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The Effect of Hatha Yoga on Doctor of Physical Therapy Students' Anxiety: A Narrative Review

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Abstract

Background and Purpose: Research provides evidence that students enrolled within higher education have reported a steady increase in anxiety for over the past decade. In particular, those students enrolled within graduate health science programs tend to have higher anxiety than students who are not. The purpose of this narrative review is to highlight the effectiveness of Hatha Yoga practice on decreasing anxiety in DPT Students. Hatha Yoga's holistic approach meets the demand for clinically useful, safe, patient acceptable and cost-effective forms of treatment for mental illness.

Results: A literature review was conducted using ProQuest, CINAHL, PubMed, and Google Scholar. The literature provides evidence that the practice of Hatha Yoga is an effective strategy in decreasing anxiety in graduate-level health students along with negating unwarranted side effects that other traditional options may present.

Discussion and Conclusion: The authors conclude that Hatha Yoga should be incorporated into DPT curriculums to assist with alleviating anxiety.

Keywords: Hatha yoga; Anxiety; Physical therapy student; Graduate student

Introduction

From a period of 2009 to 2014, university counseling centers reported an 89% increase in students seeking support in managing anxiety disorders [1]. Among the students pursuing support with anxiety, students enrolled within a healthcare program demonstrate higher anxiety levels compared to peers in a non-healthcare curriculum [2]. Unfortunately, common treatment for anxiety with medication often pose other complications for students. For example, there is always a risk/benefit consideration when utilizing medication, as some pharmacologic agents convey unwarranted side effects, sometimes far worse than the anxiety itself. In addition, non-pharmacologic treatment such as counseling may source a pronounced sum of financial burden for students [3]. Research indicates a growing concern for Doctor of Physical Therapy (DPT) graduate students experiencing increased anxiety, which correlates with attrition, poor academic performance, suicidal ideation, and a decrease in overall well-being. To date, there is an abundant amount of research involving medical, dental, and nursing students compared to the diminutive literature involving DPT students when discussing anxiety in the higher education arena [4-11]. Despite the limited literature involving anxiety within a DPT curriculum Macauley et. al. and Frank and Cassidy found that DPT students experience high levels of state and trait anxiety alike their medical colleagues. Frank and Cassidy's work reinforce the need for research on remedies to combat the anxiety students are experiencing within the DPT curriculum. Therefore, the purpose of this review is to highlight the potential effectiveness of Hatha Yoga practice on decreasing anxiety in DPT Students [2,12].

Methods

Articles for this review were found through ProQuest, CINAHL, PubMed, and Google Scholar databases. Items included in this analysis were: (a) state anxiety and trait anxiety, (b) anxiety and the DPT curriculum, and (c) Hatha Yoga. Various procedures were followed to ensure high quality articles were included in this review on Hatha Yoga and its impact on students' anxiety in the DPT curriculum. First, a comprehensive search of only peer-reviewed journals using the following search terms was performed: (a) Hatha Yoga, (b) anxiety, (c) physical therapy

student, and (d) graduate students. Secondly, four respected databases were searched, to which include (a) ProQuest, (b) CINAHL, (c) PubMed, and (d) Google Scholar. Lastly, key physical therapy education journals were searched independently to ensure all topics pertaining to Hatha Yoga and anxiety were included in this review.

Discussion

State anxiety and trait anxiety

Anxiety as an emotion can be broken down into a state anxiety characteristic along with a trait anxiety characteristic [10,13-19]. State anxiety is brought about by certain specific situations an individual can experience. Trait anxiety is the predisposition to become anxious [16]. Individuals, who experience high levels of trait anxiety, classify more situations as an emergency and therefore experience higher levels of state anxiety more frequently and more deeply than those individuals who demonstrate low levels of trait anxiety [16]. In relation to DPT students, trait anxiety is the student's baseline level of how they either mediate or intensify a situation [10]. On the other hand, state anxiety changes frequently based upon different stimuli presented to the student [17]. The following example provided by the authors assist the reader in understanding how state and trait anxiety come in to play. The example provides for two DPT students. Student "A" has a predisposed, genetically high level of trait anxiety. Student "B" has a low level of trait anxiety. Ideally, coming into their first graduate year within a DPT curriculum, both students report the same amount of anxiety. Both students during the first week experience the same events as both are in the same classes. At the end of the first week, student "A" finds the need to seek guidance from the counseling center because of experiencing an overwhelming amount of anxiety, while on the other hand, student "B" does not portray an overwhelming amount of anxiety. The rationale based upon the literature suggests that student "A", having a higher level of trait anxiety when compared to student "B", experienced a heightened level of state anxiety throughout the week, thus causing student "A" to view stimuli as more of an "emergency" than student "B". Fortunately, through repetition and practice, individuals can decrease their level of trait anxiety, thus lowering their response with state anxiety. In turn, an individual will be able to decipher more appropriately between emergent situations, to inhibit disillusioned anxious responses. Training the mind to think differently to initiate the reversal of thought process is associated to The Relaxation Response or becoming more resilient to anxiogenic factors [18]. Repetition and practice can make this response more habitual for individuals who display high levels of trait anxiety. Much of the research on reducing anxiety refers to Benson's work around the Relaxation Response. The main ideology of Benson's work focuses on meditation, biofeedback, relaxation, and exercise, all of which fall into modern day resiliency training [16]. Research indicates that each of these interventions can modify both psychological and physiological indicators of stress. Meditation, biofeedback, relaxation and controlled mental focus are all main components consistent with Hatha Yoga practice [18]. To date, there is an abundant amount of information regarding the efficacy of mindfulness practice in association with medical and nursing students [19]. Mindfulness practice is an umbrella term in which incorporates many different forms of relaxation. Within the literature, mindfulness practice seems to combine and compare numerous techniques to reduce anxiety, making it difficult to analyze the specific effects of yoga practice. To date, no single study has examined the beneficial effects of Hatha Yoga practice amongst DPT graduate students. For this reason, combined with the author's interest regarding the mind body aspects of yoga, the author has developed his research interest on examining the efficacy of Hatha Yoga practice on DPT student's anxiety.

Anxiety and the DPT curriculum

Anxiety amongst college health professions has been a topic of concern in the realm of higher education for many decades. Numerous studies have reported that students enrolled in health science programs report higher perceived stress and lower quality of life (QOL) than those in other disciplines. In the United States, the American Physical Therapy Association (APTA) has mandated all physical therapy programs to be at the doctoral level by 2020 [20-24]. The following literature stream will describe the development of rigor involved within the curriculum of the DPT degree leading to the cause of excessive anxiety as well as anxiety's negative affect amongst DPT students [25].

Rigor of academia

Prior to acceptance into a DPT program, students must meet numerous prerequisite requirements along with compiling a competitive application. After acceptance into a program, students must deal with the overwhelming difficulty of learning a copious amount of material, while maintaining a minimum grade point average to maintain enrollment. Unlike many undergraduate degrees, the transition into the DPT curriculum presents the student with many anxiogenic challenges consisting of cadaveric dissection, objectively structured clinical examinations, and clinical practice [12,26].

Objectively structured clinical exams (OSCEs)

Unlike most undergraduate programs, the curriculum of Physical Therapy consists of OSCEs. Often times, the DPT curriculum is the student's first experience with OSCEs, and as a result, numerous challenges are presented to the student, creating a great deal of anxiety [27,28]. Although OSCE's vary in structure and duration, each typically includes a mock patient and a specific time limit within which the student must demonstrate competency for a specific skill, all along with being observed and graded on their performance [27]. OSCEs are commonly introduced prior to the student proceeding to clinical internship

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to prepare the student accordingly for clinical practice. Despite their potential benefits, OSCEs require more preparation than written examinations and are a cause of anxiety for students [29]. Previous research has cautioned that although simulating a mock environment of clinical practice may be beneficial in some respects the anxiety felt by the student may be too great, thus affecting the validity of the actual competence of the exam. Anxiety experienced throughout (OSCE) examinations correlate to low self-esteem, depression, and reduced sleep all of which could lead to poor academic performance [25-28]. OSCEs have an important role in objective assessment of a student's ability to master a subject, however, concern stems from the amount of anxiety caused to the student [28]. In addition to both cadaveric dissection and OSCEs, the DPT curriculum is unique in that it hosts clinical internships for students. Although fundamental clinical learning takes place under the guidance of a licensed physical therapist, many students report anxiety while on their clinical rotations.

Clinical internship

Clinical internships are essential for DPT students to develop critical thinking skills and practical knowledge of the profession prior to graduation. Not only do they prepare the DPT student for times of uncertainty, but also unpredictability when treating patients [29-30]. According to the Commission on Accreditation in Physical Therapy Education (CAPTE), a professional DPT curriculum is comprised of over 20% clinical education experience [31]. Because of the numerous benefits, the percentage of clinical education has been increasing over the past several years [31]. Although clinical internships provide numerous benefits towards the growth of the DPT student, the experience is often of anxiogenic nature as students often struggle with the fact that they are away from home or the institution, learning under the guidance of a licensed Physical Therapist [32-36]. Clinical internships not only place the DPT student in a vulnerable setting, but also in a situation of developing a close relationship with a well-trained professional, as a successful internship can be highly based upon the degree of relationship between the DPT student and their Clinical Instructor (CI) [33]. Because of its high prevalence of anxiety for DPT students, Jacob & Einsten (2016) suggested that CI's become more aware of signs and symptoms of anxiety and ways to manage anxiety, in order to assist the DPT student with this transition [37].

Effects of anxiety amongst DPT students

Increased academic demand and financial debt convey numerous challenges associated with graduate-level academia. Students realize the importance of success and identify the limited liability for error. Psychological distress is common among graduate students and manifests in a variety of ways including burnout, depression, stress, low mental quality of life, and fatigue [38]. Students, who experience a more considerable amount of distress, also experience a higher risk of suicidal ideation or thoughts of dropping out [38]. In turn, students engaging in a rigorous, complex, graduate program are at increased risk for developing anxiety disorders, particularly those graduate students of a Doctoral of Physical Therapy (DPT) program [2]. Macauley and Plummer support the clause that graduate students enrolled in a DPT program endure a great amount of stress and anxiety based upon the results of their cross-sectional descriptive study on 135 first and second year DPT students at MGH Institute of Health Professionals. Data gathered concluded that 36% of the students demonstrated moderately high Scale (WTAS). In addition, the authors provided information discussing that students enrolled within a DPT program experience a significant amount of anxiety compared to age and gender-based norms [2]. Frank and Cassidy performed a study focusing on the separation of state and trait anxiety and its effects on DPT students [12]. In addition to proving that DPT students suffer a great deal of anxiety when compared to other students, this study investigated the relationship among measures of stress, anxiety, and academic performance in entry-level DPT students during the didactic portion of their curriculum in all graduate levels, across three separate DPT programs. Based on their conclusion of data from the Perceived Stress Scale-10 (PSS-10), the authors reported that trait anxiety seems an excellent place to start when attempting to decrease the amount of anxiety experienced by DPT students. Frank and Cassidy explain that a decrease in trait anxiety would lessen the state of anxiety DPT student's experience. This argument coincides with the early work of Benson's Relaxation Response, in the sense that through training, an individual can lower the amount of trait anxiety, thus lowering their response to stressful stimuli (state anxiety) [12].

Coronavirus disease (COVID-19)

On December 31, 2019, the World Health Organization (WHO) China Country Office was informed of cases of pneumonia from an unknown cause detected in Wuhan City, Hubei Province of China [39]. As of July 13, 2020, WHO report informs of 12.91 million cases of COVID-19 disease globally, with 561 thousand deaths [40]. Additionally, in March 2020, WHO announced COVID-19 outbreak of a global pandemic. Now during this unprecedented time, the shift towards online learning has created a new anxiogenic situation for students resulting in a significant negative impact on mental and physical wellbeing [41].

Secondary to the abrupt shift towards an online learning platform, in response to COVID-19 safety guidelines, Wang & Zhao implemented a survey to 3,800 university students regarding anxiety connected with online learning [42]. From their results, Wang & Zhao (2020) concluded that university students demonstrated a much higher level of anxiety than the general population after the virus outbreak. In addition, Wang & Zhao concluded that of those university students who exhibited an increase in reported anxiety, medical students and female students reported a greater increase in anxiety when compared to non-medical students and male students. Although there are

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copious amounts of factors contributing to this spike in anxiety, the main stressors include: (a) adaptation to new learning methods and materials within remote teaching, (b) financial hardships and constraints, and (c) the feeling of uncertainty about the future of academics and career development [42].

Hatha yoga

The most common form of Yoga practice in the United States is Hatha yoga [43]. Originating over 40 centuries ago in India, Hatha Yoga delivers a mind-body practice that originates from the groundwork of mindfulness [44,45]. Written by an Indian native named Patanjali around two thousand years ago, The Yoga Sutras, a sacred text, consists of most of what modern day yoga practice entails [46]. Although most of the western world correlates yoga to physical postures (asanas), asanas nearly make up a small percentage of yoga practice. Most of the yoga practice evolves around an understanding of mastery over the mind [44]. This concept of mastery over the mind, or in other words a meditative state, was termed Hatha Yoga by Patanjali [44]. Hatha Yoga is an integration of three communicative components consisting of asanas, pranayama, and dhyana. Asanas portray the physical postures held in yoga that tend to increase focus and self-awareness for the practitioner [44]. Pranayama is the practice of demonstrating focused breathing techniques [44,47]. Dhyana is the meditative component to Hatha Yoga practice [44,48]. Below, the author provides a rich description of all three components of Hatha Yoga.

Hatha yoga and resiliency training

According to several authors, resiliency is the ability to overcome and adapt more appropriately to uncertain, stressful stimuli in a timely fashion so that "psychophysiological resources are conserved" [49-53]. The mind-body practice of Hatha Yoga requires a practitioner to focus attention and their breath during and in transition of physical postures, encouraging one to implement focus on the present state, thus dismissing psychological discomfort [54]. In turn, with repetitious practice, the practitioner increases resiliency and habituation to stressful stimuli, thus reducing anxiety [55,56].

Resiliency and physical therapy education

Given that physical therapy students experience high stress levels often leading to undesirable concerns, it is important to explore methods to assist students with reducing such stressors. Because college students have been shown to benefit from programs that assist in learning of strategies to manage stress and enhance resiliency providing physical therapy students with tools to improve psychological resilience deems necessary [57-60]. In a recent exploratory study of 43 physical therapy students performed by Mejia-Downs comparing the effectiveness of mindfulness training to levels of resiliency, Mejia-Downs concluded that the group receiving intervention demonstrated "significantly greater increases in resiliency". Mejia-Downs' study found that lower stress levels, increased positivity, and greater coping abilities predicted greater resilience in DPT students. For this reason, the author has chosen to utilize Hatha Yoga practice within this study secondary to its numerous benefits, in particular with constructing resiliency [61].

Efficacy of a six-week period of hatha yoga in graduate students

Several studies have examined the favorable results of Hatha Yoga practice on reducing anxiety, practicing one time per week, over the course of six weeks [62-64]. Several intervention studies have been performed using pre-test and post-test data for comparison when investigating Hatha Yoga and the effect on anxiety. Prasad, Varrey, and Sisti performed a pre-test/post-test study on 27 medical students and found that anxiety decreased after performing Hatha Yoga one time per week, over the course of six weeks. In this study, not only did participants report a decrease in anxiety, but also an increase in happiness, positivity, personal satisfaction, and self-confidence from baseline to the end of intervention. The participants also reported improvements with the feeling of being fatigued [62]. The authors utilized the perceived stress scale-10 (PSS-10) as their outcome measure in a pre-test, post-test fashion. Lemay, Hoolahan, and Buchanan performed a pre-test/post-test study on 17 doctoral of pharmacy students and found that anxiety decreased after performing yoga one time per week, over the course of six weeks. Because of the remarkable results shown from this study on decreasing anxiety, the authors implemented the funding required to provide yoga classes to PharmD students once per week, for a total of six weeks within their curriculum of study. The authors for this study utilized the Beck Anxiety Inventory (BAI), Perceived Stress Scale-10 (PSS-10), and the Five Facet Mindfulness Questionairre (FFMQ) [63]. Kindel and Rafoth performed a pre-test/post-test study on 32 Doctoral of Physical Therapy (DPT) Students and found that education and instruction on meditation decreased reported anxiety in accordance with the Perceived Stress Scale-10 (PSS-10). The authors of this study did not incorporate yoga practice, however included meditational aspects based on Eastern Buddhist teachings. The time of intervention was once per week, for a total of six weeks [64].

Conclusion

Hatha Yoga has shown to be a beneficial strategy in reducing anxiety in graduate students [62-64]. In particular, it has been shown to decrease anxiety and stress, but also was shown to increase reports of happiness, positivity, personal satisfaction, and self-confidence from the use of objective outcome measures [64]. Thus, discussion of performing Hatha Yoga while enrolled in a DPT program is needed. One possibility is providing Hatha Yoga as an intervention to reduce anxiety through the curriculum as an adjunct or supplemental intervention for students while enrolled in their respective DPT programs. This could help increase examinations scores in the didactic setting and improve learning during students' clinical experiences, as they would be

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able to be more present and alert due to deceased anxiety and stress, leading to a more focused student. Although a certain level of stress is required to grow and, for some individuals, to be optimally productive, abundant stress levels can result in adverse health outcomes [13,65]. It is the expectation for students enrolled in clinically oriented graduate programs to complete rigorous amounts of academic work while taking part in patient management and care. In turn, this combination creates a great deal of anxiety for graduate health students [66]. Many undergraduate and graduate students have identified anxiety as an essential problem they want help in dealing with. Campus communities reach over half of young adults and thus represent unique opportunities to address mental health issues in this critical age group [67]. The demand for clinically useful, safe, patient acceptable and cost-effective forms of treatment for mental illness is growing. The literature provides evidence that the practice of Hatha Yoga is an effective strategy in decreasing anxiety in graduate-level health students as well as negates any unwarranted side effects that traditional forms of treatment may present [68]. There were numerous limitations that were listed for all studies included in this scoping review. All studies were unable to blind participants in their respective studies. An additional limitation cited by the included studies was the relatively small sample sizes used. The inability to blind participants and using a small sample size, diminishes the generalizability of the studies. Future studies should include larger sample sizes and the ability to blind participants**.** This would improve the overall generalizability of the studies and improve external validity for future research.

Conflict of Interest

The authors report no economic interest or any conflict of interest.

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