

PILOT STUDY

Impact of Stress Management Coaching for Graduate Students in a Doctorate of Physical Therapy Program: A Mixed Methods Pilot Study

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ABSTRACT

Study Design: The purpose of this study was to determine the acute and long term impact of a coaching program for doctoral physical therapy students. A mixed methods approach was used to explore a stress management and life skills enhancement coaching program implemented during the first year of graduate school. We hypothesized that the intervention would reduce students' perceived stress and be sustained throughout the following year of the DPT program. **Objectives:** Determine the impact of a 7 session wellness coaching program for doctoral physical therapy (DPT) students in order to reduce perceived stress. **Background:** Research shows that academic concerns are the major stressors in graduate physical therapy programs as students deal with emotional, financial, and social stressors. Curriculum stresses, inadequate stress management strategies, and a lack of concern for personal wellness have been reported in the literature however, no studies have explored the use of stress management wellness coaching for DPT students. **Methods and Measures:** Twenty first year graduate students were recruited from an accredited DPT program and received 7 weekly 75 minute group coaching sessions during their first semester. The group completed pre-post surveys for three consecutive semesters on measures of stress and self-efficacy: *Student Stress Scale (SSS)*, *Perceived Stress Scale (PSS)*, *Exercise Self-Efficacy Scale (ESES)*. Coaching sessions included visualization techniques, breathing, yoga, and discussion. Qualitative questions included the subjective experience of participants throughout the coaching intervention. **Results:** SPSS 18.0 was used to analyze a multivariate, three semesters by two measurement levels (pre and post) for the 3 primary dependent measures. When the trend components of the interaction were decomposed the linear by linear component was dominant indicating a consistent decrease over time. The PSS showed reliable efforts for all the component variables, semester, pre-post and the interaction. The interaction also showed a strong linear by linear affect consistent with the findings of the SSS. No changes were found with ESES. Positive frequency of responses was noted in the qualitative responses to greater stress management and personal well being throughout the DPT curriculum. **Conclusion:** Preliminary results of a 7-week wellness coaching program demonstrated improvements in the areas of perceived student stress and were sustained for one year after intervention. Further randomized controlled trials are needed to confirm the results of this study.

Background

Student stressors can be thought of as resulting from an imbalance between demands and resources or as occurring when pressure exceeds one's perceived ability to cope in school¹. In order to cope with this imbalance, stress management was developed based on the principle that stress

is not a direct response to a stressor; rather one's ability to properly perceive the demand, negotiate the stress response and willingly change the outcome, thus controlling stress. This interpretation of stress management, known as the transactional model, converges the interaction between people and their

external environment¹ and is the underpinning to coaching strategies used as an intervention. This suggests that stress can be reduced by allowing students to change their perceptions of school stressors and provide them with coping strategies to improve their confidence in the ability to control the stressor.

The new field of health and wellness coaching (WC) is based on the growing science of coaching psychology which draws from 15 or more theories or evidence-based domains, including the transtheoretical model, transactional model, motivational interviewing and appreciative inquiry. WC is a humanistic, growth-promoting relationship, designed for constructive development. A growth promoting relationship refers to a non-judgmental approach where the coach demonstrates empathy, utilizing open questions, mindful listening, and reflections to engage the client to encourage them to reach their individual goals. Coaching seeks to foster this growth-promoting relationship which supports peak health and well-being, as defined by the individual. A coach facilitates discussion and focus on what matters most and co-creates a vision and realistic plan that works within the framework of his or her life, enlisting the individual as their own expert. Coaches help individuals design plans which leverage individual strengths, and engage social and environmental support to build success, and sustainable lifestyle or behavioral change. Coaching focuses on building self-efficacy and autonomy from a strength-based approach that encourages the individual to think about what is going well (versus what is wrong-assets vs. pathology), where they have been successful in the past, and what will support success in the future. The coach then supports the client to facilitate changes over time, and take consistent action through the challenges they may encounter, utilizing a variety of tools from domains listed above².

Stressors in Physical Therapy Curriculum

Graduate student education is demanding and stressful, especially in the medical field. According to W.C. Leung¹⁴, medical graduates are required to show originality, knowledge application, and awareness of critical issues on a higher level than undergraduates¹⁵. Emotional and physical symptoms related to stress are greater in medical graduate students, similar to those in physical therapy programs, than those in the general college population¹⁶. Physical therapy students experience high levels of academic stress. Students report that academic concerns, such as the amount of learning and the demands to succeed, are the major stressors in graduate physical therapy programs¹⁶. Students state they consider academic stress to occur “somewhat” and “quite a bit” in their experience. It has been found that academic stressors are strongly correlated with “perceived course difficulty”¹⁶. Students in a master’s of physical therapy program in Australia reported significantly higher stress levels, than those in a bachelor’s program¹⁷. Another study, in a related field, studied the perceived stress of entry-level master’s occupational therapy students¹⁸. When interviewed, the student response expressed being overwhelmed, unsure of curriculum expectations and desired more hands-on experience in hopes of further improving their education. These stressors impacted educational performance, in addition to personal life and wellbeing. Students enrolled in an entry-level graduate program experience more stress than the average student¹⁹.

In addition to academic stress, physical therapy students significantly reported financial and personal concerns during their graduate education. The amount of material and the time to learn, conflict with personal activities and create a struggle to balance the

two obstacles¹⁶. Long hours in lecture, lab, or clinic do not allow for full-time or even part-time jobs, thus creating a financial burden to the student. One study discovered specific themes that negatively affect medical students, including inadequate stress management strategies and a lack of concern for personal wellness¹⁹. They found that students' considered their physical and emotional health to be "good" at the beginning of their education, but as the years of education progressed; symptoms such as anxiety, fatigue, headache, and difficulties in sleeping were common.

It is important to be aware of continued stressors because it negatively affects students' overall self-perception and physical health²⁰. While there are many stress management strategies, only one study explored benefits of undergraduate nursing students using a coaching method¹³, and none have examined coaching interventions for graduate physical therapy students. Therefore, the purpose of this study was to determine the acute and long term impact of a coaching program for doctoral physical therapy students. A qualitative inquiry was used to further elucidate subjective outcomes of coaching beyond the standardized measures. This study explored a stress management and life skills enhancement coaching program implemented during the first year of graduate school. Successful stress management depends on class participation, amount of academic curriculum, and the ability to schedule adequate time for coaching. We hypothesized that the intervention would reduce students' perceived stress and be sustained throughout the following year of the DPT program.

Methods

Sample

Graduate students of an accredited physical therapy doctoral program, at a state college

in southern New Jersey, were asked to participate in a coaching program based on the widely implemented Circle of Life Health and Wellness Coaching System. The physical therapy doctoral program has an average class size of 25 students per year. Twenty out of twenty-four first year students agreed to voluntarily participate in a wellness coaching program over the course of two years. The Richard Stockton College of New Jersey Institutional Review board approved the research protocol and supported the participation of student volunteers.

Circle of Life Health and Wellness Coaching System

For this trial, we implemented the Circle of Life Health and Wellness Coaching which was originated in the 1980s and has been refined through multiple applications in a wide array of environments with diverse populations – schools, universities, hospitals, social service agencies, corporations, fitness centers and military installations. The Circle of Life Coaching System is an assets-based approach based on maximizing that which is working to enhance function, rather than targeting and trying to fix what is broken or under-functioning.

The Circle of Life Coaching System starts with an assets-oriented assessment and moves through a progress referenced as the "Blueprint for Success" which includes establishing intent, setting goals, acknowledging challenges, segmenting to succinct action steps, creating inner dialogue phrases (affirmations) and establishing specific points of accountability. This can be either one-on-one with the coach or in a group and can occur either live or telephonically. This system, refined over many trials, is a process in which the Circle of Life Coaching System is designed to become "embedded or entrained in an individual's lifestyle and living process"³.

Implementation Wellness Coaching for DPT Students

Circle of Life Health and Wellness Coaching sessions were held for 75 minutes during the spring semester for 7 sessions. The 7 sessions were held every other week over the course of a 16 week semester, excluding the first, last, and spring recess weeks of the semester.

Wellness Coaching sessions included visualization techniques, breathing, yoga, and discussion groups which revolved around a specific topic (Table 1). They were lead by a PT professor and trained coach. The initial session included self-evaluation using the Circle of Life Assessment (Figure 1). Each student was asked to self-evaluate and identify areas of strength and vulnerability that appeared on the Circle of Life Assessment. Group discussion and guided visualization concluded the session.

The following 6 sessions, throughout the semester, combined a group discussion of the weekly topic, self-care techniques and visualization techniques (Table 1). Each session began with a group check in and an introduction to the weekly topic, lasting 15 minutes. For the next 30 minutes, the participants gathered in pairs to brainstorm possibilities to enhance and plan, according to the topic. The paired groups created self-affirmations and shared them with their partners to allow the students to be accountable and encourage one another in and out of the sessions. The participants regrouped as a whole for another 15 minutes, to discuss each other's ideas for change and how to implement the new behaviors and habits. For the final 15 minutes the participants explored self-care methods, such as gentle body movement (yoga), visualization, meditation or self-massage concluded the session. Body-

CIRCLE OF LIFE ASSESSMENT®

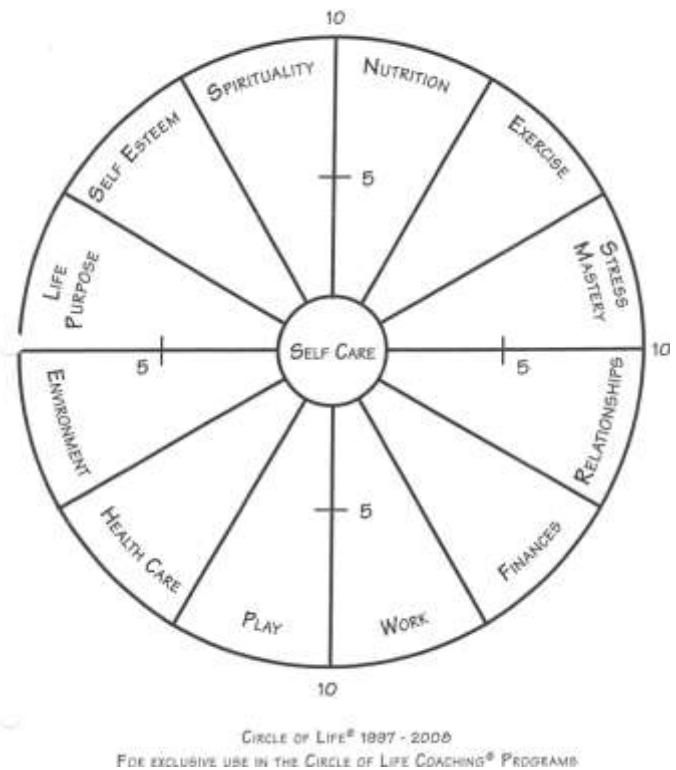


Figure 1: The Circle of Life Assessment used during the coaching sessions.

awareness techniques, such as these, were conducted to challenge the students' physical body, but allowed the mental and physiological self to relax and rejuvenate to continue the day with less stress. Continued impact of coaching extended to the two subsequent semesters of the DPT program to measure sustainability and effectiveness of the 7 week coaching sessions. During the following two semesters, students received small mini coaching sessions and weekly reminders to continue to integrate skills learned in the seven week coaching session. This included 10 to 15 minute weekly, formal and informal personal reminders during class time, to incorporate skills attained for stress management. At the end of each semester, students were assessed using the same baseline scales.

Table 1: Summary of Initial Wellness Coaching Sessions

| Session | Topic of Discussion | Discussion Details | Self-Care Techniques | Visualization |
|---------|--|---|---|--|
| 1 | Intro to Wellness coaching and Self-Evaluation | <ul style="list-style-type: none"> Paired with accountability partners Self-Evaluation using Circle of Life to determine strengths and weaknesses How "ready" are you to implement change? | <ul style="list-style-type: none"> Body Scan Detect areas that carry stress throughout the body | <ul style="list-style-type: none"> Life Boat Visualization Who is in our boat? Where is it going? How does that translate into who we are? |
| 2 | Readiness for Change in Stressful Lifestyle | <ul style="list-style-type: none"> Designed blueprint for change Created a positive affirmation to promote adherence to goal | <ul style="list-style-type: none"> Body Scan Creating stability throughout the spine and in relation to the surrounding environment | <ul style="list-style-type: none"> Deep Breathing with posture to promote relaxation |
| 3 | Relationships/Communication | <ul style="list-style-type: none"> Non-Verbal communication techniques in professional and personal relationships Discussed progress of goals to reduce stress | <ul style="list-style-type: none"> Deep Breathing Yoga Pose-Tree Pose | <ul style="list-style-type: none"> Grounding ourselves to our affirmation and goals |
| 4 | Work/Finances | <ul style="list-style-type: none"> Ideal Job environment Financial Concerns as student | <ul style="list-style-type: none"> Deep Breathing | <ul style="list-style-type: none"> Ideal environment to work in the future |
| 5 | Health Care/Exercise | <ul style="list-style-type: none"> Current Health Status Parent's/Loved one's health status and living wills Make routine doctor appointments | <ul style="list-style-type: none"> Yoga-Tree pose and Mountain pose | <ul style="list-style-type: none"> How would a healthy lifestyle look now as a PT student? How to add time to schedule to have health lifestyle, including exercise? |
| 6 | Environment | <ul style="list-style-type: none"> Positive and Negative interaction with specific environments Developing an environment to promote peace and rejuvenation | <ul style="list-style-type: none"> Self-Massage of hands and ears | <ul style="list-style-type: none"> Visualize area in home and school that best promote a calm environment to relax |
| 7 | Life Purpose | <ul style="list-style-type: none"> Conclusion of progress towards goal | <ul style="list-style-type: none"> Yoga- Mountain pose, Chair pose, Tree pose | <ul style="list-style-type: none"> What is our future purpose? What would be enjoyable and purposeful in the future? |

Table 2: Pre/Post Semester Scale Measures

| Pre/Post Semester Descriptive Data | Student Stress Scale | | Perceived Stress Scale | | Exercise Self-Efficacy Scale | |
|-------------------------------------|----------------------|--------------------|------------------------|--------------------|------------------------------|--------------------|
| | Mean (N=20) | Standard Deviation | Mean (N=20) | Standard Deviation | Mean (N=20) | Standard Deviation |
| Pre-Test Spring Semester, 1st year | 187.33 | 84.53 | 2.25 | 0.25 | 68.23 | 18.58 |
| Post-Test Spring Semester, 1st year | 136.56 | 97.40 | 2.25 | 0.31 | 69.58 | 16.36 |
| Pre-Test Fall Semester, 2nd year | 177.17 | 81.43 | 2.31 | 0.30 | 66.47 | 15.80 |
| Post-Test Fall Semester, 2nd year | 134.50 | 85.69 | 2.30 | 0.26 | 68.46 | 16.78 |
| Pre-Test Spring Semester, 2nd year | 148.17 | 92.17 | 1.78 | 0.77 | 67.59 | 23.32 |
| Post-Test Spring Semester, 2nd year | 148.61 | 83.14 | 2.31 | 0.26 | 64.90 | 18.39 |

Outcome Measures

Volunteers who participated signed the appropriate approved IRB informed consent documents in order to participate. The group completed pre-post surveys for each of three consecutive semesters on measures of stress and self-efficacy. Instruments included: *Student Stress Scale (SSS)*, *Perceived Stress Scale (PSS)*, *Exercise Self-Efficacy Scale (ESES)*. Students completed the surveys while a researcher was present to answer any questions that may be of concern to the students. Pre-surveys were administered at the second week of each semester. The post-surveys were administered the 2 weeks prior to the end of semester, as not to interfere with examination schedules and the inevitable increase in student stress.

Student Stress Scale assesses the perceived stress levels of college students. It focuses on specific items, such as educational, financial, and personal concerns that create stress specific to college students. The survey is constructed of 31 questions that are given specific points and tallied for a total score. The total stress score corresponds to health risk. Scores of 300 or greater indicate relatively high health risk. Scores between 150 and 300 have about a 50/50 change of serious health change within two years. Scores below 150 have a 1 in 3 change of serious health change. The reliability estimate of 0.72.²¹

Perceived stress scale is a widely respected and often utilized assessment that evaluates one's stressful feelings and thoughts during the past month. The ten item scale evaluates the frequency of stress on a five point scale ranging from "never" to "very often." The total mean score directly correlates with psychological stress and the physical symptoms observed²². Therefore, as the score increases, the participants' psychological stress and the physical symptoms observed will also increase. This form of the PSS had a higher reliability than the other two forms of the scale in a recent Chinese study.²³ The PSS-10 has a Cronbach's alpha value of 0.83 and when compared with the State Trait Anxiety Intervention the Pearson correlation was 0.73 and found to be statistically significant with a p-value <0.0001.²⁴

Exercise Self-Efficacy Scale assesses the confidence of a person to continue exercise on a regular basis while under stressful conditions. Specific circumstances, which are most likely to interrupt daily exercise, are given to rate on a scale of 0-100. The scale ranges from 0 denoting "not able to continue" or 100 denoting "certain to continue." The scale is measured by the mean with higher scores illustrating more confidence to continue exercise stressful conditions²⁵. The Cronbach's

coefficient alpha was .94, an item-total correlation of all items between .57-.72, and a test-retest correlation value of .77.²⁶ When a factor analysis was done of the different sub-factors within the scale, the loadings of all items ranged from 0.52-0.82, which is considered good to excellent. Physical activity, including mindfulness-based activities have been found to improve physical stress-related symptoms²⁷ and high self-efficacy scores are positively related to physical activity participation^{28,29}. This scale was added to determine if the physical exercise programs taught in the curriculum for patient care would carry over into the personal lives of students. Furthermore, given the long days in lecture and lab, physical activity was anticipated to increase and be used as a mechanism of stress management.

Circle of Life Assessment is a key component of the intervention, which is a simple and brief graphical form where each participant expresses their “satisfaction” with the 12 domains of life using a 1-10 scale (Figure 1)³⁰. This is essentially a graphical Likkert Scale which assists the participant, under the supportive guidance of the coach, to target their personal assets and areas that could benefit from improvement. This assessment can be used on an occasional basis to give participants a view of their progress³.

Qualitative Measures

A panel of experts in qualitative research developed the following questions to attain subjective responses from the students to further elucidate subjective outcomes of coaching beyond the standardized measures.

How has wellness coaching helped you live a healthier lifestyle?

How has your health, fitness, or well-being improved over the last 8 weeks?

What small changes have you been able to make that you feel you will be able to continue?

What has been most helpful in working in a coaching group to manage stressors during the course of the spring semester? Would you recommend this program to someone in your situation?

Results

A total of twenty students completed the coaching program over two years. The participants included 14 female and 6 male students ranging from 21-32 years old (average age=23 years old). Students attended an average of 80% of all coaching sessions. No student dropped out of the coaching sessions.

Quantitative Analysis

SPSS 18.0 was used for the analysis. A multivariate ANOVA, three semesters by two measurement levels (pre and post) was conducted for the 3 primary dependent measures (Table 2). The first dependent measure, SSS, showed a significant effect for pre vs. post $F(1, 17) = 10.57; p = .005$, indicating that students stress scores declined following the intervention. This result however needs to be interpreted with care because of a marginally significant semester by pre-post interaction $F(2, 34) = 3.358; p = .047$. Results show a main effect or an interaction in ANOVA, which means that one or more of the means differ from each other. We can determine which mean is different from which other mean by running post hoc tests or a priori tests. The trend component analysis is particularly useful when we have an effect for a within subjects variable. This is the case in this pilot study. The trend analysis attempts to fit line through the means (similar to a regression) and sees if the pattern of means is best represented by a straight line (linear), a line with one bend in it (quadratic) or two bends (cubic).

An orthogonal decomposition of trend components was conducted in order to determine the form of the interaction. The linear by linear decomposition was significant $F(1, 17) = 4.871$ $p = .041$ accounting for over 86% of the sums of squares of the interaction (Figure 2). In our case, the linear trend accounts for the 84% of the effect and means that the trend for the SSS measures is consistently improving with no large deviations from linearity. Therefore, we have an effect that is probably not due to chance ($p = .047$) and the form of the

effect is largely linear (84%).

The second variable, *PSS*, showed significant effects for all the component variables, semester $F(2,36) = 4.366$; $p = .02$, pre-post $F(1,18) = 7.969$ $p = .011$ and the semester by pre-post interaction $F(2,36) = 6.643$ $p = .004$. When the semester main effect was decomposed, the quadratic trend component term accounted for 45% of the sums of squares $F(1, 17) = 8.333$ $p = .01$. More interestingly, when the semester by pre-post interaction term was also decomposed the linear by linear trend component $F(1, 17) = 8.403$ $p = .01$, accounted for over 73% of the interaction sums of squares (Figure 3). In this case, the linear trend accounts for the 73% of the effect and means that the trend for the PSS measures is consistently improving with no large deviations from linearity. There were no significant findings for the *ESES*.

Implementation of coaching did not impart costs on students or faculty. The coaching was done by a faculty member, trained and certified in wellness coaching through the American College of Sports Medicine. The program was conducted in the middle of the day when other classes were held and

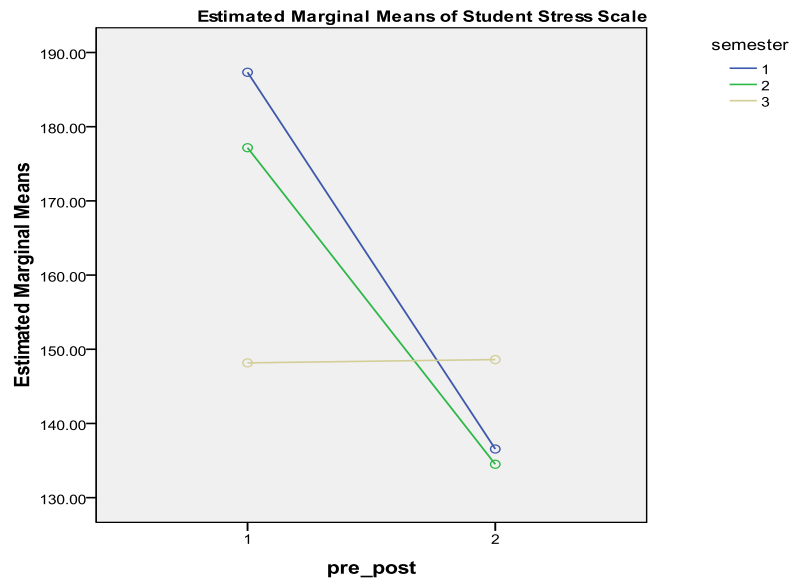


Figure 2: The Estimated Marginal Means of the SSS pre and post semesters.

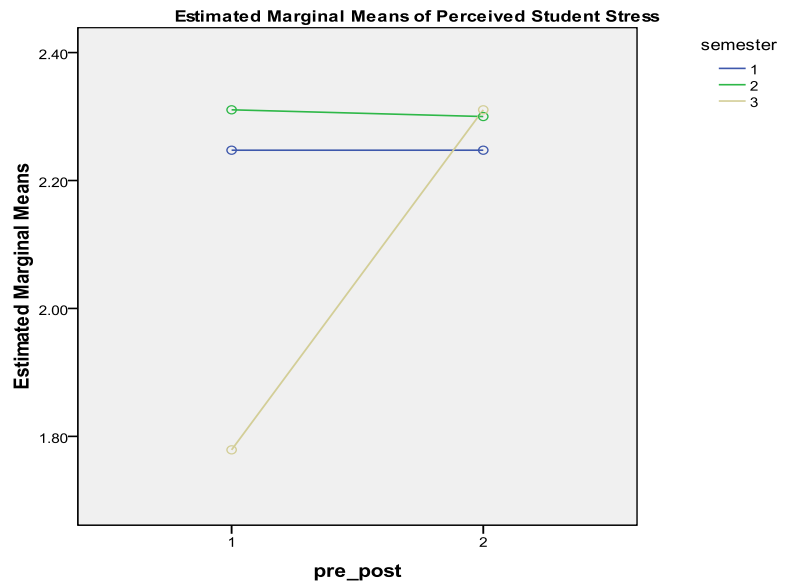


Figure 3: The Estimated Marginal Means of the SSS pre and post semesters.

considered a “break” in students’ day. The 7 week program was a reasonable timeframe to impart new strategies and reinforce skills for DPT students.

Qualitative Analysis

Analysis of open-ended questions included frequency of response identified systematically and independently by the researchers. This method of content analysis included independent coding of frequency of response to the qualitative questions. Coding comparison and discussion revealed consensus (0.80 kappa coefficient) upon

frequency of response and illustrative quotes were identified. The following questions capture positive qualitative outcomes coaching program.

How has wellness coaching helped you live a healthier lifestyle?

“Coaching got me more aware of my current health level and showed me I could make little changes that would make a difference.”

“I am less stressed and feel more organized and confident.”

How has your health, fitness, or well-being improved over the last 8 weeks?

“Yes, tremendously! I have been on a diet eating a lot healthier and have lost weight. I also have been exercising which has made me feel better overall.”

“I’ve become better at yoga. I used the breathing exercises before going into my practical and visualized passing.”

What small changes have you been able to make that you feel you will be able to continue?

“Taking a break from reality to close my eyes and visualize myself in a peaceful place. This helps me and it’s an easy technique to use that I will continue.”

“I know now that I have the ability to dictate my life and make positive changes over time, such as scheduling time for exercise and bettering myself.”

What has been most helpful in working in a coaching group to manage stressors during the course of the spring semester?

“Sharing my stressors, problems, and goals with other people has been helpful to me. I would never think to tell my classmates what is going on in my life but it is helpful

to tell someone else who will listen. We did this in one particular session and I left that session in higher spirits than when I came in.”

“Identifying with other people having similar problems.”

Would you recommend this program to someone in your situation?

“Definitely, I think that every PT student should take this class during their first year in the PT program.”

“I would recommend it to everyone. I believe anyone can benefit from it.”

Discussion

With increasing interest in coaching, the introduction of health coaching may have an appeal across different generations. However, there is a lack of published research for the effectiveness of health coaching³¹. As the physical therapy profession advances and continues to promote health in the population, doctorate degrees have become the norm, which then increases educational demands on physical therapy students¹⁷. Stress symptoms can be detrimental to the completion of one’s academic career and well-being³². With the intent of addressing stress and related symptoms, social support groups including coaching have been suggested as a method to ease stress and isolation which students individually feel³².

Our study implemented a coaching methodology, in a group setting, to relieve stress, educate graduate students about stress management, and build skills to cope with high demands of graduate school curriculum and stressors. No research has been done to explore stress management through coaching in DPT programs and our pilot study found that the 7 week program was well received by students and sustained for

the semesters beyond initial implementation and acute effects of coaching. While an acute intervention is noteworthy, the ability of stress management skills is important not only in graduate training but in clinical practice with the heavy demands of the health care system.

The interpretation of stress management, through the use of the transactional model, converges the interaction between people and their external environment¹ and was the underpinning to coaching strategies used in

this intervention. However, several confounders must be considered in this pilot study. Firstly, the time of survey administration, while consistent for each semester, may foster different responses based on the increasing demands of the curriculum. Furthermore, we could not control for outside activities equally impacting stress management such as other types of social events and mind-body strategies outside the coaching intervention. Coaching in a group setting may improve student's ability to manage stress, however research has identified social support alone may confirm participant's ability to express emotions and disclose personal struggles, therefore enhancing psychological and physical well-being²⁹. While the primary intervention was seven weeks, we cannot rule out a dose-response relationship across the subsequent semesters.

Limitations

Limitations include small sample size and lack of a control group. However, trends noted in the analysis are encouraging especially in the sustainability of stress management and wellness throughout the DPT curriculum. This pilot study

may encourage other DPT programs to implement a formalized program to address stress management as a foundation to a rigorous program thus fostering skills and self-efficacy throughout graduate studies. Future studies may take into account the utility of coaching specifically at end of semester stressors or pre/post clinical experiences. However, there is much variation within student clinical populations and environments which adds to the heterogeneity of clinical settings and stressors. Future research may compare the various aspects of coaching including mindfulness training, mind-body therapies and visualization to a traditional social support group to determine benefits for graduate students.

Conclusion

A 7-week wellness coaching program based on the Circle of Life Health and Wellness Coaching System demonstrated improvements in the areas of student stress and perceived stress which was sustained for one year. These preliminary quantitative and qualitative results begin to identify the use of coaching for stress management in healthcare professional graduate DPT curriculum. Coaching may support building and sustaining optimal stress management and wellness for graduate students. These observations may spread awareness to professors and students navigating the challenges of DPT programs. Further clinical trials are necessary to confirm the results of this study. Future research with carefully designed controls will effectively explore the true effect of coaching on graduate DPT.

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Grant Support

Graduate Student Fellowship Research Grant from the Richard Stockton College of New Jersey was used for the support of this research. No other special interests or payments have been procured for the purpose of this research.

Acknowledgements

The authors would like to thank Dr. Roger Jahnke and Rebecca McLean of Heath Action for their edits to this manuscript and for their dedication to training coaches to impact quality of life for all people.
