

Research

Determining Physical Therapists' Readiness for Integrating Yoga Therapeutics into Rehabilitation

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Abstract

The positive health effects of yoga have led physical therapists (PTs) to integrate elements of the discipline into their treatments in some settings. Formal PT education includes limited, if any, training in yoga, and there is no system in place to provide education on safely implementing therapeutic yoga (TY) as an adjunctive treatment approach. The purposes of this study were to: (1) assess the readiness of PTs (those who do not currently prescribe TY to patients) to integrate TY into treatment, and (2) determine the feasibility of a 5-week online TY training to improve the readiness of PTs to utilize TY in their practices. Licensed PTs ($n = 103$) were recruited nationally through social media and email. Eligible and consented PTs registered for a 5-week online TY training course. PTs' perceptions of TY and the role of safety and confidence in prescribing TY to patients were measured at baseline and postintervention. Feasibility outcomes were measured after completion of the course. Benchmarks included: (1) $> 70\%$ of PTs would find the course acceptable; (2) $> 60\%$ would finish the course; and (3) there would be significant improvements in PTs' perceptions of TY. A total of 95 eligible PTs consented and registered for the course, with 60 (63.1%) completing the intervention. Prior to the training, most PTs felt they were not ready ($n = 19/60$, 31.7%) or somewhat ready ($n = 25/60$, 41.7%) to integrate TY. More than half thought the online training was acceptable ($n = 50/60$, 83.3%) and finished the course ($n = 60/95$, 63.1%). There were significant improvements in personal readiness and confidence to safely prescribe TY, current understanding/knowledge of TY, and feeling adequately trained to use some form of TY with patients. A 5-week online TY training course is feasible to deliver for improving PTs' readiness to prescribe TY. Future studies are proposed to test the effectiveness of TY training

and education with PTs. Thompson, Huberty, Eckert, et al. *Int J Yoga Therapy* 2020(30). doi: 10.17761/2020-D-19-00040.

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Introduction

The rapid advancement of yoga therapy as a profession brings with it both challenges and opportunities. Concerns regarding professional boundaries and domains of practice, recruitment of future yoga therapists, and interprofessional integration within the larger healthcare field are major foci for the profession. The current study addresses each of these issues.

The practice of yoga has become increasingly popular in the United States, with almost 36.4 million U.S. adults practicing yoga in 2016 (up from 20.4 million in 2012).¹ Research has shown yoga to benefit a variety of health conditions, including low-back pain,²⁻⁷ cancer,⁸ diabetes,⁹ Parkinson's disease,¹⁰ cardiovascular disease,¹¹ and coronary artery disease.¹² Yoga may improve musculoskeletal function by increasing strength, balance, and flexibility,^{12,13} as well as postural control to help in fall prevention.¹⁴ The literature supports yoga for the treatment of chronic pain^{15,16} and for improving the general well-being of patients.¹⁷⁻¹⁹ Based partly on the evidence for yoga as a means to reduce stress^{20,21} and chronic pain and manage disease, some physical therapists (PTs) have begun to integrate yoga into their treatment regimens.²²

The term *yoga* is derived from the Sanskrit verb root *yuj*, meaning to yoke, unite, or bind together.²³ The practice of yoga comprises various techniques that aim to promote higher levels of consciousness.²⁴ The yogic tradition views

individuals from a multidimensional system that recognizes all aspects of the mind, body, and spirit.²⁵ Traditional yoga practice includes breath regulation (*pranayama*), meditation, the adoption of specific postures (*asana*), and self-reflection.²⁴

Yoga therapy (*chikitsa*) is a part of yoga practiced for many centuries in India and more recently in the West.²³ The International Association of Yoga Therapists (IAYT) defines yoga therapy as “the process of empowering individuals to progress toward improved health and well-being through the application of the teachings and practices of yoga.”²⁶ Yoga therapy is the appropriate use of the teachings and practices of yoga in a therapeutic context. The key in this definition is the use of both *teachings* (paradigm) and *practices*. Presently, healthcare practitioners use yogic practices in a conventional medical paradigm rather than the yoga therapy paradigm. For the purposes of this study, we used the techniques of yoga, but not its teachings, for therapeutic benefit; therefore, we have defined this approach as “therapeutic yoga” to indicate that the intervention is not yoga therapy training in either scope or definition. Therapeutic yoga (TY) is the use of yoga in a biomedical model for treating disease and dysfunction.²⁷

Although there is some research describing how to incorporate TY into rehabilitation,²² there are few studies on the perceptions and readiness of PTs to integrate TY into their practices. In one recent survey of 333 members (i.e., PTs), the American Physical Therapy Association (APTA) reported that a majority of PTs (70.6%; $n = 230/326$) used TY with their patients. PTs reported (60%; $n = 202$) their knowledge and education to integrate yoga was self-learned based on personal yoga practice. For more than a quarter of PTs, yoga education was obtained at yoga-specific workshops and trainings (29%; $n = 95$) as well as from colleagues or peers (28%; $n = 93$). The fewest PTs reported receiving education on yoga as part of their formal PT curricula (7.9%; $n = 26$). Nearly a third (30%) of PTs reported safety as a primary concern when referring patients to yoga.²² Findings suggested the need for opportunities for PTs to gain education and training to help to bridge the gap between physical therapy and TY as an adjunctive approach for care.

In another study, allied health students (e.g., occupational therapist, physician assistant, PT) reported that their personal experience with yoga practice was related to their acceptance to refer their patients to yoga.²⁸ The authors recommended the development of strategies to make health professionals more aware of the merits of yoga, regardless of whether the professionals have a personal yoga practice. Brems and colleagues²⁹ assessed the factors that interfere with yoga practice and knowledge in health professions students ($n = 478$). Similar to Sulenes et al.,²⁸ students report-

ed that their personal yoga experience was related to their perceptions of the benefits of referring their patients to yoga. Brems et al.²⁹ proposed strategies to motivate health professionals to practice yoga by integrating yoga research into health curricula to provide health professions students education on the benefits of yoga practice.

Continuing education opportunities on TY may improve PTs' confidence and acceptability to prescribe TY to their patients. In a study of the Center for Mind-Body Medicine's training programs, held in the United States from 1998 to 2001, healthcare professionals were presented with scientific evidence for the efficacy of mind-body skills (e.g., biofeedback, autogenics, imagery, meditation, and exercise).³⁰ Healthcare professionals reported applying mind-body skills in their professional or personal practices 1 year following the training program. Participants also reported an enhanced sense of well-being and purpose in life, which may have contributed to their personal and professional practices of mind-body skills.³⁰

There is a need to provide knowledge and education to PTs about how to safely and easily implement TY as an adjunctive treatment approach because of the positive effects of yoga on stress, pain, and chronic disease; the increase in the number of PTs considering using TY to complement their rehab²²; and the lack of training for PTs related to yoga. Accordingly, the purposes of this study were to: (1) assess the readiness of PTs (those who do not currently prescribe TY to patients) to integrate TY into treatment, and (2) determine the feasibility (i.e., acceptability, demand, and practicality) of a 5-week online TY training to improve the readiness of PT's to utilize TY in their practices. Data gathered in this study will uncover the needs for training PTs to utilize TY in their practices.

Methods

This was a feasibility study with a pre-post, single-group design approved by an institutional review board at a large metropolitan university in the Southwestern United States. All participants signed an informed consent form prior to their participation in the study.

Subjects

Licensed PTs ($n = 103$) were recruited nationally through internet-based strategies including social media (e.g., Facebook, Twitter, Instagram), social networking sites, and email listservs. Recruitment fliers were posted on social media websites and in PT clinics. The emails of chairs of accredited PT programs in the United States were derived from the APTA website. PT chairs were emailed an explanation of the study and its requirements and asked to advertise the study by sharing researcher-provided recruitment

information (e.g., fliers, blurbs) with other PTs. The research team followed a script to respond to interested participants who called or emailed to participate in the study and referred them to the eligibility survey. All recruiting efforts were tracked.

The eligibility survey, hosted by Qualtrics (Provo, Utah), was free, voluntary, available online and included investigator-developed questions. In addition to the eligibility screener questions related to inclusion/exclusion criteria (see below), the survey included questions related to the PTs' personal experience with TY. If ineligible, participants received an email stating their ineligibility status as well as contact information for any questions or concerns. Eligible participants were electronically sent an informed consent (via Qualtrics) that included a place for their electronic signature. Participants were enrolled into the study as they volunteered to participate (i.e., rolling). Participants were not randomized due to the single-group design of this study. Included in the study were licensed PTs who had not consistently (within the last 6 months) prescribed TY to their patients and were

- ≥ 18 years of age;
- able to speak/read/understand English;
- residing in the United States;
- able to regularly access the internet via mobile phone, desktop/laptop computer, tablet, etc.; and
- willing to participate in the online training curriculum.

PTs who had consistently (within the last 6 months) prescribed TY to their patients, physical therapy assistants, and occupational therapists were excluded from the study.

Data were collected between October 2018 and February 2019. Prior to the intervention, eligible participants were asked to complete a demographic survey, information about their employer's PT practices, and a baseline survey to identify their perceptions of TY (i.e., overcoming barriers, safety, confidence, and readiness to prescribe TY to patients). Following completion of surveys, participants were emailed instructions to register for the intervention.

Intervention

The intervention consisted of a 5-week online training course titled "Readiness for Integrating Yoga Therapeutics into Rehabilitation for PTs," developed and taught by a PT who is a yoga safety expert (author MJT). The course's 5-week format was modified from a 15-week online course, "Integrating Yoga Therapeutics into Rehabilitation." The purpose of the 5-week online training course was to give PTs both a conceptual and experiential immersion into how TY can be integrated into their practices.

The online training course was self-paced and included five modules that were each 2 hours long. Each module had a didactic lecture video with citations, followed by an experiential practical class where those new principles were practiced and developed.

Table 1. Course Modules in the 5-Week Online Training

Module 1 Introduction and Orientation	Contact 2.0 hours
Lecture provides background, history, and evidence base for implementing therapeutic yoga (TY) into rehabilitation for physical therapists. Specifically, how it interfaces with biopsychosocial practice and PTs' scope of practice, as well as foundational neurophysiology. Lab/experiential component gives the participant firsthand experience and practice with the most common technologies of TY to complement the didactic lecture.	
Module 2 Therapeutic Exercise and Asana	Contact 2.0 hours
Lecture provides the process for converting conventional therapeutic exercise into mindful yoga asana. The similarities and differences are highlighted, as well as clinical indications. Lab/experiential component takes therapists through multiple experiences of the theory for embodied, experiential learning and assigns them to convert their three favorite therapeutic exercises into asana.	
Module 3 Breathing and Pranayama	Contact 2.0 hours
Lecture provides the physiological basis, the foundational pranayama practices, contraindications, and indications for clinical application. Lab/experiential component instructs in the techniques and requires participants to record their experience and how it might be useful clinically.	
Module 4 Fear Avoidance and Clinical Applications	Contact 2.0 hours
Lecture is reviews of fear avoidance principles, how TY addresses fear, and situations where the techniques can be applied. Lab/experiential component demonstrates and has the participant practice the techniques and reflect/record two instances in their clinical caseload where they could apply the technique.	
Module 5 More Clinical Applications	Contact 2.0 hours
Lecture is 5 short case reports with clinical rationale and specific application of the earlier technologies presented in this series. Lab/experiential component has the participant experience two cases (one orthopedic and one neurological) and then reflect how they would employ techniques for their most common clinical diagnosis.	
Total Contact Hours 10.0	

ential practical class where those new principles were practiced and developed. We selected techniques based on their approximation to methods utilized in conventional physical therapy to facilitate adoption and avoid having documentation be a barrier to implementation. Downloadable handouts for each module were available, as was an audio file for the practice class.

The curriculum focused on three limbs/domains of yoga: asana (postures), pranayama (breathing exercises), and *pratyahara* (drawing attention to senses inward to enable response rather than reaction). The course breakdown of modules was (1) introduction and orientation, (2) therapeutic exercise and asana, (3) breathing and pranayama, (4) pratyahara and fear avoidance with clinical applications, and (5) more clinical applications. Table 1 describes each

module. The research team tracked participant course progress weekly throughout the intervention. Email reminders were sent to participants every week and included an update on the participant's course progress and the course completion deadline.

Feasibility Outcomes

Feasibility was measured using Bowen et al.'s standards and guides for feasibility³¹ and focused on acceptability (i.e., how individuals react to the intervention, satisfaction), demand (i.e., use of selected intervention activities), and practicality (i.e., whether it can be delivered regardless of resources). Acceptability was measured at the end of the course using an investigator-developed satisfaction survey (i.e., acceptability of training course components and plans of future prescription of TY to patients). Demand was measured by how many PTs finished the 5-week course out of how many registered for the course. To measure practicality, we asked participants to repeat the baseline perceptions of TY survey (i.e., overcoming barriers, safety, confidence, and readiness to prescribe TY to patients) at postintervention. Our benchmarks included: (1) at least 70% of PTs would find the course acceptable; (2) at least 60% would finish the course (i.e., demand); and (3) there would be significant improvements in PTs' perceptions of TY.

Survey participants who completed the satisfaction survey and the postintervention perception survey received: (1) \$5 gift card, (2) free admission to a 15-week yoga training (Integrating Yoga Therapeutics into Rehabilitation), and (3) a certificate (awarded after completion) indicating completion of 10 contact hours of online education.

Data Extraction and Analysis

Once all of the survey responses were generated, data were extracted from the Qualtrics software into Microsoft Excel and Adobe Reader. To verify the validity of the extraction, data were checked for missing information and entry errors and were stored on password-protected computers.

Collected quantitative data were entered into the Statistical Package for Social Sciences (SPSS), version 22.0, for analysis. Descriptive statistics (mean \pm standard deviation [SD], 95% confidence interval [CI], frequencies, and percentages) were calculated for numerical and categorical variables. Changes from baseline to postintervention on perceptions of TY were analyzed using a Wilcoxon signed-rank test due to the ordinal nature (%) of the data. A p value ≤ 0.05 was considered statistically significant for all comparisons.

Questions that included the option *other* were analyzed using the qualitative data analysis software NVivo, produced by QSR International.

Results

Enrollment and Participants

A total of 192 individuals completed the eligibility survey. Of those, 64% ($n = 123$) were eligible and 36% ($n = 69$) were ineligible for the study. The most common reasons for ineligibility were not being a licensed PT ($n = 9$, 13%), prescription of TY to patients within the past 6 months ($n = 46$, 67%), and not residing in the United States ($n = 14$, 20%). The majority of those eligible ($n = 103$, 84%) completed informed consent forms as well as the baseline perception survey and were emailed instructions to register for the online training course. Ninety-five participants registered in the online training course (i.e., intervention). After removing those who did not register in the course ($n = 8$) or complete the course ($n = 35$, 37%), a total of 60 (63%) PTs completed the study and were included in the analysis. Supplementary Figure 1 (online only; access through iayt.org) describes eligibility and enrollment.

Participants reported residing in 18 states and attending 37 different PT schools throughout the United States. The majority of participants were female ($n = 54/60$, 90.0%), and more than half of the participants had graduated PT school within the previous 10 years ($n = 36/60$, 60.0%). The most common primary clinical focus areas reported by participants were orthopedics ($n = 31/60$, 51.7%) and neurology ($n = 11/60$, 18.3%), and the most common practice setting reported was outpatient rehabilitation ($n = 48/60$, 42.1%). More than one third of participants ($n = 22/60$, 36.6%) had been licensed PTs for at least 10 years, including 18.3% ($n = 11/60$) who had more than 20 years of experience in the field. See Table 2 for participant demographics.

Participant Experience with TY and Baseline Readiness

The majority of participants ($n = 49/60$, 81.7%) reported having personal experience with TY practice (Table 3). More than a third of PTs ($n = 39$, 38.2%) reported their exposure to the practice of TY from attending a yoga class. Nearly half of the participants ($n = 29/60$, 49.2%) reported the practice of TY in the previous month, including 23.7% ($n = 14/60$) who had practiced TY more than four times in the previous month. The majority of participants ($n = 50/60$, 83.3%) reported they did not receive education on the use of TY during PT school and that they were also not trained yoga instructors, teachers, or therapists ($n = 49/60$, 81.7%).

Prior to participating in the online training course, the majority of participants reported feeling not ready ($n = 19/60$, 31.7%) or somewhat ready ($n = 25/60$, 41.7%) to prescribe TY to their patients (Table 4). The majority of PTs

Table 2. Participant Demographics, *n* (%)

Mean age (y)	36.87
Gender	
Male	6 (10.0)
Female	54 (90.0)
Ethnicity (<i>n</i> = 62*)	
Asian or Asian-American	3 (4.8)
White or European-American	57 (91.9)
Arab or Non-Arab North African/Middle-Eastern	1 (1.6)
Biracial or Multiracial	1 (1.6)
PT school graduation year	
1980–1989	4 (6.7)
1990–1999	7 (11.7)
2000–2009	13 (21.7)
2010–2018	36 (60.0)
Years working as a licensed PT	
< 1	8 (13.3)
1–5	21 (35.0)
5–10	9 (15.0)
10–20	11 (18.3)
20+	11 (18.3)
Practice setting (<i>n</i> = 114*)	
Acute care	13 (11.4)
School	4 (3.5)
Wellness and fitness	8 (7.0)
Inpatient rehabilitation	6 (5.3)
Outpatient rehabilitation	48 (42.1)
Community-based program	1 (0.9)
Pediatrics	7 (6.1)
Geriatrics	7 (6.1)
Psychiatric care	1 (0.9)
Private practice	11 (9.6)
Other	8 (7.0)
Age group of primary practice	
Children (ages 0–18)	6 (10.0)
Adults (ages 19–65)	28 (46.7)
Older adults (ages 65+)	12 (20.0)
All ages	14 (23.3)
Clinical focus	
Chronic pain management	3 (5.0)
Oncology	2 (3.3)
Neurology	11 (18.3)
Orthopedics	31 (51.7)
Women's health	4 (6.7)
Cardiovascular pulmonary	4 (6.7)
Other	5 (8.3)
Practice time spent directly with patients	
< 25%	5 (8.3)
26%–50%	2 (3.3)
51%–75%	8 (13.3)
> 75%	45 (75.0)

*Participants selected all responses that applied.

Table 3. Personal Experience of Therapeutic Yoga (TY), *n* (%)

Personal experience with TY practice	
I have practiced in the past but not in the past year	10 (16.7)
I have practiced in the past but not in the past month	10 (16.7)
I have practiced once in the past month	8 (13.3)
I have practiced 2–4 times in the past month	7 (11.7)
I have practiced more than 4 times in the past month	14 (23.3)
Not applicable/I do not have any experience with TY practice	11 (18.3)
Years of personal TY practice	
< 1	8 (13.3)
1–5	21 (35.0)
5–10	13 (21.7)
10–20	6 (10.0)
20+	1 (1.7)
Not applicable/I have never practiced TY	11 (18.3)
Trained yoga instructor/teacher/therapist	
Yes	11 (18.3)
No	49 (81.7)
Exposure to the practice of TY (<i>n</i> = 102*)	
Attending a yoga class	39 (38.2)
Childhood education	2 (2.0)
Education at a college or university	10 (9.8)
Yoga workshop or training (online or in person)	14 (13.7)
Friend/colleague	17 (16.7)
Research journal	9 (8.8)
Not applicable/I have never been exposed to the practice of TY	11 (10.8)
Exposure to yoga used therapeutically (<i>n</i> = 87*)	
Friend/colleague	22 (25.3)
Organization of my practice	3 (3.4)
Yoga workshop or training (online or in person)	15 (17.2)
Research journal	7 (8.0)
In my experience practicing yoga	20 (23.0)
Not applicable/I have never been exposed to yoga used therapeutically	16 (18.4)
Other	4 (4.6)
Education received on the use of TY in PT school	
Yes	10 (16.7)
No	50 (83.3)

*Participants selected all responses that applied.

Table 4. Participants' Baseline Readiness to Prescribe Therapeutic Yoga (TY), *n* (%)

Personal readiness to prescribe TY to patients	
I do not feel ready	19 (31.7)
I feel somewhat ready	25 (41.7)
I feel ready	16 (26.7)
What would help you feel more ready to prescribe TY to your patients? (<i>n</i> = 148*)	
Receiving TY training	52 (35.1)
Practicing yoga myself	27 (18.2)
Attending a yoga-specific workshop	35 (23.6)
Teaching yoga as a registered yoga teacher	8 (5.4)
Teaching yoga as a certified yoga therapist	23 (15.5)
Other	3 (2.0)
Adequately trained and educated to use some yoga techniques therapeutically with patients	
Yes	13 (21.7)
No	47 (78.3)
Why do you not feel adequately trained and educated? (<i>n</i> = 123*)	
Lack of education/training	37 (30.1)
Education/training was too general or unspecific	18 (14.6)
Lack of safety	2 (1.6)
Lack of confidence	19 (15.4)
Lack of resources (continuing education benefits)	15 (12.2)
Lack of acceptability from the organization of my practice	5 (4.1)
Lack of personal acceptability	0 (0.0)
Lack of support from colleagues	1 (0.9)
Lack of personal TY experience	26 (21.1)
Other	0 (0.0)
Interest in obtaining knowledge and education on TY	
I am not interested	0 (0.0)
I am slightly interested	4 (6.7)
I am very interested	56 (93.3)
Preference for receiving knowledge and education on TY (<i>n</i> = 205*)	
Training online	54 (26.3)
Training in person	51 (24.9)
Yoga-specific workshop	46 (22.4)
As a part of formal PT education	19 (9.3)
Through a registered yoga teacher or certified yoga therapist training	35 (17.1)
Not applicable/I am not interested	0 (0.0)
Other	0 (0.0)
Clinic policies and procedures allowance for the prescription of TY	
Yes	59 (98.3)
No	1 (1.7)
Readiness of organization and administration of practice for the prescription of TY	
Yes	54 (90.0)
No	6 (10.0)

*Participants selected all responses that applied.

(*n* = 47/60, 78.3%) also reported not feeling adequately trained and educated to use some yoga techniques therapeutically with patients. PTs reported inadequate readiness due to a lack of education/training (*n* = 37/123, 30.1%) and personal yoga experience (*n* = 26/123, 21.2%), and agreed that they would feel more ready to implement TY if they were receiving TY training (*n* = 52/148, 35.1%) or attending a yoga-specific workshop (*n* = 35/148, 23.6%). All participants reported they were interested in obtaining knowledge and education on TY.

Feasibility

The majority of participants (*n* = 50/60, 83.3%) thought the training course was acceptable and were satisfied with the online training course (Table 5). Over half of participants reported the training course was beneficial in improving their knowledge on TY (*n* = 35/60, 58.3%). Almost all participants (*n* = 49/60, 81.7%) agreed that the training course prepared them to use some yoga techniques therapeutically with patients, and that they had the opportunity to practice the skills and procedures to use some yoga techniques therapeutically with patients (*n* = 43/60, 71.7%). The majority of participants (*n* = 53/60, 88.3%) planned to prescribe TY to their patients in the future, with the remaining participants (*n* = 7/60, 11.7%) unsure of their plans to prescribe TY to their patients. Participants reported (*n* = 21/57, 36.8%) confidence in prescribing other treatment approaches and not feeling adequately trained on TY (*n* = 15/57, 26.3%) as the greatest factors preventing their future prescription of TY to patients. Over half (*n* = 60/95, 63.1%) of PTs finished the online training course and the posttraining surveys and received incentives.

Significant pre–post differences were found in personal readiness to prescribe TY, ability to identify safety risks when prescribing TY, confidence to prescribe TY, current understanding and knowledge of TY, and feeling adequately trained and educated to use some form of TY techniques with patients (Table 6). No significant pre–post differences were found in increased confidence with personal yoga practice, recognition of the benefits to prescribing, or difficulty recognizing a significant change in a patient's condition from the prescription of TY.

Pre–Post Change in Perceived Barriers to Prescribing TY

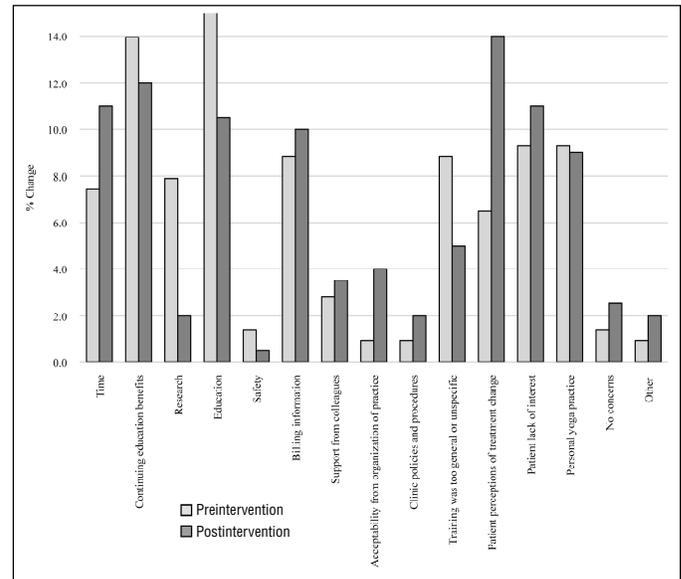
The greatest increases in PTs' perceived barriers included lack of time, lack of acceptability from organization of practice, clinic policies and procedures, patient perceptions of treatment change, and "other." The most common reductions were reported for the following perceived barriers: lack of research, lack of education, lack of ability to identify safety risks, and that training had been too general or unspecific. The most common improvement in perceived barriers

Table 5. Course Satisfaction Survey Responses, *n* (%)

Acceptability of (i.e., satisfaction with) training course	
Satisfied	50 (83.3)
Slightly satisfied	8 (13.3)
Neither satisfied nor dissatisfied	2 (3.3)
Slightly dissatisfied	0 (0.0)
Dissatisfied	0 (0.0)
Effectiveness of training course on improving personal readiness to use some yoga practices therapeutically	
Effective	37 (61.7)
Moderately effective	18 (30.0)
Somewhat effective	5 (8.3)
Not effective	0 (0.0)
Beneficial in improving knowledge on TY	
Beneficial	35 (58.3)
Moderately beneficial	15 (25.0)
Somewhat beneficial	10 (16.7)
Not beneficial	0 (0.0)
I had the opportunity in the training course to practice the skills and procedures to use some yoga techniques therapeutically with my patients	
Agree	43 (71.7)
Somewhat agree	14 (23.3)
Neither agree nor disagree	3 (5.0)
Somewhat disagree	0 (0.0)
Disagree	0 (0.0)
The training course prepared me to use some yoga techniques therapeutically with patients	
Agree	49 (81.7)
Somewhat agree	10 (16.7)
Neither agree nor disagree	1 (1.7)
Somewhat disagree	0 (0.0)
Disagree	0 (0.0)
Plans for future use of TY with patients	
I do not plan on prescribing TY to patients in the future	0 (0.0)
I am not sure if I will prescribe TY to patients in the future	7 (11.7)
I plan to prescribe TY to patients in the future	53 (88.3)
Preventing the prescription of TY to patients in the future (<i>n</i> = 57*)	
I do not feel adequately trained on TY	15 (26.3)
I do not feel safe prescribing TY to patients	0 (0.0)
I do not see the benefits of TY	0 (0.0)
My organization of practice will not allow the prescription of TY	2 (3.5)
I feel more confident prescribing other treatment approaches	21 (36.8)
I believe other treatment approaches are more beneficial	0 (0.0)
Other	19 (33.3)

*Participants selected all responses that applied. TY = therapeutic yoga.

Figure 1. Pre-Post Change in Perceived Barriers to Prescribing Therapeutic Yoga



was stated as, “I do not have any concerns prescribing TY to patients.” See Figure 1 for the pre–post changes in barriers.

Qualitative Data for Course Satisfaction

Qualitative data provided in textual form in comment boxes were summarized (Supplementary Table 1, online only; access through iayt.org). When participants were asked to explain their future plans on prescribing TY, 80.0% (*n* = 48/60) provided a response. Nearly one third (*n* = 18/60, 30.0%) planned to integrate TY into their practices in the future for all or most of their patients. PTs (*n* = 11/60, 18.3%) referred to specific TY techniques (e.g., asana, pranayama, or pratyahara) they planned to use in their practices in the future. Participants (*n* = 10/60, 16.7%) planned to use TY techniques with specific categories of patients, such as those with chronic pain and children. A group of participants (*n* = 6/60, 10.0%) also discussed their planned use of TY in more analytical approaches to patient care.

When asked what was preventing them from prescribing TY to their future patients, more than one third (*n* = 23/60, 38.3%) provided responses. Participants (*n* = 7/60, 11.7%) indicated that they felt more confident in TY’s use as a result of taking the online course. Participants said that their perceived resistance of patients or assumed difficulties in using TY were barriers to prescribing TY (*n* = 4/60, 6.7%). A few participants (*n* = 3/60, 5.0%) felt more confident using different approaches or perceived these to be more appropriate for their patients. Time constraints (*n* = 4/60, 6.7%) and uncertainty about how to bill patients for TY (*n* = 2/60, 3.3%) were also mentioned as factors preventing TY use.

Table 6. Pre–Post Perception Changes (%)

	Preintervention	Postintervention	Change	<i>p</i>
Personal readiness to prescribe TY	26.7	33.3	25	0.01*
Safety prescribing TY	46.7	100	114.3	0.00*
Confidence to prescribe TY	3.3	10	200	0.00*
Confidence in identifying safety risks for patients when prescribing TY	50	75	50	0.00*
Confidence in ability to use TY techniques with patients	40	75	87.5	0.00*
Current understanding/knowledge of TY and feeling adequately trained and educated to use TY	21.7	95	338.5	0.00*
Prescription of TY to patients could be beneficial	98.3	100	1.69	0.32
Difficulty recognizing change in patients' condition when prescribing TY	3.3	5	50	0.66
Increased confidence with personal yoga practice	40.7	45	10.6	0.44

*Statistically significant at $p < 0.05$.

TY = therapeutic yoga.

Finally, when asked which treatment approaches they felt more confident prescribing, one third of participants ($n = 20/60$, 33.3%) provided a response. Overall, 11 participants (18.3%) felt more confident prescribing traditional treatment approaches such as manual therapy, therapeutic exercise, neuromuscular reeducation, and gait training.

Discussion

The purposes of this study were to (1) assess the readiness of PTs not currently prescribing TY to patients, and (2) determine the feasibility (i.e., acceptability, demand, and practicality) of a 5-week online TY training to improve the readiness of PTs to utilize TY in their practices. Primary findings indicated most PTs felt they were not ready or somewhat ready to integrate TY prior to taking the online training. Furthermore, upon completion of the course, more than half of PTs thought the online training was acceptable.

Readiness to Prescribe TY

Prior to participating in the online training, a majority of participants reported feeling unready (31.7%) or somewhat ready (41.7%) to prescribe TY to their patients. To our knowledge, there is limited research assessing the readiness of PTs to integrate TY into their practices. In a survey with APTA members to determine how U.S. PTs use yoga therapeutically,²² no questions were asked pertaining to the PTs' personal readiness to integrate TY into treatment. Findings suggested the need for training opportunities for PTs to develop strategies to improve the use of TY in PT practice and to bridge the gap between PTs and TY as an adjunctive approach to care. PTs in our survey reported inadequate training due to a lack of education and personal yoga experience, and that they would feel more ready to implement TY if they were receiving TY training (35%) or attending a

yoga-specific workshop (24%). Findings from other studies^{32–36} support the effectiveness of a specific training to improve individuals' attitudes, knowledge, confidence, and willingness to utilize the techniques learned.

Feasibility

To our knowledge, no literature exists exploring the feasibility (i.e., acceptability) of an online TY training for PTs or other healthcare providers. A majority of PTs thought the online training was acceptable, meeting our benchmarks for satisfaction. PTs thought that the training improved their knowledge of TY and gave them an opportunity to practice skills and procedures to use some TY techniques. There were significant improvements in PTs' personal readiness to prescribe TY to their patients at the end of the online training as compared to baseline. There were significant improvements in the PTs' perception of their ability to safely prescribe TY after the training as compared to baseline, with every PT feeling safe prescribing TY.

Following the training course, one third of PTs reported that they planned to use TY with all or most of their patients, one fourth planned to use specific components of TY with patients (i.e., asana, pranayama, or pratyahara) or with specific patients they felt would benefit the most from TY (e.g., children or chronic pain patients), and the majority of PTs reported that they planned to incorporate a variety of different TY techniques extending beyond movement and breathing (e.g. relaxation, concentration, focus, awareness, postural control, visualization, mindfulness, self-reflection, etc.). One study³⁴ had findings similar to ours, with most PTs planning to use components of a training program to manage patients with chronic knee pain. In another study, those who attended a training about in-practice use and the efficacy of mind-body skills (i.e., biofeedback, autogenics, imagery, meditation, and exercise) reported applying mind-body skills in their professional or

personal practices 1 year following the training program.³⁰ The majority of PTs (88.3%) in our study reported planning to incorporate TY techniques with their patients after the training course.

More than half of PTs finished the online training course and the posttraining surveys (63.1%), meeting our benchmarks for attendance. Attendance rates in similar studies are better or comparable to those reported in this study.^{34–36} A study with a better course completion rate than ours reported 94% course completion for a required 32-contact-hour training course.³⁵ In another similar study with a 100% course completion rate, 64 PT students attended a required training as part of a course in communication with patients.³⁶ A noteworthy difference in these studies is that the trainings were course requirements in students' PT curricula. One study similar to the present study—with optional participation using a 5-day in-person training program for PTs related to treating chronic knee pain—had a completion rate similar to ours, with 74% ($n = 39/52$) of PTs completing the postintervention questionnaires.³⁴

Despite themselves feeling able to identify safety concerns, PTs perceived their patients would be resistant to TY or have difficulties participating in TY (i.e., wouldn't feel safe). Although we did not specifically ask PTs why their patients might not perceive TY as safe, a few PTs ($n = 4$) shared possible reasons: minimal health literacy in specific patient populations, lack of education about yoga, cognitive deficits making the prescription of multifaceted techniques difficult, and younger patients not being able to follow along with every component of TY.

There were significant improvements in confidence prescribing TY at the end of the online training, as well as improved confidence using TY techniques with patients and confidence identifying actual and/or potential safety risks. A handful of PTs specifically noted “nothing” is preventing them from prescribing TY to patients in the future. However, one third of PTs reported they felt more confident prescribing other treatment approaches or perceived these to be more appropriate for their patients after the training course. PTs in our study who felt more confident prescribing other treatment approaches specifically pointed to more traditional treatment modalities commonly used in PT settings, including manual therapy, therapeutic exercise, neuromuscular reeducation, and gait training, as well as a combination of TY approaches (e.g., pranayama and asana) and alternative methods such as meditation and visualization.

Current Understanding/Knowledge of TY

Our findings suggest the online training course improved PTs' knowledge and understanding of TY and feeling adequately trained and educated to use some form of TY tech-

niques with patients from baseline to postintervention; the majority of PTs reported having some understanding and knowledge of TY (92%), with all but three PTs (95%) feeling adequately prepared to use some form of TY techniques with patients. Our findings are comparable to those of a study in which at the beginning of training PTs realized limitations in their current knowledge and after the training had developed a deeper understanding of how to provide person-centered care.³⁷ PTs in Lawford et al.'s study³⁷ specifically noted that their knowledge and understanding increased their willingness and competence to integrate this approach with their patients. The literature also suggests that learning through personal experience is an important component of training that influences successful integration of new knowledge gained from the training.^{33,37} These findings are comparable to the experimental component of our training course, where PTs personally practiced various TY techniques to strengthen their knowledge and understanding of TY. Studies show this practice method facilitates the integration of new skills and suggests PTs in our study who felt adequately trained and educated after our course may be more inclined to integrate TY into their practices in the future.^{33,37} Training opportunities for PTs are essential to their knowledge and understanding of TY and to them feeling adequately trained and educated to utilize TY techniques in their practice. There is a need to continue building an evidence base for the adoption of TY into PT practice.

Qualitative Analysis

PTs thought that the training improved their knowledge of TY and gave them an opportunity to practice skills and procedures to use some TY techniques. The majority of PTs reported that they plan to incorporate a variety of different TY techniques extending beyond movement and breathing (e.g., relaxation, concentration, focus, awareness, postural control, visualization, mindfulness, self-reflection). Regardless of the acceptability of the online education, PTs perceived remaining barriers to the integration of TY into PT care, including the lack of time, clinic policies, and the acceptability to their organization of practice, that may contribute to their use of TY. Future adoptions of the training course should explore the readiness of the organization for implementing practices such as TY into PT and whether the instruction of yoga can be supported in a traditional clinical setting. The uncertainty about how to bill patients for TY was also mentioned as a factor preventing participants (3.3%) from using TY with patients. Providing information in the online training course on how to bill patients for TY may increase PTs' use of TY with their patients.

Although PTs felt safe prescribing TY to patients after completing the training, PTs perceived their patients would

be resistant to TY or have difficulties participating in TY. Some of the reasons expressed as barriers for the use TY in PT practice were: (1) minimal health literacy, (2) lack of patient education regarding yoga, (3) cognitive deficits, and (4) younger patients being unable to follow TY procedures. Participants also reported that they feel they need more training to prescribe TY to their patients, and that they are not convinced TY is more effective than other treatment approaches. PTs who reported they feel more confident prescribing other treatment approaches specifically pointed to more traditional treatment modalities, including manual therapy, therapeutic exercise, neuromuscular reeducation, and gait training.

Strengths and Limitations

Our feasibility benchmarks were successfully met, and our findings showed significant improvements from baseline to postintervention in personal readiness to prescribe TY, ability to identify safety risks when prescribing TY, confidence to prescribe TY, current understanding and knowledge of TY, and feeling adequately trained and educated to use some form of TY techniques with patients. To our knowledge, this is the first study to determine the feasibility of an online TY training curriculum for PTs. Despite the strengths of this study, its limitations should be considered before conclusions can be drawn.

First, although our recruitment methods through social media platforms and email listservs allowed us to have a broader reach, our response rate was low ($n = 192$). Individuals interested in TY may have been more likely to complete the eligibility survey than those who are not (i.e., self-selection bias). Our findings may therefore not be generalizable to the broader population of PTs. Second, we surveyed PTs immediately after they completed the training course, and whether their perceptions of our course and TY were sustained beyond that time is unclear. Third, this study was cross-sectional and therefore no causal relationships could be explored. Fourth, the majority of participants (81.7%) reported having personal experience with TY practice. Nearly half of the participants (49.2%) reported the practice of TY in the past month, including 23.7% who had practiced TY more than four times in the past month.

Similar studies have suggested that online trainings are well-attended, as they offer advantages to eliminate barriers often seen with attending in-person training,^{38–40} but that was not the case in this study, suggesting those with an inherent interest in TY were the ones completing the course. Additionally, participation in our study was optional, decreasing the motivation to finish the 5-week online training (i.e., lower compliance).

Future Research

Our study provides insight into the needs for training PTs to utilize TY in their practices in future research. Future research should explore the effect of TY training on the rates of PTs prescribing and using TY in PT practice.

Future studies should also explore the readiness of the organization for implementing practices such as TY into PT treatment, the specific barriers that affect readiness, and whether the instruction of TY can be supported in a traditional clinical setting. Demonstrating the readiness of the organization of practice may in turn provide strategies to address barriers that affect readiness (e.g., clinic policies, organizational constraints, time constraints, patient perceptions of treatment) and evidence on the efficacy of the application of TY within general PT practice settings.

Additionally, future studies may consider modifying or improving incentives to complete online TY training courses. Requiring a fee, instead of providing participants an incentive for completion, may increase attendance rates because participants would be required to purchase the training course themselves.

Finally, we did not reach out to the eligible participants who did not register or participants that did not complete the online training course. Implementing surveys to assess the reasons for not signing up or not finishing the course may provide insight to guide incentive structure in future studies.

Conclusions

The demonstration of both interest and execution of learning TY by PTs invites consideration of how PTs and other licensed healthcare professionals may interact with the yoga therapy profession. This study suggests there is an interest in incorporating TY into physical therapy practice that yoga practitioners and certifying agencies might pursue to increase the dissemination of these practices.

This was the first study to determine the feasibility of an online TY training for PTs and the readiness of PTs to prescribe TY after participating in the training. Our findings suggest a 5-week online TY training course is feasible in improving PTs' readiness to prescribe TY, confidence to prescribe TY and do so safely, current understanding/knowledge of TY, and feeling adequately trained and educated to use some form of TY techniques with patients. These findings are encouraging and suggest readiness of the PTs in our study to incorporate some form of TY techniques with their patients. Future studies should design trials to test the effectiveness of TY training and education opportunities with PTs to further advance the adoption of TY into PT practice.

Conflict-of-Interest Statement

There are no conflicts of interest.

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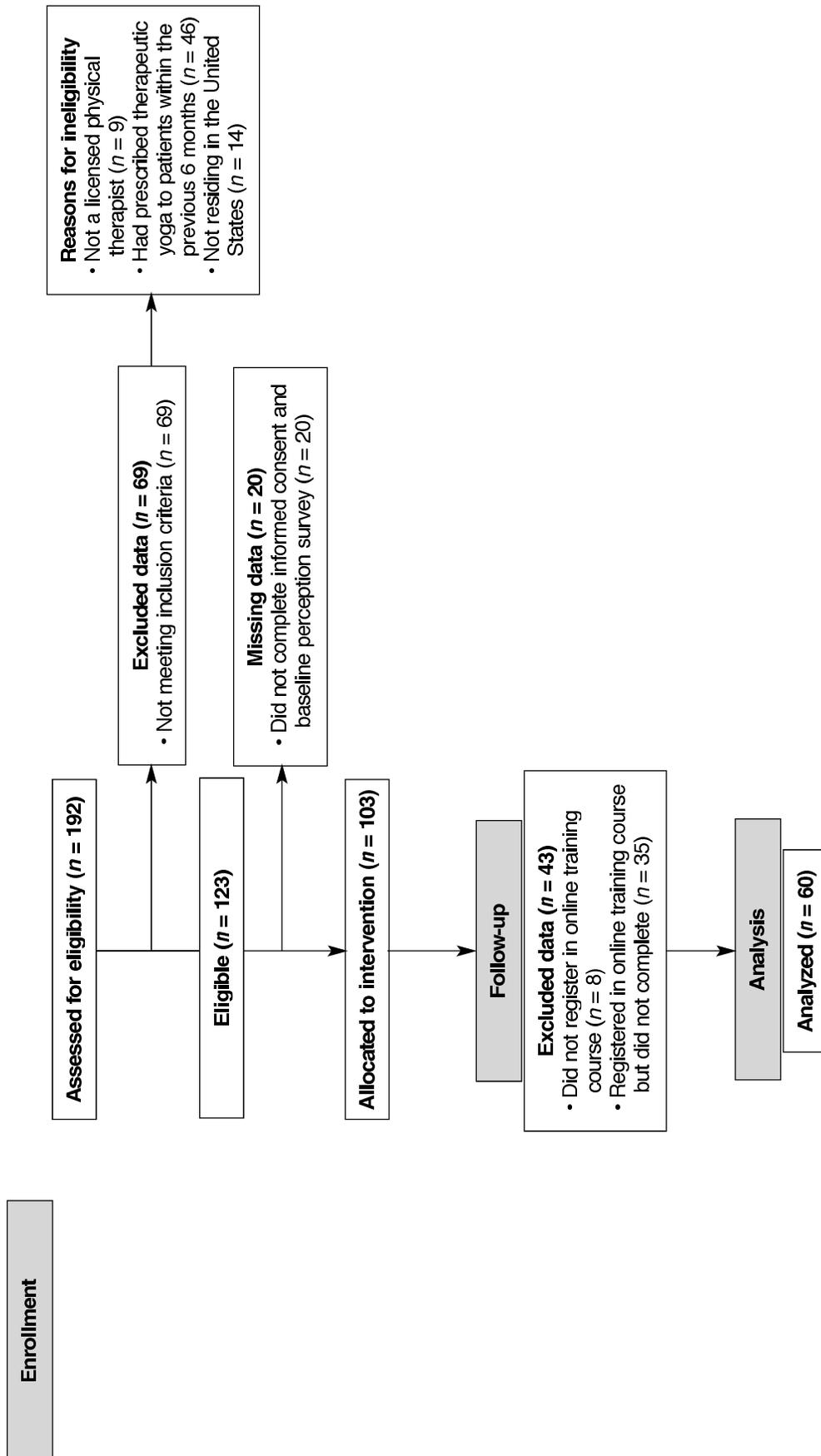
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Supplementary Figure 1. Intervention Eligibility and Enrollment



Supplementary Table 1. Qualitative Course Satisfaction Responses

Theme	Exemplary Quotes	<i>n</i>
Future plans to prescribe TY (<i>n</i> = 48)		
With all or most patients	<p>“I will do the breathing with EVERYONE—I think it helps with awareness and postural control.”</p> <p>“I work in a post-acute brain injury facility, and I plan to incorporate therapeutic yoga into my treatment to challenge balance, strength, endurance, attention/focus as well as mindfulness practice, pain and anxiety management.”</p> <p>“I am planning to incorporate what I learned into my clinical practice.”</p> <p>“Slow integration of the techniques with all or most of my patients.”</p>	18
Specific TY techniques	<p>“Depending on the patient, I see myself using breathing techniques, visual feedback/feed-forward techniques to improve awareness of positions and muscles used, as well as some components of asanas or the full asana for strength, flexibility, variability of exercise, and/or balance.”</p> <p>“I plan on prescribing breathing, different poses and having my patients focus on how their body feels as they are performing these activities.”</p> <p>“I plan on utilizing the breathing and relaxation techniques first then incorporate more of the asanas as part of the treatment plan.”</p>	11
With specific patients	<p>“I plan on focusing more on breathing and postural awareness with future patients, especially those with chronic pain.”</p> <p>“I have a few kids who I think could benefit from yoga for flexibility and mindfulness.”</p> <p>“I work . . . mostly in acute care with a few outpatient days during the week. I work with mainly cardiopulmonary patients, cystic fibrosis in particular, and the techniques and knowledge I gained will really help me prescribe therapies that I know my patients can tolerate and that will help.”</p>	10
Analytical approaches	<p>“Being more inquisitive to the underlying co-morbidities and potential influencing aspect of the biopsychosocial aspects of [whole-person] care while letting the patient self-identify the influence these items may have on their symptoms.”</p> <p>“Connecting the psychosocial with the physical interventions, as well as mental and emotional expectations and responses.”</p> <p>“I feel I will be able to use TY as both an evaluation and a treatment strategy, and even a test-retest as a within-session technique to assess benefit of various treatment approaches.”</p>	6
Need more training or knowledge	<p>“I do feel a bit overwhelmed with the scope of TY and feel like I don't have a good, holistic understanding of it yet. I feel like I would be more comfortable if I had an in-person mentor rather than trying to figure it out from an online course.”</p> <p>“I think I will incorporate TY but feel I need more training to incorporate it more than sporadically.”</p>	3

(continued on next page)

Supplementary Table 1. *continued from previous page*

Theme	Exemplary Quotes	n
Factors preventing the future prescription of TY (<i>n</i> = 23)		
Nothing is preventing them	“Nothing—I will be using more as I become comfortable with more.” “I feel more confident prescribing TY than at the start of this course, in addition to other treatment approaches I know have been beneficial.”	7
Resistance of patients or expected difficulties	“My patient population has poor health literacy and minimal education. I believe many of my patients will not be receptive to TY.” “The majority of my patients have cognitive deficits, which makes prescribing something that is multifaceted difficult.” “My patients are very young and may not be able to follow through with all of the aspects of TY.”	4
More confident using different approaches	“I am not convinced it is more effective than tai chi, qi gong or pilates, which I am more comfortable with.” “I don't know that it is applicable to all of the ortho conditions I see.” “I am more confident with other treatment approaches.”	3
Level of skills and knowledge	“I use some techniques, but want to feel more confident in my skill before I add more.”	2
Time constraints	“I need to figure out how to treat within the restrictions of our current schedule, which is treating 1–2 patients every 30 minutes in a busy setting.” “The volume of patients may limit the one-on-one practice of [TY] needed.”	4
Uncertain how to bill for patients	“I'm not sure how to bill it.” “Information on documentation and billing would potentially increase my use.”	2
Organization of practice	“No one else in my organization is practicing this way, so it is hard at times to step out of the norm.”	1
Treatment approaches you feel more confident prescribing (<i>n</i> = 20)		
Traditional approaches	“Standard therapeutic exercise, neuromuscular reeducation, manual therapy, therapeutic activities, as that is what I have utilized most so far in my practice as a physical therapist.” “A more standardized Western medicine approach (e.g., manual therapy, therapeutic exercises, etc.). Basic breathing exercises in more standard postures/easy movements.” “I feel more confident with my manual techniques and traditional [therapeutic exercise].”	11
TY approaches and/or alternative methods	“Pranayama, asana, dhyana. Meditation, visualization.” “Breathing combined with the asanas.”	7
Miscellaneous approaches	[Open-chain/closed-chain exercise and myofascial release.]	2

TY = therapeutic yoga.