Overcoming a Hurricane and Maintaining Wellness in College Student Physical Education

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ABSTRACT

Background: With instructional time lost due to natural disasters, it is essential to examine the effect of a physical education course (PED 101) on college student well-being and motivation.
Aim: This research examines the effect of physical education classes with a wellness component on wellness and motivation during a disruptive hurricane.
Methods: A pre and posttest survey methodology was utilized to measure well-being and motivation, including by gender and exercise frequency, using the Wellness Inventory on college students enrolled in PED 101 who experienced Hurricane Florence.
Results: All 12 dimensions of participants' wellness and their motivation to make changes in those wellness dimensions increased by the end of the hurricane semester. The results found significant changes between the pre- and post-assessment scores for all dimensions of wellness and motivation for male and female participants, as well as for all levels of exercise frequency.
Conclusions: Including a well-being and motivation component in a college level physical education curriculum may enhance students' overall well-being and motivation during a disruptive hurricane.

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Keywords: health education, student wellness, motivation, wellness inventory, hurricane

A positive correlation exists between well-being and overall health. In comparison, a negative correlation exists between well-being and mental health issues (i.e., missed workdays, suicide risk, psychological symptoms; Lyubomirsky, King, & Diener, 2005) and general measures of health such as premature mortality, heart disease, and other chronic health disorders (Steptoe, Deaton, & Stone, 2015). Positive subjective well-being is associated with physical longevity, productivity at work, and perceptions of improved relationships (Keyes et al., 2012; Keyes & Grzywacz, 2005; Keyes & Simoes, 2012). This study examines the effect of a Physical Education course (PED 101) with a wellness component on wellness and motivation in college students during a disruptive hurricane.

College Student Well-Being

Hettler (1984) proposed a holistic approach to college student wellness that consisted of 6 dimensions of health-related behaviors: (1) physical wellness, (2) emotional wellness, (3) spiritual wellness, (4) social wellness, (5) occupational wellness, and (6) intellectual wellness. Today, a holistic approach to well-being is associated with improved psychological functioning that serves as a protective mechanism against physical disorders (Gieck & Olsen, 2007). Existing research in college student health and well-being has design limitations that threaten reliability and validity. Quantitative comparative studies have used small sample sizes or overlooked a pre-post intervention design (Baldwin, Towler, Oliver, & Datta, 2017; Gieck & Olsen, 2007; Lothes & Nanney, 2019). Lothes and Nanney (2019) and Baldwin et al. (2017) found that wellness differences may vary from the types of colleges that students attend to gender differences in ratings of wellness. Baldwin et al. (2017) showed that employed students had higher ratings of self-efficacy than unemployed students, and they also found that female students engaged in less exercise and had lower ratings of overall health-related behaviors than males. In contrast, Lothes and Nanney (2019) conducted an end of semester assessment with college students (n = 1544) using the Travis (1981) Wellness Inventory and found few significant differences by age and gender on the 12 dimensions. What they did find was that students who self-reported higher levels of wellness and higher levels of exercise frequency had higher wellness scores than students who reported lower levels of both. Quinn et al. (2019) found through a series of qualitative interviews that students expressed concerns for information on matters of wellness, including issues of nutrition, economics, mental health, and campus safety. Wilson et al. (2021) found that during the COVID-19 pandemic, physical activity alone did not protect against deterioration in mental health. Therefore, it is important for a physical education course to offer information on wellness beyond just engaging in physical activity. While these findings shed light on well-being differences between college students, they were taken at a single snapshot in time, overlooking how interventions could be designed for long-term activities and benefits.

Another limitation of Lothes and Nanney (2019) and Baldwin et al. (2017) was that they failed to conduct pre-post assessments to examine whether wellness scores changed within the groups. Single assessments in these studies did find that some group differences existed, but they failed to assess if changes in college student wellness occurred throughout a semester. The present study expands on Lothes and Nanney's (2019) research by adding pre-post assessments for participants, including pre-post assessments analyzed by gender.

Catastrophes and Well-being

Individuals who suffer financial losses, insurance issues, and disrupted daily routines like loss of service, utilities, and temporary or permanent job loss due to catastrophic flooding, experience higher levels of mental health problems (Fernandez et al., 2015). Fernandez et al. (2015) found that people exposed to flooding reported elevated symptoms of Post Traumatic Stress Disorder (PTSD), anxiety, and depression as well as substance misuse (tobacco, alcohol, and medication). Coping factors included having social support systems before and after the flood. The examination of demographic factors produced mixed outcomes on gender. Alcohol use in males increased after floods, and lower socioeconomic status was shown to put people at risk for poorer mental health outcomes. Similar results have been identified in individuals who have lived through hurricane events (Bourque, Siegel, Kano, & Wood, 2006). In a spatial epidemiologic analysis of post disaster wellness in two Texas counties following Hurricane Ike, older individuals were

more likely to experience lower mental health wellness (Greubner et al., 2016). Level of education, pre-disaster depression, financial loss, and any loss of sentimental value possessions were also associated with decreased mental wellness. Lowe et al. (2015) found similar results with stressors of pre-disaster depression, financial loss, or loss of sentimental possessions related to a lower likelihood of mental wellness during Hurricane Ike. They also found personal property loss to be related to a diminished likelihood of general wellness. Greater peri-event emotional reactions resulting in physiological reactions such as shortness of breath or racing heart during and shortly after the hurricane event were associated with the likelihood of poorer mental health and general wellness. Qualitative studies have also shown results relating natural disasters to mental health (Fernadez et al., 2015; Makawna, 2019). The current study was conducted during the Fall 2018 semester when Hurricane Florence occurred. Although the impact of a range of natural disasters on wellness has been addressed in the literature, the influence of hurricanes will be the focus of this study. In this study, participants' levels of wellness were measured at the start and end of the semester to investigate changes in wellness patterns during a hurricane.

Wellness Inventory & Wellness Continuum

Myers and Sweeney (2004) proposed an evidence-based multidimensional model of wellness formed on the characteristics of healthy individuals. It focuses on a strength-based, choice-oriented model grounded in sound wellness theory, not just anecdotal evidence. Myers and Sweeney (2004) discussed how the 12-component Wheel of Wellness, comprised of influencers such as family, spirituality, education, business, government and community, influenced behavioral patterns. The authors were able to identify societal factors that play a role in wellness but overlooked other influences in which an individual may exercise greater control. Travis (1981) and Travis and Ryan (2004) argued that individuals can be trained to focus on factors within their control to enhance wellness.

Travis (1981) and Travis and Ryan (2004) favors an illness-wellness continuum model that accommodates bi-directionality rather than a dichotomy. The continuum captures physically non-symptomatic ailments through items measuring depression, boredom, anxiety, or unhappiness. As a byproduct of this continued direction towards illness, an individual may develop both physical and mental health symptoms. People must engage in self-care activities to attain higher levels of wellness. Such activities may include being able to experience and express emotions effectively, doing things to take care of physical health, engaging the mind in a constructive manner, being creative, and possibly having some form of spiritual practice. Wellness is not so much about where an individual exists on this continuum, but in which direction that individual is facing.

The mission of health educators is to try and help students establish and implement healthy lifestyle choices through education. Health behavior patterns established during the college years have a strong relationship to mid-life health behavioral patterns (Hultquist, Duckham, Stinson, & Thompson, 2009). Rouse and Biddle (2009) claim that a better education or understanding of physical activity and wellness helps encourage students to move towards wellness. The American College Health Association (ACHA, 2002; 2017) identified physical inactivity as a continuing concern for the college population and has called for immediate attention to the matter.

During their college years, many students learn how to balance work, school, relationships, free time, and self-care. Providing students education on well-being is vital at this stage of development. Through practical quality education, students can learn about effective and ineffective health habits for well-being. Because there are many

factors that play a role in college students' well-being (Downes, 2015), it would be wise to take a multidimensional approach to wellness (Travis & Ryan, 2004).

The PED 101 course offered at the institution where the study for this paper was conducted presented educational materials and wellness practices in which students engaged. Thus, empowering and offering them an opportunity to expand wellness behaviors.

Purpose of Study

The purpose of this study was to determine if there were changes in participants' wellness scores while taking a Physical Education (PED 101) course during a hurricane at a southeastern university in the United States (IRB approval #18-0232). An examination of overall changes in the 12 dimensions of wellness scores, as well as self-reported motivation to make changes in those wellness dimensions was conducted. Pre-post outcomes were assessed by exercise frequency and gender. Descriptive statistics were collected on age group. The Wellness Inventory was utilized to assess participants at the beginning (pre) and end (post) of the semester on 12 dimensions of wellness (Travis & Ryan, 2004)

The hypotheses were:

H_1: All students who took PED 101 during the semester of Hurricane Florence would experience a significant difference in wellness scores from the start of the semester to the end of the semester.

H_2: All students who took PED 101 during the semester of Hurricane Florence would experience a significant difference in motivation scores from the start of the semester to the end of the semester.

H_3: Students who took PED 101 during the semester of Hurricane Florence, divided by gender into a male group and a female group, would experience a significant difference in all dimensions of wellness from the start of the semester to the end of the semester, regardless of gender.

H_4: Students who took PED 101 during the semester of Hurricane Florence, divided by gender into a male and a female group, would experience a statistically significant difference in motivation scores for all dimensions of wellness from the start of the semester to the end of the semester, regardless of gender.

METHODS

Participants

The population of this study consisted of students enrolled in PED 101 who completed a physical activity and wellness curriculum during Hurricane Florence, which hit the east coast causing the campus to close from September 11, 2018, through October 8, 2018. For the sample, PED 101 students (n = 1,177) were assessed at the beginning of the semester (August 2018) for each dimension of wellness and then again at the end of the semester (December 2018). The academic content of the course was conducted online with resources available through Canvas and the Wellness Inventory for dimensions of wellness. An eBook with the wellness curriculum was also used through Tophat (Nanney, 2019) for students to work through tutorials online about health and wellness.

Demographics

Participating students were asked to provide demographic characteristics. Of the 1,177 students, 439 identified as male and 738 as female. Age was split into the Wellness Inventory's specified categories: 18-24 years of age = 1,136 students; 25-34 years of age = 35 students; and 35+ years of age = 6 students). The 1,177 students exercised at different frequencies (daily to monthly): daily = 119 students; 4-6x/week = 281 students; 3x/week = 239 students; 2x/week = 268 students; 1x/week = 159 students; and 1x/month = 111 students). For analysis purposes, frequency of exercise was combined into 3 groups: daily and 4-6x/week (High = 400 students); 3x/week and 2x/week (Moderate = 507 students); and 1x/week and 1x/month (Low = 270 students).

Course Description

Each class was a two-credit hybrid course that met the physical activity recommendations suggested by the National Guidelines for Physical Activity for America of 150 minutes each week (U.S. Department of Health and Human Services, 2019). The course consisted of two parts: (1) a face-to-face laboratory and (2) an online lecture. Educational materials were designed as assignments to increase awareness and develop components of wellness (i.e., physical, spiritual, emotional, social, and intellectual), become an informed health consumer, and apply healthy lifestyle choices for improved quality of life. Tutorials provided through the PED 101 course not only offered knowledge-based educational tools for wellness, but also suggested weekly practices for students. Since the course was designed for all students, it did not matter where they began their wellness journey. Rather the goal was to get the students moving, or at least facing towards wellness.

For the face-to-face laboratory, students enrolled in various classes offered from a menu of approximately 40. Example classes from the menu include martial arts, strength and conditioning, aerobic exercise, and yoga. The face-to-face laboratory consisted of assignments and readings that were conducted through Tophat's online book (Nanney, 2019). There was also an online lecture component that addressed the educational activities in the Travis and Ryan Wellness Workbook (2004). Students accessed the study center tutorials through the Wellness Inventory and through the Canvas learning platform. Throughout the semester, students created action steps to help guide them on a path towards wellness through a process of implementing small steps to continuous improvement (Cardinal, 2014).

Measures

Wellness Inventory. The Wellness Inventory, a mandatory component of the PED 101 course, was used at the beginning and the end of the semester to assess overall student ratings on the 12 dimensions of wellness. The Wellness Inventory has been shown to be both reliable and valid in the assessment of overall college student populations (Travis & Ryan, 2004). The Wellness Inventory has also been used in previous studies with college-aged populations (Lothes, 2020; Lothes & Nanney, 2019).

There are 12 dimensions of wellness (Travis & Ryan, 2004):

1. Self-Responsibility and Love entails expressing ideas and emotions effectively with others while remaining faithful to oneself;
2. Breathing is how factors of breathing affect output or general metabolism and a person's ability to work,

play, and communicate;

3. Sensing is comprised of developing skills and becoming aware of how to appreciate and use the body's sensory input efficiently and creatively;
4. Eating deals with assessing and teaching students how food not only affects physical health, but also how it plays a role in emotions;
5. Moving addresses how movement of the body plays a role in holistic well-being, and how movement affects both physical and emotional health;
6. Factors of Feeling is about becoming aware of emotions and feelings and how they may affect us;
7. Thinking focuses on how thinking can be affected by both emotional and physical health and how improved health can relate to improved thinking;
8. Playing and Working concentrates on recapturing the spirit of play and how this can bring balance to people's lives when they are overwhelmed from work and other responsibilities;
9. Communicating focuses primarily on verbal communication, and how an individual talks to themselves as well as how they speak with others, while also examining some of the potentials for breakdown in communication that may occur;
10. Intimacy addresses how we connect with others and build relationships effectively.
11. Finding Meaning assesses how people find meaning in life and offers suggestions of activities to help them find some meaning and purpose in their life; and
12. Transcending is about finding that peak experience or flow state; it is an experience of being fully awake and engaged in the present moment.

Each of the 12 dimensions in the Wellness Inventory consists of ten questions on a 10-point Likert scale ranging from 0 (not at all) to 10 (completely). The questions ask about different aspects of each wellness dimension with a total possible score ranging from 0 (lowest) to 100 (highest) for each dimension. There is also a 10-point Likert scale, ranging from 0 (lowest) to 10 (highest), for questions that ask about the individual's level of motivation to engage in a particular statement about the wellness dimension. These question also have a possible total score of 0 (lowest) to 100 (highest). The wellness inventory has no reverse scored items.

Statistical Analysis

Scores for the 12 dimensions were collected from the Wellness Inventory database of all the classes. To preserve confidentiality, no personally identifying data were gathered. To analyze changes from the start and end of the course, paired *t*-tests were conducted for each of the Well Inventory dimensions and on students' reported motivation to make a change in those dimensions. Paired *t*-tests were also conducted separately for males and females as well as by reported frequency of exercise to assess if there were differences by the gender and exercise subgroup scores.

RESULTS

Overall Wellness Scores

Pre-post assessment showed significant increases in all 12 dimensions of wellness and overall increases in motivation (Tables 1 & 2), even with Hurricane Florence having occurred.

Table 1. *Overall Wellness Pre/Post*

Dimension (*N* = 1177)	Pre		Post				
	Mean	SD	Mean	SD	Paired t	p-value	Cohen's d
Self-Resp & Love	70.06	12.82	78.51	14.22	20.22***	<.0001	0.62
Breathing	56.48	17.37	71.81	16.07	30.14***	<.0001	0.91
Sensing	65.65	13.79	75.85	14.02	24.04***	<.0001	0.73
Eating	53.08	17.09	64.17	16.98	21.33***	<.0001	0.65
Moving	60.70	18.29	72.27	17.28	23.04***	<.0001	0.67
Feeling	64.34	15.70	74.13	15.26	21.65***	<.0001	0.63
Thinking	60.91	15.90	72.42	15.87	24.86***	<.0001	0.72
Playing & Working	63.3	16.22	73.08	16.25	22.80***	<.0001	0.60
Communicating	74.45	13.50	79.90	13.71	14.43***	<.0001	0.40
Intimacy	76	14.74	82.01	14.16	14.84***	<.0001	0.41
Finding Meaning	66.63	16.04	75	15.73	18.44***	<.0001	0.53
Transcending	63.93	16.56	73.98	16.39	22.69***	<.0001	0.61

Note. *<.01; **<.001; ***<.0001.

Table 2 *Overall Motivation Pre/Post*

Dimension (N = 1177)	Pre		Post				
	Mean	SD	Mean	SD	Paired t	p-value	Cohen's d
Self-Resp & Love	64.83	21.98	71.73	24.45	14.57***	<.0001	0.30
Breathing	66.98	22.14	75.41	23.86	13.21***	<.0001	0.37
Sensing	62.50	23.85	71.54	26.34	13.41***	<.0001	0.40
Eating	70.18	21.00	75.83	22.12	9.35***	<.0001	0.26
Moving	70.65	22.55	75.00	25.46	6.60***	<.0001	0.18
Feeling	69.16	23.44	74.82	25.07	8.51***	<.0001	0.23
Thinking	71.42	22.69	76.34	24.63	7.54***	<.0001	0.21
Playing & Working	70.47	22.89	75.64	25.49	8.00***	<.0001	0.21
Communicating	69.19	25.81	74.73	27.64	8.14***	<.0001	0.20
Intimacy	69.04	26.61	73.60	29.69	6.33***	<.0001	0.16
Finding Meaning	71.94	23.22	76.04	25.79	6.20***	<.0001	0.17
Transcending	65.22	24.55	71.57	27.23	9.20***	<.0001	0.24

*<.01, **<.001, ***<.0001

Gender

Both males (Appendix A & B) and females (Appendix C & D) showed significant increases on both wellness ratings and motivation for change per dimension from pre-assessment to post-assessment.

DISCUSSION

These results support the hypothesis that wellness scores increased from the beginning of the semester to the end of the semester despite class interruptions caused by Hurricane Florence. The results also support the hypotheses that wellness scores and motivation would increase in both males and females. Given the range of possible disruptions to campus activities due to various types of natural disaster, universities should have solid contingency plans in place to mitigate academic disruptions. These results provide promising outcomes that universities offering a wellness course can help build and maintain a healthy academic community even when disruptions to traditional course schedules occur.

Summary of Findings

The implications for using the Wellness Inventory as an assessment tool in college students are promising. The results of this study offer evidence that a course designed for implementing the 12 dimensions of wellness shows promise for moving students in the direction of wellness. Even during the challenges posed by Hurricane Florence, college students showed significant increases in all 12 dimensions of wellness. Both male and female students showed significant increases wellness ratings from the start to end of the semester. These outcomes show promise that a PED

101 course can be designed to help move students in the direction of wellness (2018 Physical Activity Guidelines Advisory Committee, 2018; Cardinal, 2014).

B. Cardinal, Park, Kim, and M. Cardinal (2015) argued for a well-rounded approach to teaching and assessing wellness in college students. One possible reason behind the successful increase in wellness scores was that the hurricane caused classes to be canceled for nearly a month, resulting in a very condensed schedule from October 8, 2020 to early-mid December 2020. The tightened scheduled resulted in closer course deadlines. It is possible that students who followed the class assignment schedule closely were essentially "forced" to learn the course material on a constant basis and were more frequently exposed to concepts of wellness during the condensed hurricane semester. The online nature of class lectures via Tophat allowed for more flexible scheduling of curricular content after the hurricane, allowing students to adapt to changes in the course because the online component could be adjusted easily.

Pietro (2017) found that natural disasters can delay graduating on time and slightly increase the probability of students dropping out. Social resources can help protect against poor wellness outcomes in times of disaster (Fernandez et al., 2015, Lowe, Joshi, Pietrzak, Galea, & Cerda, 2015; Norris et al., 2002). College students' resilience may have been mediated by their social connections (including physically distant or remote networks) and family to whom they had evacuated. Marr and Wilcox (2015) found that self-efficacy and social support facilitated the relationship between health locus of control and physical activity behaviors and healthy eating habits. A course that offers a battery of options in learning about wellness aspects and describes how to improve upon the dimensions of wellness can help increase college students' self-efficacy in moving towards wellness.

Cardinal (2014) recommends assessing student wellness and education beyond health-based outcomes like exercise and weight. The findings of this study support the Travis and Ryan (2004) theory that wellness is more fluid than static. The current findings also build upon more contemporary research (Lothes, 2020; Lothes & Nanney, 2019) by examining pre- and post- assessments as opposed to a single snapshot in time. The results show that students involved in a physical education course with a holistic approach to well-being could improve multiple dimensions of well-being regardless of gender, frequency of exercise engagement, and a semester with a major hurricane. Future research could further compare wellness results from a hurricane semester to wellness data from a semester without interruption from natural disaster to examine similarities or differences (Lothes, 2020).

In summation, it is the role of health educators to take students from where they are at in their wellness journey and attempt to move them forward on the health continuum (Travis, 1981; Travis & Ryan, 2004). Through educating on the matters of the 12 Dimensions of Wellness, educators can help students maintain their wellness journey even after graduation. Within the context of a hurricane, students can still maintain wellness, which in turn may help them be more resilient to the effects of the hurricane itself.

Natural Disaster Guidelines

Universities need to design and employ effective ways to persuade students to engage in wellness activities. Stress during times of natural disasters can produce several mental health outcomes such as anxiety, PTSD, and depression (Centers for Disease Control [CDC], 2020). Stanke, Murray, Amlôt, Nurse, and Williams (2012) noted the following key themes that emerged from natural disaster guidance guidelines:

- The importance of adopting a multi-sector approach to promoting well-being and recovery that involves communities as well as agencies;

- Most people who are affected by flooding are remarkably resilient;
- Many people who are affected face psychosocial challenges and most have distressing experiences for which they require psychosocial support; these responses can be anticipated, as should be their needs for support;
- Most people's psychosocial needs are met by people who are close to them, but some people may require more substantial psychosocial care and approaches that are based on the principles of psychological first aid; and
- A substantial minority of people who are affected by flooding require mental health services and psychosocial care.

The CDC (2020) recommendations for dealing with situations like natural disasters include:

- Taking breaks from watching, reading, or listening to news stories, including social media;
- Taking care of self, friends, and family to help cope with stress;
- Taking deep breaths, stretching, or meditation;
- Eating healthy, well-balanced meals, exercising regularly, getting plenty of sleep, and avoiding alcohol and drug use;
- Finding time to unwind and engage in joyful activities; and
- Connecting and sharing feelings with others.

While this PED 101 course was not specifically designed to address the concerns of a natural disaster disruption, it did address some of the CDC's recommendations for dealing with situations like natural disasters. Specific content in the course lectures covered such topics as taking media breaks, engaging in self-care, mindfulness and meditation, exercise and nutrition, engaging with others, and finding time to unwind and engage in meaningful and joyful activities. The content that focused on self-care and wellness consisted of a variety of approaches that students could implement to promote wellness and develop a healthy academic community.

Outcomes from this study show that even during times of academic disruption, a positive impact on student health and well-being can be addressed and affected despite loss of instructional time, thus helping maintain a healthy academic community for students.

Limitations

A limitation of this study was that there was no control group to see if observed differences were the result of the physical education course or were just a natural occurrence of being in college. It is recommended that future studies adopt an experimental or quasi-experimental approach by including a control group that is not exposed to a physical education course. It is also recommended to capture pre-physical education students for an assessment and follow them for longitudinal data collection. Ideally, data collection should start during the semester before they take the physical education course and continue through the semester that they take the physical education course. Researchers could also consider tracking students longitudinally after a physical education course to see if trends were sustained for the remainder of their college years.

Factors such as female gender, history of mental illness, and age (such as children) are examples of risk factors that increase susceptibility to poor mental health outcomes within the context of disasters (Goldman & Galea, 2014;

Norris et al., 2002). During a disaster, an individual's degree of exposure to the disaster is highly predictive of their susceptibility to subsequent mental health issues (Fernandez et al., 2015; Goldman & Galea, 2014). A further limitation of the study was the lack of access to the students' mental health history and how these histories may have influenced their self-reports or self-perceptions. The large sample size helps to offset any outliers in the data that may skew the data.

Another suggestion would be to try this same type of educational protocol with individuals in the general public on a voluntarily basis to see if measures of the wellness dimensions change in the absence of tight deadlines and the need to earn credit. Due to the nature of an academic course, participants may have been motivated to engage in wellness activities to earn credit for homework assignments.

CONCLUSION

Current trends in college student health show an increase in sedentary lifestyles for both college students and adults after graduation (Kwan, Cairney, Faulkney, & Pullenayegum, 2012). Setting a foundation for effective health and wellness habits in college may influence lifestyle behaviors across the lifespan. Current research shows how a sedentary lifestyle correlates with negative health and illness, so acquiring healthy behaviors has a longer-term influence on work and productivity generally. Health educators are ideally placed to promote a holistic approach to well-being regardless of external events such as hurricanes (Cardinal, Errisuriz, Golaszewski, Born, & Bartholomew, 2018).

Conflict of Interest Disclosure

The authors have no conflicts of interest to report. The authors confirm that the research presented in this article met the ethical guidelines, including adherence to the legal requirements, of the United States and received approval from the Institutional Review Board of the University of North Carolina Wilmington (18-0232).

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Appendix A

Males Wellness Pre/Post

Dimension (n = 439)	**Pre**		**Post**				
	Mean	**SD**	**Mean**	**SD**	**Paired t**	**p-value**	**Cohen's d**
Self-Resp & Love	70.33	12.00	78.78	12.83	14.31***	<.0001	0.68
Breathing	57.94	17.59	72.25	16.09	17.05***	<.0001	0.85
Sensing	66.42	13.36	76.03	13.73	13.95***	<.0001	0.71
Eating	53.32	16.51	65.01	17.08	14.29***	<.0001	0.70
Moving	62.63	17.62	72.84	16.92	12.78***	<.0001	0.59
Feeling	64.23	15.27	73.37	15.02	12.99***	<.0001	0.60
Thinking	62.28	15.62	72.66	15.60	14.15***	<.0001	0.66
Playing & Working	64.67	15.44	73.97	16.05	12.75***	<.0001	0.59
Communicating	73.07	13.33	77.96	14.24	7.79***	<.0001	0.35
Intimacy	75.15	14.40	79.65	14.76	6.69***	<.0001	0.31
Finding Meaning	67.60	15.63	74.62	14.47	9.46***	<.0001	0.67
Transcending	64.41	16.17	73.25	16.57	12.13***	<.0001	0.54

Note. *<.01, **<.001, ***<.0001

Appendix B

Males Motivation Pre/Post

Dimension (n = 439)	Pre		Post				
	Mean	SD	Mean	SD	Paired t	p-value	Cohen's d
Self-Resp & Love	63.43	22.10	73.39	23.91	9.43***	<.0001	0.43
Breathing	63.62	25.06	72.08	25.06	7.44***	<.0001	0.33
Sensing	60.80	24.19	69.24	26.08	7.72***	<.0001	0.34
Eating	66.13	24.51	72.22	22.66	6.07***	<.0001	0.26
Moving	67.63	23.55	71.72	25.60	3.63***	<.0001	0.17
Feeling	66.05	23.54	72.08	25.26	5.35***	<.0001	0.25
Thinking	69.04	22.83	73.59	24.94	4.18***	<.0001	0.19
Playing & Working	67.54	23.13	72.24	25.96	4.21***	<.0001	0.19
Communicating	68.49	23.45	72.69	26.74	3.62***	<.0001	0.17
Intimacy	68.43	24.85	72.05	28.40	2.93**	<.004	0.14
Finding Meaning	70.65	22.33	73.56	25.80	2.65**	<.008	0.08
Transcending	63.72	23.80	69.54	27.05	4.95***	<.0001	0.23

Note. *<.01, **<.001, ***<.0001

Appendix C

Females Wellness Pre/Post

Dimension (n =738)	Pre		Post				
	Mean	**SD**	**Mean**	**SD**	**Paired t**	**P-value**	**Cohen's d**
Self-Resp & Love	69.90	13.30	78.35	15.00	14.91***	<.0001	0.60
Breathing	55.61	17.15	71.56	16.06	24.95***	<.0001	0.96
Sensing	65.19	14.03	75.74	14.20	19.60***	<.0001	0.75
Eating	54.08	17.44	63.67	19.62	15.92***	<.0001	0.52
Moving	59.55	18.60	71.93	17.18	19.25***	<.0001	0.69
Feeling	64.41	15.96	74.58	15.39	17.33***	<.0001	0.65
Thinking	60.10	16.02	72.28	16.04	20.50***	<.0001	0.76
Playing & Working	62.55	16.62	73.70	16.38	18.96***	<.0001	0.68
Communicating	75.27	13.54	81.05	13.26	12.24***	<.0001	0.43
Intimacy	76.51	14.92	83.41	13.26	13.17***	<.0001	0.49
Finding Meaning	66.06	16.27	75.23	15.89	16.04***	<.0001	0.57
Transcending	63.64	16.80	74.41	16.28	19.36***	<.0001	0.65

Note. *<.01, **<.001, ***<.0001

Appendix D

Females Motivation Pre/Post

Dimension (n =738)	Pre		Post				
	Mean	**SD**	**Mean**	**SD**	**Paired t**	**P-value**	**Cohen's d**
Self-Resp & Love	65.67	21.88	75.53	24.74	11.16***	<.0001	0.42
Breathing	68.97	21.19	77.39	22.90	11.05***	<.0001	0.38
Sensing	63.51	23.61	72.91	26.42	10.97***	<.0001	0.38
Eating	72.59	20.32	77.98	21.53	7.12***	<.0001	0.26
Moving	72.30	21.76	76.96	25.19	5.55***	<.0001	0.20
Feeling	71.02	23.19	76.45	25.53	6.62***	<.0001	0.22
Thinking	72.84	22.83	77.97	24.32	6.30***	<.0001	0.22
Playing & Working	72.21	22.58	77.66	25.00	6.91***	<.0001	0.23
Communicating	69.61	26.32	75.95	28.12	7.58***	<.0001	0.23
Intimacy	69.40	27.62	74.53	30.41	5.78***	<.0001	0.18
Finding Meaning	72.70	23.72	77.51	25.96	5.81***	<.0001	0.19
Transcending	66.11	24.96	72.77	27.81	7.84***	<.0001	0.25

Note. *<.01, **<.001, ***<.0001