

## Research Article



# Utility of Yoga as an Alternative Therapy for Occupational Hazards among Physical Therapists

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## ABSTRACT

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### Keywords:

Yoga; Physical therapy;  
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**Introduction:** This study was conducted to evaluate the adoption of yoga techniques as an alternative therapy in the management of physical and psychological occupational hazards among physical therapists.

**Materials and Methods:** A validated closed-ended questionnaire was used to assess education and experience level, personal health and occupational hazards/habits, and treatment strategies used for the physical and psychological occupational hazards for participants in their current position. By e-mail, we invited 500 randomly selected physical therapists to participate.

**Results:** We received completed questionnaires from 119 physical therapists. Musculoskeletal pain with stress was the most common occupational hazard reported, followed by only stress, and only musculoskeletal pain. Regarding the pain, the lumbar spine, cervical spine, thoracic spine, shoulder, and knee were the most affected parts of the body. Regarding pain and stress, only a third physical therapists adopted yoga as an alternative treatment for these occupational hazards; physical therapists tended to engage in other forms of exercise, listen to music or utilize massage to treat pain and stress. Lack of time and lack of training were the most common reasons cited by physical therapists for not practicing yoga. Interestingly, 85.7% of physical therapists would recommend yoga as a treatment for their patients.

**Conclusion:** While musculoskeletal pain and stress were extremely common occupational hazards among physical therapists, only about a third of physical therapists adopted yoga as an alternative treatment for these occupational hazards.

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## 1. Introduction

The demanding nature of providing physical interventions to patients often results in physical therapists developing a variety of musculoskeletal conditions. Recently, Vieira et al. [1] completed a systematic review of the literature assessing the prevalence, types, and risks for work-related musculoskeletal disorders among physical therapists. It was determined that about 90% of physical therapists will experience some form of work-related musculoskeletal disorder at some point in their careers, and 50% will experience a work-related musculoskeletal disorder within 5 years of practice with the low back being the most affected part of the body. Similar to Vieira et al. [1], Bork et al. [2] determined that low back pain is common among physical therapists; 45% of the physical therapists included in their study experienced a low back injury during 12 months. In addition, they found that performing manual therapy, and lifting and transferring patients are tasks commonly associated with physical therapists developing a work-related musculoskeletal disorder [2]. Furthermore, injury in the workplace may also be a consequence of stress. According to a study performed by Fiabane et al. [3], physical therapists had the highest levels of occupational stress and disengagement from their work. Due to the high levels of stress, healthcare workers tend to become emotionally exhausted which was demonstrated in 24.2% of healthcare workers in a study conducted by Dhaini et al. [4]. Furthermore, Taylor et al. [5] recently reported that healthcare providers tend to lack sleep, experience frequent stress, and experience physical pain and distress, primarily due to workplace incivility, death/patient suffering, and shift work with varying degrees of support.

Many ways exist that individuals can treat these occupational hazards, one of which is yoga. At its core, yoga is based on the use of movement and breathing techniques to connect the body and the mind which has crucial benefits for both men and women [6, 7]. In the past, yoga has been viewed solely as a form of exercise; however, it is gaining popularity as a form of therapy to maintain health [6]. The poses performed as a part of yoga provide muscle lengthening and elongation while breathing is directly related to mental relaxation, mental focus, stress management, and emotional regulation [6]. These elements may offer patients a more holistic and lasting method to manage chronic musculoskeletal conditions. To confirm this claim, Tilbrook et al. [8] conducted a study that assessed the efficacy of yoga in decreasing recurrent low back pain. Following completion of a 12-week yoga program, it was concluded that the patient's disability levels diminished and their pain self-efficacy scores increased. In

addition to decreasing disability and pain, studies also suggest that yoga can be used to decrease conditions, such as depression, anxiety, and stress through relaxation and breathing regulation [4]. This was confirmed by Lin et al. [9] who determined that after practicing yoga, patients experienced a significant reduction in work-related stress as well as a significant enhancement in stress adaptation.

It is thought that work efficiency can be brought about by eradicating occupational hazards, such as stress and musculoskeletal pain, and by perhaps practicing alternate medical therapies, such as yoga, which is an effective tool in treating musculoskeletal pain [10-12]. We are unaware of any studies that have evaluated the effects of yoga in the treatment of occupational hazards among physical therapists. Thus, this cross-sectional study aimed to evaluate the adoption of yoga techniques as an alternative therapy in the management of physical and psychological occupational hazards among physical therapists. We hypothesized that the majority of physical therapists participating in this study experienced occupational hazards, such as musculoskeletal pain and stress, and yoga typically serves as an alternative treatment or means of prevention for these occupational hazards.

## 2. Materials and Methods

This cross-sectional study explored the adoption of yoga techniques as an alternative therapy in the treatment of physical and psychological occupational hazards among physical therapists. Participants completed a validated closed-ended questionnaire originally designed by Ramamoorthy et al. [10] to evaluate the adoption of yoga techniques as an alternative therapy in the treatment of physical and psychological occupational hazards among dental general practitioners in Chennai, India. The first part of the survey was related to the demographics, education, and experience level of participants. The second part included questions about their health and occupational hazards/habits as well as the adoption of yoga techniques as an alternative therapy in the treatment of physical and psychological occupational hazards in their current position. Exercise, massage, walking, and listening to music were other optional management strategies.

By e-mail, we invited 500 randomly selected physical therapists to participate who served as clinical instructors for the physical therapy department at Daemen University in Amherst, NY. Surveys within 3 months after initial contact were included in the analysis. The received was administered via an online program entitled Survey Monkey. The results of the survey were stored in a secure, password-protected database for subsequent analysis. Before participant

recruitment and data collection, the study was approved by the Human Subjects Research Review Committee at [Dacmen University](#), Amherst, New York ([Appendix 1](#)).

### Statistical analysis

Descriptive statistics were calculated for survey data as appropriate (frequencies for categorical data and means and standard deviations for continuous data) to determine the personal health and occupational hazards/habits, and treatment strategies used for the physical and psychological occupational hazards for participants in their current position. Differences between physical therapists, who reported occupational hazards and those who did not, those who reported pain and stress daily and those who did not, and those who performed yoga and those who did not, were identified for the different variables using the chi-square test for categorical data and t-tests for continuous data. The alpha level was set at  $P < 0.05$ .

## 3. Results

### Participant demographics

A total of 119 participants completed the survey. The participants included 30 men (25.2%) and 89 women (74.8%) with a mean age of  $40.2 \pm 10.9$  years and a mean number of years of experience of  $15.4 \pm 11.4$  years ([Table 1](#)).

1). A total of 88 participants in the study were primarily staff therapists (73.9%) and 98 participants spent between 76-100% of their time in clinical practice (82.4%) ([Table 1](#)). Therapists who responded to the survey practiced in a variety of settings, with the three most represented settings being outpatient orthopedics (35.3%), pediatrics (21.0%), and acute care (12.6%) ([Table 1](#)).

### Occupational hazards

When asked about the occupational hazards faced by physical therapists, 93 participants (78.2%) reported both musculoskeletal pain and stress and 10 participants (8.4%) reported only pain or stress. Only 5 participants (4.2%) reported neither pain nor stress as a factor in their profession. Physical therapists who were male ( $P = 0.02$ ), as well as those who practiced yoga ( $P = 0.03$ ), were significantly less likely to report both musculoskeletal pain and stress as occupational hazard. In terms of frequency, 24 participants (20.1%) reported having musculoskeletal pain daily, 43 participants (36.1%) reported having pain weekly, 48 participants (40.3%) experienced pain at least once a month, and only 4 participants (3.4%) reported never having pain ([Table 2](#)). Participants who were older ( $P = 0.02$ ) and had spent more time in clinical practice ( $P = 0.01$ ) were significantly more likely to

**Table 1.** Participant demographics

Variables		Mean±SD/No. (%)
Age (y)		40.2±10.9
Years worked as a PT		15.4±11.4
Sex	Male	30(25.2)
	Female	89(74.8)
Position	Staff therapist	88(73.9)
	Supervisor/director	26(21.8)
	Other	5(4.2)
Time in clinical practice	0-25	7(5.9)
	26-50	3(2.5)
	51-75	11(9.2)
	76-100	98(82.4)
Setting	Acute care	15(12.6)
	Outpatient orthopedics	42(35.3)
	Wellness clinic	1(0.8)
	Neurological rehabilitation	11(9.2)
	Pediatrics	25(21.0)
Skilled nursing facility/long term care		12(10.1)
Home health care		1(0.8)
Other		12(10.1)

PT: Physical therapist

**Table 2.** How often participants experienced musculoskeletal pain and stress

Variables	No. (%)	
	Pain	Stress
Once daily	24(20.1)	40(33.6)
Once weekly	43(36.1)	58(48.7)
Once monthly	48(40.3)	21(17.6)
Never	4(3.4)	0(0)
Total	119(100)	119(100)

JMR

report pain daily. For stress, 40 participants (33.6%) reported stress daily, 58 participants (48.7%) reported stress weekly, and 21 participants (17.6%) reported stress at least once a month; no participant reported never having stress (Table 2). No significant differences were observed between those who reported stress daily and those who did not in terms of demographics or work status. Regarding pain, the lumbar spine (59.7%), cervical spine (52.1%), thoracic spine (29.4%), shoulder (23.5%) and knee (22.7%) were the body regions most commonly affected.

### Interventions

For managing pain, 109 participants (91.6%) indicated that they used ‘exercise, massage, music, and walking’, 39 participants (32.8%) indicated that they practiced yoga, 32 participants (26.9%) indicated that they used medication, and 19 participants (16.0%) listed other treatment options, such as acupuncture, heat, chiropractic, and rest; 7 participants (5.9%) indicated using no form of treatment for pain (Table 3). For managing stress, 95 participants (79.8%) indicated that they used ‘exercise, massage, music, and walking’, 38 participants (31.9%) indicated that they used yoga, 22 participants (18.5%) listed other treatment options, such as prayer, sleep, and meditation, and 9 participants (7.6%) indi-

cated that they used medication; 15 participants (12.6%) indicated using no form of stress management (Table 3).

Regarding the prevention of musculoskeletal pain, 104 participants (87.4%) indicated that they used ‘exercise, massage, music, and walking’, 38 participants (31.9%) indicated utilizing yoga, 20 participants (16.8%) listed other prevention options, such as good body mechanics and orthotics, and 2 participants (1.7%) indicated that they used medication; 8 participants (6.7%) indicated using no form of prevention (Table 3). In preventing stress, 76 participants (63.9%) indicated using ‘exercise, massage, music, and walking’, 34 participants (28.6%) indicated that they used yoga, 22 participants (18.5%) listed other treatment options, such as planning, organization, and meditation, and 4 participants (3.4%) indicated using medication; 29 participants (24.4%) indicated no form of prevention for stress (Table 3).

Overall, 39 participants (32.8%) practiced yoga. Physical therapists who were female (P=0.002), younger (P=0.003), and had spent less time in clinical practice (P=0.01) were significantly more likely to practice yoga. Regarding the 80 physical therapists (67.2%) who did not practice yoga, 34 physical therapists (42.5%) said it was due to a lack of time, 21 physical therapists (26.3%) reported a lack of training in yoga, 7 physical therapists (8.8%) reported a lack of access to yoga, 9 physical ther-

**Table 3.** Treatment and prevention methods used by participants

Variables	No. (%)			
	Treatment		Prevention	
	Pain	Stress	Pain	Stress
Yoga	39(32.8)	38(31.9)	38(31.9)	34(28.6)
Exercise, massage, music, walking	109(91.6)	95(79.8)	104(87.4)	76(63.9)
Medication	32(26.9)	9(7.6)	2(1.7)	4(3.4)
Nothing	7(5.9)	15(12.6)	8(6.7)	29(24.4)
Other	19(16.0)	22(18.5)	20(16.8)	22(18.5)

JMR

**Table 4.** Physical therapist referral of yoga as treatment

Variables	No. (%)	
	Yes	No
Would You Refer Your Patients to Practice Yoga?	102(85.7)	17(14.3)
If No, Reason	Not appropriate for the patient population	9(52.9)
	No belief in yoga as a treatment	2(11.8)
	No time for patients to perform Yoga	1(5.9)
	Other	8(47.1)

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apists (11.3%) reported having a lack of understanding of yoga, and 3 physical therapists (3.8%) reported not believing in yoga; 46 physical therapists (57.5%) selected ‘other’ reasons, such as no interest, use of alternative forms of exercise, and cost barriers. When asked if they would refer their patients to practice yoga as a form of treatment for musculoskeletal conditions or stress, 102 participants (85.7%) indicated yes, and the remaining 17 participants (14.3%) indicated no (Table 4). Of the 17 participants that would not refer their patients to practice yoga, 9 participants (52.9%) noted that yoga was inappropriate for their patient population, 2 participants (11.8%) noted that they did not believe yoga was effective, and 1 participant (5.9%) noted that their patients would not have enough time to complete yoga; 8 participants (47.1%) selected ‘other’ reasons, including lack of a need for a guided class to receive the therapeutic benefit, safety, and post-operative concerns, or restrictions in work environment policies (Table 4).

#### 4. Discussion

Physical therapists often encounter occupational hazards due to the physical and psychological demands of the profession. The results of our study indicated that the vast majority (78.2%) of therapists noted that both musculoskeletal pain and stress are occupational hazards associated with the profession. The results of our study also showed that the lumbar spine, cervical spine, thoracic spine, and shoulders were amongst the most common places to have these conditions, which is comparable to the findings of previous studies [1, 2]. In terms of frequency, our study indicated that about 56% of therapists report feelings of pain on a weekly or daily basis, whereas up to 82% experience stress at these frequency levels. Only 3.4% of therapists reported that they had never experienced pain on the job, and no participant reported never having stress due to their work. Physical therapists who practiced yoga (P=0.03) were significantly less likely to report both musculoskeletal pain and

stress as an occupational hazard. Multiple factors may be responsible for physical therapists who perform yoga being less likely to report both musculoskeletal pain and stress as an occupational hazard. Due to the design of our study, we are unable to report cause-and-effect relationships. However, we believe that performing yoga may be associated with less musculoskeletal pain and stress as an occupational hazard [6, 7, 13-15].

The results of our study are consistent with the results of a systematic review by Vieira et al. [1] who found that 90% of therapists will have a work-related musculoskeletal disorder during their career and 50% experience a work-related musculoskeletal disorder within 5 years of practice. Performing manual therapy and lifting and transferring patients are tasks commonly associated with physical therapists developing a work-related musculoskeletal disorder [1]. The body parts affected by specialty and tasks differed but the low back was the most common body part affected [1], which is also consistent with our findings. The findings presented in our study, and others [1, 2] are useful to inform future research, quality improvement initiatives, and educational programs to reduce the rates of work-related musculoskeletal disorders among physical therapists.

Yoga is effective in relieving pain and stress. Despite the proven benefits of yoga, only 33% of participants in this study practiced yoga as an alternative therapy to address occupational hazards, such as musculoskeletal pain and stress. Practicing yoga was previously reported to be low in dentists (10%) [10], and the general population (13%) [16]. In the general population, those who practiced yoga were more likely to be white, female, young, of better health status, and college-educated. In our study, physical therapists who were female, younger, and have spent less time in clinical practice were significantly more likely to practice yoga. We have also identified factors, such as lack of time, lack of training in yoga, and lack of access to yoga as potential contributors to not adopting

yoga to treat occupational hazards. Only 3 participants in our study reported that they did not believe in yoga. This lack of disbelief was evident as the vast majority of participants (86%) referred their patients to practice yoga as a form of treatment for musculoskeletal conditions or stress. This is an interesting finding because the literature to date suggests that yoga may be a relatively underused healthcare resource [17]. Since many patients are interested in complementary and alternative healthcare management strategies, it is essential to develop effective strategies to help healthcare professionals make prudent, evidence-based decisions about patient referrals for yoga practice [17].

This study has limitations. We had a 23.8% response rate, which is somewhat lower than we expected for a non-incentivized survey [18]. This may be due to the length of the survey and the time required to complete it or a lack of interest in the topic of study. Also, the majority of our respondents were women (74.8%). This is consistent with other studies that have surveyed physical therapists on their use of yoga in clinical practice and the use of yoga in the general population [19, 20]. Additionally, the majority of the study participants practiced in orthopedic, pediatric, and acute care settings. Thus, our data may reflect a selection bias; perhaps female respondents practicing in orthopedic, pediatric, or acute care settings with a special interest in yoga were more likely to complete our survey. We recommend caution in generalizing the findings of this study to other members of the profession. Third, participants completed a validated closed-ended questionnaire originally designed by Ramamoorthy et al. [10] to evaluate the adoption of yoga techniques as an alternative therapy in the treatment of physical and psychological occupational hazards among dental general practitioners in Chennai, India. While the instrument has been validated, it is unclear whether the results of this survey study reliably depict participants' actual occupational hazards and practices used to manage and prevent those hazards. Despite these limitations, the findings of this study offer a novel representation of the occupational hazards experienced by physical therapists, and the practices used to manage and prevent those hazards. Future studies accounting for these limitations are warranted.

## 5. Conclusion

Occupational hazards, such as musculoskeletal pain and stress are common among physical therapists. While the management and prevention of these occupational hazards vary considerably, most physical therapists do not practice yoga to treat these occupational hazards.

Therefore, awareness should be created among physical therapists about the benefits of yoga.

## Ethical Considerations

### Compliance with ethical guidelines

The research project was ethically approved by the Human Subjects Research Review Committee at [Daemen University](#), Amherst, New York. (Code: X.PT0916.2.v3).

### Funding

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### Authors' contributions

All authors equally contributed to preparing this article.

### Conflict of interest

The authors declared no conflict of interest.

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## Appendix

Appendix 1: Survey completed by the study participants

### Demographics and experience

Are you currently licensed (permanent license, not temporary) as a physical therapist?

1. No
2. Yes

Birthdate (month/year): \_\_\_\_\_

Sex

1. Male
2. Female

How many years have you practiced as a physical therapist? Note: Do not include time spent practicing another profession, although you may have been a licensed PT. Years: \_\_\_\_\_

Which of the following best describes your current primary position?

1. Supervisor/director of PT
2. Academic administrator or director of PT/Physical Therapist Assistants (PTA) education program
3. Director of a residency/fellowship program
4. Academic faculty member
5. Staff PT
6. Researcher
7. Other \_\_\_\_\_

Please estimate the percentage of time you currently spend in clinical practice providing physical therapy services for patients. (Note: Include any time spent in the administrative aspects of providing patient care, such as scheduling, coding, documentation, etc. as time spent in clinical practice.)

1. 0%-25%
2. 26%-50%

3. 51%-75%
4. 76%-100%

Which of the following best describes your current area of clinical practice?

1. Outpatient orthopaedics
2. Inpatient orthopaedics
3. Neurological rehabilitation
4. Acute care
5. Cardiopulmonary
6. Integumentary/wound/burns
7. Pediatrics
8. Home health
9. Wellness clinic
10. Sports physical therapy
11. Skilled nursing facility or long term care center

Assessment and Management of Occupational Hazards

Which of the following is an occupational hazard of your physical therapy profession as a clinician?

1. Musculoskeletal pain
2. Stress
3. Both
4. Other – please specify \_\_\_\_\_
5. There are no occupational hazards

How often do you experience musculoskeletal pain?

1. Very often-daily
2. Often-once weekly
3. Rare-once monthly
4. Never

If you experience musculoskeletal pain, which areas of your body are affected (please check all that apply)?

1. Neck
2. Middle back
3. Low back
4. Pelvis
5. Shoulder
6. Elbow
7. Forearm
8. Wrist
9. Hand
10. Hip
11. Knee
12. Ankle
13. Foot

How often do you experience stress?

1. Very often-daily
2. Often-once weekly
3. Rare-once monthly
4. Never

What do you do to treat musculoskeletal pain associated with your job (select all that apply)?

1. Yoga
2. Exercise, massage, music, walking
3. Medication
4. Other-please specify \_\_\_\_\_
5. Nothing

What do you do to treat stress associated with your job (select all that apply)?

1. Yoga
2. Exercise, massage, music, walking
3. Medication
4. Other-please specify \_\_\_\_\_
5. Nothing

What do you do to prevent musculoskeletal pain associated with your job (select all that apply)?

1. Yoga
2. Exercise, massage, music, walking
3. Medication
4. Other-please specify \_\_\_\_\_
5. Nothing

What do you do to prevent stress associated with your job (select all that apply)?

1. Yoga
2. Exercise, massage, music, walking
3. Medication
4. Other-please specify \_\_\_\_\_
5. Nothing

If you do not practice yoga, why?

1. No access to yoga
2. Lack of understanding of yoga
3. Lack of training in yoga
4. No time to do
5. No belief in yoga
6. Other-please specify \_\_\_\_\_



Do you refer your patients to practice yoga?

1. Yes
2. No

If you do not refer your patients to yoga, why?

1. No access to yoga
2. Lack of understanding of yoga
3. Lack of training in yoga
4. No time to do
5. No belief in yoga
6. Other-please specify \_\_\_\_\_

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