated by two studies, one of which was a systematic review which found that more than 90% of students believe yoga should be a part of the medical school curriculum.<sup>8,16</sup> The study suggested yoga would encourage students to develop a balanced academic and personal life.<sup>16</sup>

Barriers to access and participation in yoga and mindfulness practices for medical students include the heavy workload of the medical curriculum, time management, motivation, and limited access to facilities.<sup>916</sup> However, the low cost, safety, and efficacy of yoga makes it a valuable tool for supporting the well-being of medical students.<sup>7</sup> Addressing barriers through the recommendations identified in this study could facilitate greater participation and uptake of these practices within the medical school environment.

# RECOMMENDATION 1: INTEGRATION OF YOGA AND MINDFULNESS INTO THE MEDICAL SCHOOL CURRICULUM

Bansal et al. noted the alignment between community medicine and yoga in promoting health and preventing disease, suggesting the integration of yoga into community medicine teaching.<sup>8</sup> Therefore, the first recommendation of this study is to introduce a yoga and mindfulness workshop as a component of the public health, general practice, or psychological medicine module. The main cost of implementing this recommendation would be reimbursing the teachers for their time as well as finding an allotted time within one of the modules. A paradigm shift from traditional medicine to alternative and complementary medicine within the medical school environment would also

be essential. Faculty members with significant scepticism towards alternative therapies may be resistant to a change in the medical school culture.<sup>16</sup> However, the workshop would provide an equal learning opportunity for all students, helping to prepare them for their future work-life balance and remove the barriers listed above.

# RECOMMENDATION 2: PROVIDE A LOW-COST YOGA CLASS ON CAMPUS

The next recommendation is to invite yoga teachers to use a space on the University of Otago, Wellington campus to teach yoga to students for a koha/donation. Providing this service at a low cost would encourage student participation. Other ideas include providing regular classes during exam periods or utilising special events such as the NZMSA's wellbeing month and Te Wiki o Te Reo Māori to offer the service. The challenge with this intervention would be finding yoga teachers with capacity to offer their services at a low cost. The university could consider subsidising the cost to make the classes more accessible.

### **RECOMMENDATION 3: ESTABLISH A MINDFULNESS SPACE**

The final recommendation is to request the university to provide a suitable mindfulness and yoga space for students that is separate from the common room. This would require the reasonably lowcost transformation of a room to provide a quiet space with privacy, adjustable lighting, and yoga mats. Yoga classes could also use this designated health space. The main challenge for the university would be the initial expense and allocation of space, given the premium nature of space on the medical school campus.

### LIMITATIONS

The main limitation of this study is the low response rate, which is not an uncommon issue with medical students' surveys, possibly due to survey fatigue. The findings may not accurately represent the true population of medical students and there is the risk of response bias. Additionally, the small population size of yogi survey respondents, although diverse in ethnicity, age, and experience, introduces a selection bias. The use of open-ended questions allowed experienced yogis to share their opinions and views, enriching the study's qualitative insights. However, the questionnaires likely have psychometric problems due to a lack of validation with the current literature.

### Conclusion

This study shows that medical students would be willing to participate in yoga and mindfulness-based initiatives if the medical school was able to provide initiatives to help students manage their hauora in the medical school context. The recommendations for the implementation of yoga and mindfulness at the University of Otago, Wellington campus include providing a free or low-cost yoga class for students, implementing a yoga/mindfulness workshop as a part of the public health, general practice or psychological medicine modules, and providing a mindfulness space for students.

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### About the author

> Bree-Anna is of Te Ati Awa and Taranaki iwi decent. She is a PGY3 at New Plymouth Base Hospital. She has started her training in psychiatry, currently working as a registrar in adult mental health. She is a passionate advocate for te reo Māori and Māori mental health.

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### Ethical approval/patient consent

This research has University of Otago category B ethics approval.

### Notes

Appendices are available in an online repository found at: https://github.com/BreeHyphenAnna/YogaResearch.git

### Correspondence

Bree-Anna Langton: bree-anna@windowslive.com