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Running Head: STRESS RELIEF IN THE WORKPLACE

Pepperdine University  
Graduate School of Education and Psychology

STRESS RELIEF IN THE WORKPLACE

A dissertation submitted in partial satisfaction  
of the requirements for the degree of  
Doctor of Education in Organizational Change

by

Jenny Gumm

September, 2014

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This dissertation, written by

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under the guidance of a Faculty Committee and approved by its members, has been submitted to and accepted by the Graduate Faculty in partial fulfillment of the requirements for the degree of

DOCTOR OF EDUCATION

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## TABLE OF CONTENTS

LIST OF TABLES .....	vi
DEDICATION .....	iv
ACKNOWLEDGEMENTS .....	v
VITA .....	vi
ABSTRACT .....	vii
Chapter 1: Introduction .....	1
Statement Of The Problem.....	3
Purpose Of The Study .....	5
Objectives And Research Questions.....	6
Intervention Setting.....	7
Relevance Of The Study .....	7
Definition Of Terms.....	9
Limitations To The Study .....	12
Organization Of The Remainder Of The Study .....	13
Chapter 2: Literature Review .....	15
The Study Of Stress .....	15
Causes Of Stress .....	16
Physiological Responses To Stress.....	18
Stress And The Workplace .....	22
Organizational Costs Of Stress .....	24
Interventions To Mitigate Workplace Stress And Its Effects .....	25
Levels Of Intervention .....	26
Wellness Programs.....	30
Hatha Yoga In The United States .....	31
Contemporary Use .....	32
Practices And Techniques.....	34
Benefits Of Yoga .....	36
Applications To Stress Reduction.....	36
Applications In The Workplace .....	38
Outcome Measures.....	38
Perceived Stress Survey .....	40
State-Trait Anxiety Inventory .....	41
Work Engagement Profile.....	42
Other Data.....	43
Conclusion .....	44
Chapter 3: Methodology .....	47

Objectives And Research Questions .....	47
Study Approach And Design .....	48
Quantitative Methods.....	49
Qualitative Methods.....	52
Data Analysis .....	52
Participants.....	54
Protection Of Research Participants And Ethical Considerations .....	55
Confidentiality And Data Collection .....	56
Intervention Design.....	58
Researcher Credentials And Role .....	60
 Chapter 4: Results And Findings .....	 62
Results.....	63
Quantitative Results .....	65
Qualitative Results .....	74
Findings.....	79
Impact And Findings From The Survey Instruments .....	80
Reported Impact By Participants .....	82
Observations By The Researcher.....	86
Limitations Of The Study .....	90
Summary Of Results And Findings. ....	91
 Chapter 5: Conclusion.....	 95
Effects Of Stress On Individual And Organization .....	97
Individual Stress.....	97
Organizational Stress .....	99
Study Focus, Design And Objectives .....	101
Study Results And Findings.....	104
Recommendations For Further Research.....	109
Conclusion .....	112
 REFERENCES....	 114
 Appendix A: Perceived Stress Survey .....	 124
Appendix B: State Trait Anxiety Indicator Y1 Form .....	126
Appendix C: Work Profile Inventory .....	128
Appendix D: Post-Treatment Questionnaire.....	129
Appendix E: Field Notes Form.....	130
Appendix F: Letter From Participating Company .....	131

Appendix G: Approval From Pepperdine IRB .....132

Appendix H: Informed Consent Form .....134

Appendix I: Introductory Presentation.....136

Appendix J: Benefits Of The Postures In The Series .....140

Appendix K: Intervention .....143

Appendix L: Handouts .....162

## LIST OF TABLES

Table 1. Population for Study .....	55
Table 2. Population Participation.....	64
Table 3. Perceived Stress Survey Mean, Standard Deviation and Change in Means .....	66
Table 4. Perceived Stress Survey Paired T-Test .....	66
Table 5. State Trait Anxiety Indicator_Y1 Form Mean, Standard Deviation and Change in Means.....	67
Table 6. Paired T-Test: State Trait Anxiety Indicator Y1 Form.....	68
Table 7. Work Engagement Profile Mean, Standard Deviation and Change in Means.....	69
Table 8. Work Engagement Profile Paired T-Test.....	69
Table 9. Number of Attendees by Session .....	70
Table 10. Number of Attendees by Day of the Week.....	71
Table 11. Number of Attendees by Week.....	72
Table 12. Estimated Number of Sessions Attended.....	72
Table 13. Correlation Between the Instruments and Number of Sessions Attended.....	73
Table 14. Answers to the Closed Ended Questions on the Final Questionnaire.....	74
Table 15. Answers to the Open Ended Questions on the Final Questionnaire .....	76
Table 16. Components Participants Would Continue On Their Own .....	89

## DEDICATION

This dissertation is dedicated to all the people I worked with and learned from in the over twenty years I was in the corporate world. They were my motivation behind the pursuit of this study. To my Father, Dale who told me that I could be and do anything I set my mind to. To my mother, Barbara, who taught me to love learning and the pursuit of education, and to my daughter Taylor who is a constant source of joy and inspires me to be a better person every day.

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To Karen for making the process so much easier and my paper so much better with your impeccable editing assistance.

## VITA

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## ABSTRACT

The management of the psychological and physiological dimensions of stress can have significant effect on workplace productivity. Yet, stress as a universal human phenomenon is often downplayed or misunderstood by both employees and organizations. This study looked at the effects of stress on the workplace from both an individual and an organizational perspective. An exploratory mixed methods design was used to test the efficacy and potential benefits of providing employees with tools to help them better manage their stress. The three components of Hatha Yoga: breath, movement, and meditation were introduced on site to the employees of a small start-up software company. The treatment was offered to a group of 14 volunteer employees for 15 minutes per day, for 4 weeks during working hours. Three quantitative pre- and post measures, the Perceived Stress Survey (PSS) , the State-Trait Anxiety Index (STAI) , and the Work Engagement Profile (WEP) tested the impact of the treatment as it affected perceived stress, anxiety, and engagement in the workplace. The researcher also gathered qualitative data post treatment from a post treatment questionnaire, her personal observations, and a meeting with the study company's Chief Operating Officer. Only perceived stress, as measured by the PSS, showed a statistically significant decrease among the participants. However, the participants attributed additional benefits to the treatment and stated an intention to continue the treatment activities both individually and as a group. The findings from the quantitative and qualitative data led the researcher to believe that additional research and use of the treatment methods could be beneficial in other workplace settings.

## Chapter 1: Introduction

Stress in the workplace is one of the leading contributors to often unmanaged and misunderstood costs for organizations. Stress impacts organizations in the form of increased health care costs, accidents and injuries, absenteeism, tardiness, turnover, and diminished productivity and performance (“Are You Working Too Hard?,” 2005; Beehr & Newman, 1978; Garfinkel & Singhal, 1998; Klatt, Buckworth, & Malarkey, 2009; NIOSH, 2009; Sauter et al., 1999; Spielberger & Reheiser, 1995; Van der Klink, Blonk, Schene, & Van Dijk, 2001). Additionally, according to American Psychological Association’s 2013 report *Stress in America*, 84 % of Americans reported that their stress levels either increased or stayed the last year, and 21% of Americans reported extreme levels of stress, which was higher than in 2012, but lower than in previous years, and concern regarding their ability to manage stress remains high (American Psychological Association, 2008, 2010, 2013).

Of particular interest in the 2012 report, as the intervention took place in Denver, is that 43% of adults in Denver said their stress increased in the past year, and more people reported extreme levels of stress, 28%, versus 18% in 2011. Work was also stated as a reason for stress for 77% of the adults versus 65% nationally, and the number of people that reported being advised to reduce stress doubled in 2012 to 34% versus 17% in 2011 (American Psychological Association, 2008, 2010).

With increased global pressure, productivity and health care costs are key factors in American organizations’ ability to maintain and increase their competitiveness in a global economy and marketplace.

The impact of stress is often misunderstood by organizations and in a western culture, it may be seen as a necessary evil that drives better performance and higher productivity. What organizations fail to understand is the difference between people experiencing stress in the form

of harm or threat versus experiencing stress in the form of challenge. Harm refers to past damage or loss, whereas threat refers to anticipated damage or loss. Both of these trigger the physiological stress response intended to deal with acute events. In contrast, challenges demand higher performance, are energizing, ultimately leave the person with a feeling of accomplishment, and do not trigger this same physiological response (Sauter et al., 1999).

When the stress response is triggered in the body, it sets in motion a whole range of physiological mechanisms that, although triggered by different stimuli in different people, manifest similarly in the body. The sympathetic nervous system is activated, stress hormones are released into the body, and other hormones are inhibited. The stress response creates changes to most of the body's major systems (National Institutes For Health, 2002; Sapolsky, 2004; Selye, 1984). These physiological reactions allow the person to garner the physical resources necessary to facilitate the best response to a short-lived crisis or acute stress.

In acute stress, the stress response is activated and, when the crisis is over, the body's stress response is turned off, creating little or no risk to the body. However, in chronic stress, the body is in a constant state of activation, and the stress hormones and other physiological changes to the body remain in place because the body is not triggered to shut down the stress response (Ornish, 2007; Sauter et al., 1999; Selye, 1991).

Chronic stress can put a strain on the heart, undermine the immune system, and lead to chronic illness. It can also be fairly common, as there is evidence that most stress-related disease emerges from our ability to activate the stress response by both real and perceived threats, and the regularity in which we activate a system that was designed to respond to acute situations (B. McEwen & Lasley, 2007; Sapolsky, 2004). Also, it often is difficult to diagnose the existence of chronic stress, meaning that the physical and mental degradation is likely to continue until a

significant health problem occurs, such as cardiovascular disease or diabetes (Sapolsky, 2007). Thus, the physical damages of stress often go undetected.

Organizations also face the issues of their inability to distinguish work-related stress from non-work related stress, the differences in people's perceptions about job conditions and situations, and the potential for reciprocal influence where difficult work situations can cause stress and stress also can lead to difficulties at work (CIPD, 2008; C. L. Cooper & Cartwright, 1997). This means it is difficult for organizations to moderate their employees' stress and manage the associated costs, as many of the costs will not show up in the short term and other costs may not be work related.

Stress management programs should be viewed as a means for controlling the adverse costs of stress and enhancing both organizational and employee health. When such programs are designed with the employer and employee in mind, the programs tend to be much more successful. However, while many organizations do have stress management programs in place, there is a wide variation in approaches, with stress resilience training making up only 13% of the programs (Buck Consultants LLC, 2012). These programs are usually implemented in large organizations, leaving out entire employee populations—such as the large body of workers employed by small businesses. Also, most programs are not always provided to employees at all levels of the organization, meaning that the most at-risk employees often do not receive the treatment (Baicker, Cutler, & Zirui, 2010; C. L. Cooper & Cartwright, 1997).

### **Statement of the Problem**

As discussed above, issues of stress affect individuals' health and wellbeing and the organizational costs and productivity. Current attempts to implement effective stress management programs often fall short of the desired results. Further, traditional interventions often tend to be one-size-fits-all, superficial, and ineffective at reaching the employees who are

most at risk to suffer the adverse effects of stress. Effects of traditional programs tend to be short term unless other changes are implemented to change the workplace situation that created the stress for the employee (C. L. Cooper & Cartwright, 1997; Gebhardt & Crump, 1990; Lazarus, 1995). All of these factors point to an opportunity to develop an impactful intervention that could potentially reduce the effects of stress on both the employee and the organization.

Complementary and alternative medicine, specifically mind-body interventions, has been used in the medical field to address stress. These programs are usually implemented in clinical settings with patients who have pain, depression, and other health issues (Benson & Proctor, 2010; Kabat-Zinn, 2009). However, there is the potential that mind-body treatments could be used in non-clinical populations (Baldwin, 1999; Fallon, 2008; Oleshansky, 2004) and even in the workplace (Klatt et al., 2009). Additionally, Benson and Proctor's (2010) work showed that a 12- to 15-minute mind-body practice can create significant results.

Hatha Yoga is one such mind-body treatment that has been found to reduce stress (Kabat-Zinn, 2009; McCall, 2007). Hatha Yoga has also been studied as a stress reduction treatment in the workplace (Dunn, 2009; Jungman, 2005; Klatt et al., 2009). However, barriers were identified in implementing yoga in the work place setting. Klatt et al. (2009) specifically found two primary barriers: (a) the perception that it would take too much time out of the workday for yoga to be effective and (b) the belief that yoga postures could not be performed onsite at work. Additionally, it is the experience of the researcher that there is still a stigma attached to the word yoga by many executives in organizations. Even if the executive is familiar with yoga, practice themselves and have experienced its benefits, they often do not think it is a good fit for the organization. For a treatment to be impactful and accepted, it must overcome all of these obstacles.

The current study's intervention is based on a model that works in a short time frame of 15 minutes (Benson & Proctor, 2010; Klatt et al., 2009), relies on the principles of Hatha Yoga breath, postures, and meditation (Chanen, 1998; Pilkington, Kirkwood, Rampes, & Richardson, 2005; "Yoga for anxiety and depression," 2009), and is referred to as a *stress reduction program* with the participant population instead of as *yoga*. Also, the program was offered to the entire population of workers in an organization, and thus the researcher hopes to show the benefits of including employees who would have normally not been offered such a program. The purpose of the study and the research questions are outlined below.

### **Purpose of the Study**

The purpose of the study was to design and implement a 4-week researcher-developed Stress Reduction Treatment in the work setting, and to measure the treatment's impact from a personal and organizational perspective. The overall objectives of the research were to implement the intervention and determine the intervention's impact, if any. Paper and pencil questionnaires, participant feedback, and researcher observations were used to determine (a) if the treatment had an impact on the measures of perceived stress, anxiety, and engagement of the employees and (b) if the employees observed noticeable differences in themselves and the workplace as a result of the treatment.

The treatment used the Hatha Yoga-based techniques of breath (*pranayama*), movement (*asana*), and meditation (*dyana*) in a 15 minute per day guided instructional intervention with employees in their work environment, as part of their regular work schedule. The initial treatment spent more time on breath and movement, and subsequently, the treatment included a more meditative practice, with the goal of providing the participants the ability to create a daily routine that works for them specifically, and that they can continue on their own once the treatment period is over.

## Objectives and Research Questions

The study investigated the impact of the researcher-developed stress reduction treatment on the employee population in a small company setting, where all the employees, including management, at a single site of a small startup software company were invited to participate. The treatment was 15 minutes in length and was administered 5 days a week for 4 weeks in the company offices. The overall research objectives were to determine (a) if the treatment has an impact on the measures of perceived stress, anxiety, and engagement of the employees and (b) if the employees observe noticeable difference in themselves and the culture of the workplace as a result of the treatment.

The research questions guiding the study were as follows:

1. Will a 4-week, 15 minute per day guided stress reduction intervention, using Yoga techniques, have an effect on the participants' perceived levels of stress as measured by the Perceived Stress Survey (PSS)?
2. Will a 4-week 15 minute per day guided stress reduction intervention, using yoga techniques, have an effect on the participants' perceived levels of anxiety as measured by the State Trait Anxiety Indicator Y1 Form (STAI-Y1)?
3. Will a 4-week 15 minute per day guided stress reduction intervention, using yoga techniques, have an effect on the participants' perceived levels of engagement as measured by the Work Engagement Profile (WEP)?
4. Will the number of sessions attended impact the change in pre and post test results on the three instruments?
5. Will the participants see a perceived effect of the stress reduction treatment as a result of their participation in the 4-week program?

**Intervention Setting**

The participating study organization was a small startup software company located in Denver, Colorado. The study participants were the employees this organization. The company sells productivity and accuracy enhancing tools and processes to hospitals. The company's tools provide easier access to patient records to both doctors and nurses by using the company's proprietary software and hardware. When the study was conducted the organization had recently gone through significant organizational changes and the management team was looking to provide their employees with ways of understanding and managing their stress. Thirty employees work at the Denver office. The employee's positions range from executive level positions to front line customer service employees.

**Relevance of the Study**

The program presented in this study has the potential to provide organizations with a low-cost approach to instructing a broad base of employees in stress reduction techniques and, to additionally introduce cultural change to the workplace. The literature review for the present study revealed that past studies of yoga as a stress management intervention in the workplace were not offered to the entire employee population or done on company time, as part of the employees workday. This potentially limited the population of participants to people who are already interested or willing to try something to reduce their stress or at the levels being targeted (Broome, 1995; Jungman, 2005; Klatt et al., 2009; Mars, 1987). In other studies, the individuals also were already participating in yoga, meditation, or exercise and the researchers had them report on the effects of their existing practices (de Vicq, 2009; Moane, 2003). In these cases, the studies focused on secondary interventions, which teach the participants new coping or stress reduction skills that they can use, but do not focus on the outcomes for the organization. In the

proposed research, although the intervention itself is a secondary intervention, there are also elements of a primary intervention, although these impacts will not be measured.

In the current study, all employees at the company's main office location were invited to participate in the intervention. By including all levels of employees there was the potential for employees who would not normally be part of the targeted populations, by traditional stress management programs, to receive the benefits.

The intervention used in the study was 15 minutes in length, which provided an easy-to-access and time efficient alternative to traditional yoga classes, which usually last 45 minutes to 1 hour. This shorter intervention provides the potential for a new way of looking at what is required for an individual and organization to receive the benefits of breath, movement, and meditation as they apply to stress relief and engagement. Klatt et al. (2009) made strides in doing this by cutting down the traditional 45-minute Mind Body Stress Reduction (MBSR) program to 20 minutes per day, and saw success. However, the participants were also required to attend a 1-hour session on their own time each week. In the current study, all sessions were conducted during the employees' work hours and all sessions were 15 minutes in duration.

The current study also ensured that participants could wear their normal workday attire while participating. This allowed them to make the most of their time, and did not inconvenience them with having to change into other clothing more conducive to exercising. All movements were no more strenuous than an employee would experience in their normal workday, while still providing them with the benefits of the postures.

Additionally, the current study was implemented in a small organization. Most wellness programs and stress management interventions are currently implemented in large organizations, as most small organizations do not have the resources to implement these programs (Baicker et al., 2010). By providing access to a small organization's employees, there was the potential to

better understand the impact of these programs and how they could be cost effectively implemented in smaller organizations. This could potentially open up opportunities for smaller businesses to receive the benefits of a stress reduction intervention, without having to assume the costs they had previously expected to incur.

### **Definition of Terms**

*Acute stress* is the short-term activation of the stress response, where the body returns to baseline as soon as the crisis or event is over. The body responds to the crisis and then relaxes (Ornish, 2007).

*Challenges* energize the individual physically and emotionally and encourage learning, growth and expansion. When met they leave the individual relaxed and satisfied (Lazarus, 1995; Sauter et al., 1999).

*Chronic stress* is the activation of the stress response over and over, over long periods of time, where the body is not allowed to recover or return to baseline. Chronic stress can cause illness, put strain on the heart, undermine immune system, and trigger processes that lead to chronic illnesses (B. McEwen & Lasley, 2007; B. S. McEwen & Lasley, 2002; Ornish et al., 1983; Sapolsky, 2004).

*Hatha Yoga* utilizes three elements in its practice: physical postures (*asanas*), controlled breathing (*pranayama*), and meditation (*dhyana*), and is the most commonly taught form of yoga in the United States (Chanen, 1998; Pilkington et al., 2005; “Yoga for anxiety and depression,” 2009).

*Job stress* is the harmful physical and emotional responses that occur in the individual when the demands and requirements of the job do not match the resources, capabilities, or needs of the employee, or when situations are created in the workplace that create the need for the

individual to change from their normal way of functioning (Beehr & Newman, 1978; Sauter et al., 1999).

*Observable Data* is a source of data in qualitative research where the researcher takes field notes on the behavior and activities of the participants in the research study in an unstructured or semi-structure (Creswell, 2009).

*Perceived Stress Survey (PSS)* is an economical tool used to measure perceived stress (Cohen, 1988). The instrument is easy to understand and can be used with population samples with a junior high school education. The questions are general enough not to have content that pertains to any sub-population group in particular. The PSS measures the degree to which a person perceives situations in his or her life to be stressful and is designed to measure the extent to which a person sees their life events as unpredictable, uncontrollable and overwhelming (Cohen, 1988; Cohen, Kamarck, & Mermelstein, 1983).

*Primary intervention* is concerned with taking actions that modify or eliminate the sources of stress that are inherent in the work environment with the intention of reducing their negative impact on the individual. They are often used as methods for cultural change (C. L. Cooper & Cartwright, 1997).

*Presenteeism* is “the loss in productivity that occurs when employees come to work but function at less than full capacity because of ill health” (CIPD, 2008, p. 6). Employees show up for work; however, their capacity to perform their job is compromised by stress-related issues (Allen & Sullivan, 2006).

*Secondary intervention* in the context of this research is concerned with the timely detection and management of stress by helping to increase the awareness of the individual and provide them with stress management skills through the use of training and education (C. L. Cooper & Cartwright, 1997).

*State-Trait Anxiety Inventory (STAI)* is a tool used to measure the state and trait anxiety of an individual. The state or Y1 form is used in this particular study. This measures the level to which an individual feels anxiety in response to perceived stressful situations. The Y1 form allows the researcher the ability to specify the time period to be focused on which allows for the researcher to measure the effectiveness of an intervention (Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983). The STAI was developed to use with college students or adults and has been used extensively in research.

*Stress* is defined as “the *nonspecific* [common] *results of any demand placed upon the body*, be the effect mental or somatic” by Hans Selye (1991, p. 22), one of the pioneering researchers in the field of stress. It is experienced in response to a range of stimuli, particularly those that place excessive demands upon people, and is highly personal in nature due to people’s different interpretation and appraisal of situations and stimuli (CIPD, 2008; C. Smith, Hancock, Blake-Mortimer, & Eckert, 2007).

*Stress management interventions* “are defined as any purposeful action taken to reduce or alleviate the stress experienced by organizational citizens in the execution of their work function” (Le Fevre, Kolt, & Matheny, 2006, p. 548).

*Stressor* is “a stress stimulus or the external input that triggers the stress response” (Lazarus, 2007, p. 37).

*Stress response* is the general or common physiological reaction of the body to a stressor or the output of the stressor (Lazarus, 2007; Sapolsky, 2004).

*Tertiary intervention* is remedial and consists of treatment, rehabilitation, and recovery processes for individuals who have suffered or are suffering serious effects as the result of stress. They typically consists of counseling or other such services (C. L. Cooper & Cartwright, 1997).

*Work Engagement Profile (WEP)* is a 24-item questionnaire that measures the four intrinsic rewards employees have the potential to receive directly from their work: a sense of meaningfulness, a sense of choice, a sense of competence, and a sense of progress (Thomas, 2009). The WEP has been shown to be an indicator of an employee's level of satisfaction with the organization, their job performance, stress levels, and commitment to the organization. The WEP has been proven to be reliable within the United States (Burke, 2004).

### **Limitations to the Study**

The size of the population and lack of control group were definite limitations of the current study. The researcher had contacted several colleagues and associates to find an organization that was willing to participate in a study of this kind, and the participating organization was the only company that was willing to do so. The population size, of 30 employees, meant that the statistical significance was sacrificed, however the design allowed the research to observe the treatment and the participants throughout the course of the study and to augment the statistical data with data about observable behaviors. Ideally, for statistical purposes, the population size would have been larger and there would have been a control group in place. However, when the opportunity to work with an organization that was willing to make the time and cost commitment necessary emerged, the researcher believed it was judicious to do so.

The researcher conducted the intervention, which could have created a conflict and bias among participants, who may subconsciously or consciously provide answers on the measurements that "helped" the researcher. However, the data collection methods were designed to create an atmosphere of trust, where people did not feel compelled to help and did not feel any threat in being honest. All data were collected confidentially, and neither the researcher nor the organization knew the identity of any person in the individual responses to any questionnaires at

any time. The intervention was straightforward and scripted, so it could easily have been taught by anyone trained and certified as a yoga teacher.

The measures are also limited by the fact that the researcher was not able to collect data to measure the organizational impact of the study. She was not able to measure the long-term impacts of the intervention, as no data was collected after the final questionnaires at the end of the 4-week period, and the measures being used were not physiological, or performance based, but self-reported. Additionally, it was not possible to measure or control intervening variables that could potentially affect the participants during the treatment, such as family emergencies, natural events that keep the participants from being able to come to work, organizational changes, or personal crises.

### **Organization of the Remainder of the Study**

Chapter 2 provides a review of relevant literature describing the nature of stress research and the impacts of stress on the individual. It goes on to discuss the organizational impacts of stress and the current interventions and programs utilized to address stress in the workplace. Yoga is discussed within context of its background in the United States and its potential as a mind-body treatment for stress relief in the individual. Finally, the measures that were used to determine the impact of the study are described.

Chapter 3 provides a discussion of the research design and methodology of the study. A review of the design of the study, the study population and characteristics, data collection methods, timing and other aspects of the intervention are provided. Additionally, the relevance and limitations of the study are outlined.

Chapter 4 provides a summary of the results of study and specifically reviews the results for each of the research questions, including both the quantitative and qualitative data that was

captured and evaluated. A summary of the overall findings and researcher observations is also included.

Chapter 5 provides the researchers concluding thoughts on the meaningfulness and usefulness of the study, suggestions for applications of the findings, and ideas for further research based on the findings. This chapter summarizes the work that has been completed and also brings into consideration how organizations and individuals could further benefit from the study.

## **Chapter 2: Literature Review**

This chapter provides an examination of the literature in support of the current study, and specifically the literature related to stress as it applies to the individual and the organization.

First, a history of the study of stress is presented, followed by an examination of the impact of stress on the individual, and how people manage their stress.

Next, an overview of the study of stress in the workplace is provided, including a discussion of the costs to the organization and a review of interventions currently used to help people deal with stress. The third major section of this chapter reviews the outcome measures of stress to be used in the study, including the PSS, the State-Trait Anxiety Inventory, WEP and other measures.

### **The Study of Stress**

The scientific study of stress as a contributor to disease is new to the 20th century and largely evolved due to the work of Hans Selye in the 1940s and 1950s (Rosch, 1958). Previously, clinicians intuitively recognized that different individuals reacted to and recovered from diseases differently. However, with the addition of rigorous science, the study of stress became a discipline (Sapolsky, 2004). In particular, researchers began to implicate the mind as an influencer of one's wellbeing and, specifically, consider the extent to which thoughts and attitudes contributed or caused disease (C. L. Cooper & Dewe, 2007).

Before categorizing this physiological phenomenon as stress, "Sociologists, anthropologists, physiologists, psychologists, and social workers had previously used several divergent yet overlapping terms for the subject matter—for example, conflict, frustration, trauma, anomie, alienation, anxiety, depression, and emotional distress" (Lazarus, 2007, p. 35). Today, stress is a prominent public health concern that imposes "physiological, emotional, social, and economic consequences to individuals, their family and the community at large" (C.

Smith et al., 2007, p. 83). According to the American Psychological Association's 2013 report *Stress in America*, "Almost three-quarters (78 percent) of respondents say that their stress level has increased or stayed the same over the past five years and 84 percent say their stress level has increased or stayed the same in the past year" (American Psychological Association, 2012, p. 13, 2013, p. 10).

In the same 2013 report, Americans reporting high levels of stress (an 8, 9, or 10, on a 10 point scale) increased to 21% from 20% in 2012 (American Psychological Association, 2012, 2013). Respondents, in this year and in previous years, reported they do not know how to handle the stress they are experiencing and that their efforts to reduce stress are often unsuccessful (American Psychological Association, 2008, 2010, 2012, 2013). CIPD (2008) added that many people do not even understand what stress is, what impacts it can have, and what can be done to handle it—and this can undermine their willingness and ability to manage their stress effectively.

**Causes of stress.** Selye (1991), an early stress researcher, defined stress as "the *nonspecific* [common] *results of any demand upon the body*, be the effect mental or somatic" (p. 22). Thus, stress can be caused anywhere at any time by demands placed upon the person. These demands can be pleasant or unpleasant, real or imagined, and the stress reaction affects most or all parts of the body, regardless of the cause. Additionally, the physiological response is similar, regardless of whether the cause is physical or psychological (Selye, 1984).

"Stress is experienced in response to a range of physical, occupational, and emotional stimuli" (C. Smith et al., 2007), particularly those that place excessive pressure or demands upon people (CIPD, 2008). Importantly, what is excessive for one person may not be excessive for another; therefore, stress is a highly personal matter. Selye (1984) emphasized, "what matters is not really what happens to you but the way you take it" (p. 394). The key factor that distinguishes a stressful event from a non-stressful event is that the stressful event evokes an

adaptive or coping response from the individual (Holmes & Rahe, 1967). An adaptive or coping response is one that requires significant change in the ongoing pattern or behavior of the individual. “This is the paradox of stress that is it is adaptive in nature, but has possible maladaptive consequences” (Korte, Koolhaas, Wingfield, & McEwen, 2005, p. 4).

Evidence suggests that the interplay of one’s environment, personality, and other personal traits strongly influence whether someone will consider a certain event stressful (C. L. Cooper & Dewe, 2007; Lazarus, 2007). For example, one person may experience the stress response while sitting in a traffic jam and another will remain calm and not react in the exact same situation. Additionally, an individual’s personal agenda can change from moment to moment, occasion to occasion, and setting to setting, depending upon their current emotional state and their ability to cope. Thus, people tend to attend selectively to stressful events as they occur (Lazarus, 1995).

Stress typically is believed to be caused by negative or threatening occurrences (e.g., illness, loss, setbacks); however, these negative events comprise only one type of occurrence that cause stress. In fact, even desirable events “consonant with the American values of achievement, success, materialism, practicality, efficiency, future orientation, conformism, and self reliance” can cause significant stress (Holmes & Rahe, 1967, p. 217). For example, getting married, having a child, getting a promotion, or financial gain.

Because of the variety of events that can evoke adaptive responses, “stress takes place at one’s job, in one’s home, and in school—in effect, anywhere people work with each other or have close relationships as, for example, coworkers, family members, lovers, friends, students, or teachers” (Lazarus, 2007, p. 35). Stress can also be caused by internal drives and events (Selye, 1991). We do not have to confront a dangerous or threatening situation for the stress response to be triggered.

In humans, both real and perceived threats trigger the stress response. In animals, stress is concurrent with a short-term crisis that ends either with survival or death. However, for humans, stressors may occur naturally, through deliberate orchestration (e.g., by engaging in risk-taking activities), or even simply by thinking or imagining (Sapolsky, 2004; Sauter et al., 1999; Serber, 2000). We can think ourselves into the stress response with work deadlines, an argument with a boss or coworker, or anticipation of a crucial dinner with clients. Thus, we could be in a constant state of stress throughout our day. “Essentially, we humans live well enough and long enough, and are smart enough, to generate all sorts of stress events in our heads” (Sapolsky, 2004, pp. 4-5).

**Physiological responses to stress.** Stressful life events “threaten the security of the individual and evoke attempts at adaptive behavior” (Rahe, Meyer, Smith, Kjaer, & Holmes, 1964, p. 42). Rahe et al. also pointed out that psychophysiological studies have found that these stressful events also “evoke significant alterations in the function of most bodily tissues, organs and systems” (p. 42). When a stressor is consciously or subconsciously detected, the brain is alerted that the individual is endangered or threatened and a series of autonomic responses are initiated to prepare the body to fight or flee from the stressor (typically called the fight-or-flight response) (Cannon, 1920). The evolutionary purpose of this response is to preserve survival of the organism. Selye (1984) emphasized that stress “manifests itself by measurable changes in the organs of the body” (Selye, 1984, p. 58), including activation of the sympathetic nervous system, release of stress hormones, and inhibition of other hormones. These reactions allow one’s senses to sharpen, heart rate to increase, respiration to deepen, and muscles to engage, thus, enabling a successful fight, rapid escape, or other ways of dealing with the event while it is occurring (National Institutes of Health, 2002; Sapolsky, 2004).

Selye (1991) named the body's response to stress the General Adaption Syndrome. He explained, "The totality of these changes—the stress syndrome—is called the general adaptation syndrome (GAS). It develops in three stages: (1) the alarm reaction; (2) the stage of resistance; (3) the stage of exhaustion" (Selye, 1991, p. 1). In Stage 1,

the adrenal medulla releases epinephrine and the adrenal cortex produces glucocorticoids, both of which help restore homeostasis. Restoration of homeostasis leads to the second stage, that of resistance, in which defence and adaptation are sustained and optimal. If the stressor persists, the stage of exhaustion follows, and adaptive response ceases; the consequent may be illness or death. (B. S. McEwen, 2005, p. 316)

New information has come to light and the stress theory has been refined and adapted through the course of research conducted over the last 60 years. It has been found that in the body's activation of the stress response, "The hypothalamus-pituitary-adrenal (HPA) axis is the feedback loop by which signals from the brain trigger the release of hormones needed to respond to stress" (National Institutes of Health, 2002, p. 2). When the stress response is triggered, an alarm is signaled in the hypothalamus, and corticotrophin-releasing hormone (CRH) is released, which triggers the body's response to stress (National Institutes of Health, 2002; Sapolsky, 2004; Selye, 1984).

The CRH signals the pituitary gland, which releases the hormone adrenocorticotropin (ACTH). ACTH then signals the adrenal glands to release epinephrine or adrenaline, cortisol or glucocorticoids, and norepinephrine or noradrenaline. The epinephrine acts within seconds and increases the blood pressure and heart rate, diverts blood to the muscles and speeds up reaction time, while the glucocorticoids back these responses up over minutes or hours (National Institutes of Health, 2002; Sapolsky, 2004). The glucocorticoids also release sugar and raise the levels of glucose for use as fuel by the muscles and brain (National Institutes of Health, 2002; Sapolsky,

2004). Norepinephrine is secreted by all the nerve endings throughout the body and acts as a chemical messenger to start the response in several organs (Sapolsky, 2004). These hormones affect the autonomic or sympathetic nervous system which regulates heart rate, blood pressure and digestion (National Institutes of Health, 2002; Sapolsky, 2004).

The HPA communicates with several regions of the brain, including the limbic system, which controls motivation, mood and emotions (National Institutes of Health, 2002; Sapolsky, 2004), the amygdala which plays a key role in generating anxiety and fear (National Institutes of Health, 2002; Sapolsky, 2004), and the hippocampus which impacts our ability to access our memories (National Institutes of Health, 2002; Sapolsky, 2007). Additionally, the HPA axis is connected to areas of the brain that control temperature, appetite, and pain—in this case, creating an analgesic effect (National Institutes of Health, 2002; Sapolsky, 2004).

In addition, the HPA axis interacts with the glandular systems, which produce reproductive hormones, growth hormones, and thyroid hormones, interfering with their normal production. This affects a person's growth, tissue repair, reproduction capabilities, metabolism and immune system (National Institutes of Health, 2002; Sapolsky, 2004). All of these reactions take place to garner the physical resources necessary to facilitate the best possible response to a short-term crisis, or acute stress.

In acute stress, the above described stress response is activated, and when the crisis is over, the body's stress response is turned off, creating little or no risk to the body. In chronic stress, however, the body is in a constant state of activation, and the stress hormones remain high. Cortisol and other steroids are produced, which can lead to depression, impotence, anxiety, and other problems. Ultimately, the body's immune systems are impaired and suppressed (Ornish, 2007; Sauter et al., 1999; Selye, 1991).

. . . even the most finely tuned stress response in the healthiest of individuals can begin to cause damage if activated again and again over a long period. In other words, chronic stress can cause illness, putting strain on the heart, undermining the power of the immune system, and triggering processes that lead to diabetes and other chronic illnesses. (B. McEwen & Lasley, 2007, p. 100)

Chronic stress can also be fairly common, given that people are able to think and worry themselves into the stress response. Sapolsky (2004) explained,

A large body of evidence suggests that stress-related disease emerges predominantly out of the fact that we so often activate a physiological system that has evolved for responding to acute physical emergencies. But we turn it on for months on end, worrying about mortgages, relationships and promotions. (Sapolsky, 2004, p. 6)

In turn, “prolonged exposure to stress is linked to psychological conditions such as anxiety and depression as well as physical effects such as heart disease, back pain and headaches” (CIPD, 2008, p. 2). Making matters worse, it is difficult to pinpoint or diagnose the existence of chronic stress, meaning that the physical and mental degradation is likely to continue unabated until the most likely outcome is “for the roof to cave in at some point” (Sapolsky, 2007, p. 190). Selye (1984) pointed out, “Experimental animals and even human beings can die from stress” (p. 59). Additionally, evidence is accumulating to suggest that stress contributes to several chronic health issues including cardiovascular disease, musculoskeletal disease, psychological disorders, maladaptive behaviors, and cognitive impairments.

Up to this point in the chapter, the discussion has focused on the impact of stress for individuals. Importantly, stress also affects all those who come in contact with a distressed individual. of particular interest to this study are the impacts for the organizations that employ distressed individuals. This is the focus of the next section.

### **Stress and the Workplace**

Based on a traditional 40-hour work week, people generally spend more than half of their waking hours at work. During this time, they encounter a number of social, psychological, and physical factors that influence their health and wellbeing (Beehr & Newman, 1978; Griffin-Blake, Tucker, & Liburd, 2006). Lazarus (1995) classified these influences as harm and threat (which can lead to stress) and challenge (which differs from stress). Whereas harm refers to past damage or loss, threat refers to anticipated loss or damage. In contrast, challenges demand higher performance from workers; however, challenges are ultimately energizing and motivating, leaving workers with a feeling of relaxation and accomplishment (Sauter et al., 1999).

Harm and threat—those factors creating stress—stem from a variety of sources in the workplace. A leading source of stress is job design, including noise, pressure, lack of control over decisions, role ambiguity, demanding work schedules, excessive workloads, and poor job security (American Psychological Association, 2008; CIPD, 2011; Lazarus, 1995; NIOSH, 2009). A 2008 survey by the American Psychological Association found that 43% of respondents cited excessive workloads, another 43% cited poor growth opportunities, another 40% cited unrealistic job expectations, and 34% cited job insecurity as key workplace stressors. The same survey in 2010 found that fewer adults than in previous years were happy with the way their organization helped them with work-life balance and fears regarding job security are on the rise (American Psychological Association, 2010). NIOSH (2009) elaborated that one form of unrealistic job expectations occurs “when there is a mismatch between the job requirements and the capabilities, resources or needs of the workers” (NIOSH, 2009, p. 1; Sauter et al., 1999, p. 2). In such cases, job-related factors may require an employee to alter “his or her psychological and/or physiological condition such that the person (i.e., mind-body) is forced to deviate from normal functioning” (Beehr & Newman, 1978, pp. 669-670). For example, employees may find

themselves not being able to focus, being more argumentative, or being less aware of their surroundings. Having to adapt one's preferred way of being dramatically can be deeply disturbing and self-alienating for the individual, thus, creating distress.

Other sources of stress in the workplace originate from workplace conflict (Lazarus, 1995) and low pay (American Psychological Association, 2008). Finally, the growing trends of downsizing and restructuring (e.g., lean manufacturing initiatives) have further fed the identified stressors of job insecurity and heavy work demands as well as introducing the additional stress of change (NIOSH, 2009). These trends and their role in stress have been examined with increased scrutiny among researchers.

Researchers have further clarified that stressors vary by type of work: for example, hourly versus salaried workers or exempt versus non-exempt (Wallace, Levens, & Singer, 1994). Job stress may be higher in hourly or non-exempt positions, as these employees tend to have less control over the nature and content of their work. Further, pressures for global competitiveness have resulted in demands for fewer workers to produce the same or more—despite working the same number of hours for the same pay (Griffin-Blake et al., 2006). These trends and effects have fueled a number of research studies:

Growing concerns over the consequences of job stress for both employees and organizations have stimulated efforts to understand the sources and consequences of stressors in the workplace. These concerns are dramatically reflected in the increasing number of studies of occupational stress that have appeared in psychological, organizational and medical literature over the past 20 years. (Spielberger & Reheiser, 1995, p. 52)

Despite the attention that has been dedicated to the issue (NIOSH, 2009), stress in the workplace appears to be on the rise. A survey of worker experiences of stress reported that

employees' reporting "that their job is 'very' or 'extremely' stressful peaked at 17.1% in 2008, the highest proportion reported in any of the five annual surveys produced since the psychological working conditions series started in 2004" ("Number of stressed workers peaks in 2008," 2008, p. 28). NIOSH (2009) further found that one third of United States workers "report high levels of stress" (p. 1). It follows that workplace stress imposes certain outcomes and costs for organizations. The next section examines these costs in detail.

**Organizational costs of stress.** The diminished health and wellbeing people experience as a result of stress exact certain costs for the organization in terms of increased health care costs, accidents and injuries, absenteeism, tardiness, turnover, conflict as well as diminished productivity, performance and decision making ("Are You Working Too Hard?," 2005; Beehr & Newman, 1978; Garfinkel & Singhal, 1998; Klatt et al., 2009; NIOSH, 2009; Sauter et al., 1999; Spielberger & Reheiser, 1995; Van der Klink et al., 2001). Costs associated with these impacts were estimated to total \$150 billion dollars annually as of 1991 (Pelletier & Lutz, 1991) and \$300 billion dollars in 2005 ("Are You Working Too Hard?," 2005). More recently, Cooper and Dewe (2008) reported that stress, depression, and anxiety alone "accounted for 13.8 million days lost or 46% of all reported illnesses, making this the single largest cause of absenteeism attributable to work-related illness" (C. Cooper & Dewe, 2008, p. 522).

In terms of workplace safety, evidence suggests that stress tends to precipitate accidents. "This may be due to poorer concentration, forgetfulness, reduced motivation or other stress-related mechanisms" (CIPD, 2008, p. 8). In these instances, one or more people's health, wellbeing, and life can be placed at risk.

Lost productivity occurs in various forms. One form is withdrawal, including taking excessive absences, being late, psychologically withdrawing through lowered commitment or job engagement, or quitting (Beehr & Newman, 1978). Another response is *presenteeism*, "defined

as ‘the loss in productivity that occurs when employees come to work but function at less than full capacity because of ill health’ (CIPD, 2008, p. 6). In this case, employees show up for work; however, their ability to perform their job is diminished by stress-related issues. Allen and Sullivan (2006) believe that health problems such as allergies, headaches, and other ailments have degraded employee productivity and become “many companies’ greatest health-related expense” (p. 48). The American Psychological Association (2008) found in its study that “Americans reported more lost productivity at work due to stress in 2008 than they did in 2007. Sixty percent reported losing some amount of productivity during the previous month compared to 55 percent in 2007” (American Psychological Association, 2008, p. 13). CIPD (2008) emphasized that it is lost productivity rather than sheer absence that imposes the greatest costs to organizations. Given these varied and far-reaching impacts, CIPD emphasized that the issue of stress at work is a business-critical one that must be managed effectively.

**Interventions to mitigate workplace stress and its effects.** Given the substantial incidence and impacts of workplace stress, organizations have dedicated time and resources to designing and implementing interventions to help employees effectively manage their stress (Le Fevre et al., 2006; Nash, 2010; Pelletier & Lutz, 1991). “The exponential growth of worksite health programs has partially resulted from the belief that an organization should take some responsibility for the welfare of its most valuable resource, the worker” (Gebhardt & Crump, 1990, p. 1). In the 2012, Buck Consulting Survey on employee wellness strategies, only 13% of respondents did not believe they had a role in helping the employee manage their wellness (Buck Consultants LLC, 2012). Organizations have experienced significant savings by reducing the severity of workplace stress—especially when those measures help improve employee health and reduce employee injuries and illnesses (Allen & Sullivan, 2006; CIPD, 2008).

However, care needs to be taken to design appropriate and effective interventions, as several factors complicate organizations' efforts to run effective stress management programs. One key difficulty is that much of the stress-related costs organizations experience are due to non-work-related stress. Based on a 2008 survey, CIPD researchers estimated "that 60% of stress-related absence is for non-work causes" (CIPD, 2008, p. 2). Further complicating the issue is the fact that everyone perceives and experiences stress differently. Thus, situations that one person might find debilitating and stressful might be the same situations that another finds stimulating (C. L. Cooper & Cartwright, 1997). Additionally, work and stress have a reciprocal influence, meaning that "difficult work situations can cause stress, but also stress can lead to difficult work situations" (CIPD, 2008, p. 11). Thus, it can be difficult to unravel causes from effects and, therefore, to help people deal with what causes their particular stress.

Finally, it is important to understand that "stress is dynamic and, in a rapidly changing environment, is unlikely to ever disappear completely, but needs to be regularly monitored and addressed" (Cooper & Cartwright, 1997, p. 12). Stress management interventions should, therefore, be viewed as a means for controlling the adverse costs of stress as well as enhancing organizational health. When programs are designed to meet the employees' as well as the organizations' needs, organizational stress management efforts tend to be even more successful.

**Levels of intervention.** Stress management interventions "are defined as any purposeful action taken to reduce or alleviate the stress experienced by organizational citizens in the execution of their work functions" (Le Fevre et al., 2006, p. 548) Cooper and Cartwright (1997) identified three levels of workplace stress interventions: primary, secondary, and tertiary.

**Primary intervention.** Primary intervention examines and modifies the work environment and the nature of the work itself to change or "eliminate sources of stress inherent in the work environment and thus reduce their negative impact on the individual" (C. L. Cooper &

Cartwright, 1997, p. 7). Interventions may address work overloads, conflicting expectations, and other factors endemic to the work that produce stress. Primary prevention offers the most direct and powerful stress-reducing effects; however, organization members may resist this kind of intervention because it typically requires changes in the company's culture, structure, and work processes and routines, all of which have implications for the organization's performance (Sauter et al., 1999). Additionally, while primary interventions have been identified as the preferred method of intervention for workplace stress, studies of these interventions suggest that they are not usually effective at lowering the worker's level of stress (Murphy & Sauter, 2003).

***Secondary intervention.*** Secondary intervention focuses on building employees' awareness and ability to detect and manage stress (C. L. Cooper & Cartwright, 1997). Secondary interventions can be one of three types: somatic, cognitive, and multimodal. Somatic interventions include relaxation techniques, biofeedback, and breathing exercises. Cognitive interventions focus on mindfulness, and multimodal combine aspects of both (Le Fevre et al., 2006). These types of interventions are generally delivered through education and training that focus on enhancing self-awareness, developing basic relaxation skills, and modifying employees' lifestyles to include healthful activities and practices that carry over into employees' professional and personal lives (Gebhardt & Crump, 1990). C. L. Cooper and Cartwright (1997) emphasize that secondary prevention is less direct than primary prevention, as it offers "damage limitation" by focusing on "the consequences rather than the sources of the stress" associated with the organization and the work (C. L. Cooper & Cartwright, 1997, p. 9). Nevertheless, such training can be effective in helping employees recognize and deal with both work- and non-work-related stress "and to overcome much of the negativity and stigma still associated with the stress label" (p. 9).

Nearly half of the large companies in the United States offer secondary prevention in the form of employee training and education in stress awareness and management (Sauter et al., 1999). Topics of such programs include time management, relaxation techniques, and the causes and effects of stress. The impetus for these programs are their ease and low cost of implementation (Sauter et al., 1999) combined with business leaders' recognition that such programs often pay for themselves by avoiding or reducing healthcare costs (Allen & Sullivan, 2006). "Companies that take this approach gain some control over seemingly uncontrollable health care spending and create a win-win situation: Their workers enjoy better health and quality of life while they realize more productive employees and improved financial results" (pp. 55-56).

***Tertiary intervention.*** Tertiary intervention focuses on treating, rehabilitating, and supporting the recovery of employees who are dealing with serious stress-related illnesses or injuries. Counseling (e.g., through employee assistance programs) is a widely used form of intervention at this level (C. L. Cooper & Cartwright, 1997). Other forms of intervention at this level include "the implementation of comprehensive systems and procedures to facilitate and monitor rehabilitation and return to work of employees" (p. 9).

The key differences among these levels of intervention are that primary prevention aims to mitigate workplace stressors, while secondary interventions aim to provide the employee with training and skills to mitigate stressors that cannot be changed, and tertiary interventions aim at rehabilitating and supporting the employee (C. L. Cooper & Cartwright, 1997).

***Criticisms of secondary organizational interventions.*** Despite the popularity of corporate stress management programs, which fall into the secondary intervention category, several criticisms have been lodged against them. First, as discussed earlier in this chapter, although stress is a highly personal and subjective matter, most stress management programs fail

because they are superficial and treat people as if they were all the same (Lazarus, 1995). Stress management programs are designed in this manner for ease and low cost of implementation; however, they fail to help individuals with “markedly different goal commitments, belief systems, and coping resources and patterns” (Lazarus, 1995, p. 11).

Second, for organizations to reap the full benefits of stress management programs, “strategies and incentives must be designed to recruit individuals who are at risk for disease and disability or who must maintain a specified level of physical fitness to avoid injury in a physically demanding job” (Gebhardt & Crump, 1990, p. 14). However, these programs typically appeal and are promoted to company executives rather than to employees at all levels of the organization. For example, research suggests that smoking, alcohol abuse, obesity, and coronary heart disease is often more prevalent among lower level employees; however, these employees rarely are the recipients of intervention. Furthermore, these employees typically have little ability to modify the stressors unique to their work (C. L. Cooper & Cartwright, 1997).

Third, despite the benefits attributed to stress management programs, some researchers question whether the positive effects were due to the programs or to some other factors, such as the employees’ personal interests or behaviors (Jex, Spector, Gudanowski, & Newman, 1995). For example, exercise helps reduce the physiological impacts of stress; however, a habit of exercise must be maintained on a regular basis for these effects to be lasting. A program cannot achieve this result without the employee’s personal dedication to the practice.

Fourth, Cooper and Cartwright (1997) cautioned that any positive changes witnessed as a result of second and tertiary interventions are “likely to be short term if employees return to an unchanged work environment and its indigenous stressors” (p. 11). They elaborated, “Lifestyle and health promotion activities appear to be effective in reducing anxiety, depression, and psychosomatic distress, but do not necessarily moderate the stressor-strain linkage” (p. 11).

Additionally, if job satisfaction is not improved, it is likely “that the individual will adopt a way of coping with stress which may have positive individual outcomes, but may have negative implications for the organization (i.e., taking alternative employment)” (C. L. Cooper & Cartwright, 1997, p. 11).

**Wellness programs.** Wellness programs for the purpose of stress management often fall under the larger umbrella of an organization’s wellness initiatives and are normally part of the company’s health program. However, despite growing awareness of the organizational costs of stress, Buck Consultants LLC’s (2012) survey of 1,356 organizations revealed that the most popular objective for employee wellness programs was improving productivity and reducing presenteeism, which are directly affected by stress. Ironically, however, many organizations do not engage in any form of workplace wellness or stress reduction practices (Baicker et al., 2010). Most organizational wellness practices in place in the United States consist of flu vaccines, health risk appraisals, fitness club discounts, workplace competitions, and health fairs.

These programs do not address stress directly, and, as mentioned earlier, people who have access to and volunteer for these programs often are the healthiest employees rather than those who are at risk. Another issue is current wellness programs are much more likely to be prevalent in large organizations (1,000 employees or more); therefore, a large group of workers (e.g., those employed by small organizations) are not addressed (Baicker et al., 2010).

Finding a way to link prevention and improved productivity to the investment in the employees’ wellness seems critical if organizations are going to create programs to help their employees manage their stress. Recently, complementary and alternative medicine, specifically mind-body treatments, has become of interest as effective methods for treating stress. These programs have typically been implemented in a clinical setting for patients who have pain, depression, or other health issues (Benson & Proctor, 2010; Kabat-Zinn, 2009). However, there

is the potential that mind body interventions could be used as preventative treatments in a non-clinical population (Baldwin, 1999; Fallon, 2008; Oleshansky, 2004). Yoga is one such mind body treatment that has been used to reduce and manage stress (Kabat-Zinn, 2009; McCall, 2007).

### **Hatha Yoga in the United States**

Yoga is a system of spiritual, mental, and physical practices designed to transform the practitioner “from a limited physical, mental and emotional person into a fully illumined, thoroughly harmonized being” (Corner, 2009, p. 379). Yoga begins with “harmonizing [one’s] interactions with the external environment first and then going more deeply into the internal environment to further develop human consciousness” (p. 380). Through this approach, “the restless mind is calmed and energy is directed into constructive channels” (Iyenger, 1979, p. 20). The calm and silence characteristic of yoga practice can be quite difficult for beginners; however, over time, these conditions can be the source of great inspiration and relaxation (Corliss et al., 2001).

The origins of yoga are found in Indian culture, where it “consisted of a complex system of spiritual, moral, and physical practices aimed at attaining ‘self-awareness’” (Pilkington et al., 2005, p. 15). Yoga began to spread to lay audiences in the rest of the world during the early part of the 20<sup>th</sup> century through the work of independently motivated pioneers including Sri Krishnamacharya in Mysore, Swami Sivananda in Rishikesh, Sri Yogendra in Bombay, and Swami Kuvalyananda in Lonavala. These visionaries saw the possibilities of bridging Western medicine and Hatha Yoga for the purpose of enhancing mental and physical health and for spreading yogic philosophies beyond India (Cushman, 2000). This was heretical to conservative yoga practitioners, as women and foreigners had traditionally been excluded from the practice.

Since this time, however, yoga has been increasingly practiced secularly and applied for therapeutic uses (Pilkington et al., 2005). Its applications in Western culture and integration with Western science have resulted in adaptations of the practice, resulting in various nuanced forms (Cushman, 2000). For example,

Schools of yoga that emphasize physical precision often draw on techniques from Western physical therapy and movement disciplines such as Alexander and Feldenkrais' work. Styles that use the [physical postures called] asanas to consciously unwind and release stored emotional traumas draw on the tools and language of body-centered psychotherapy. (Cushman, 2000, p. 6)

Today, various forms of yoga are practiced in the United States, such as Iyenger (Iyenger, 1979), Baptiste Power (Baptiste, 2002), Kripalu (Faulds & senior teachers of Kripalu Center for Yoga and Health, 2006), Jivamukti (Gannon & Life, 2002), Ashtanga (Swenson, 2007), and Viniyoga (Desikachar, 1995). Hatha Yoga gained popularity in the United States in the 1960s (Saper, Eisenberg, Davis, Culpepper, & Phillips, 2004) and is now the most commonly taught and practiced form of yoga in the United States (Chanen, 1998; Pilkington et al., 2005). As a result, this form of yoga is the focus of the present study. The following sections describe how yoga is used in contemporary Western society in the United States, what its practices and techniques are, what benefits are attributed to the practices, and how yoga has been specifically applied for stress reduction and the workplace.

**Contemporary use.** Across its various forms, yoga in the United States tends to be practiced by educated, affluent women in the western, eastern, and southern states, based on a survey of 5,050 United States adults by Macy (2008). Researchers concluded that 15.8 million (6.9%) adults in the United States characterize themselves as current yoga practitioners, 9.4 million (4.1%) non-practitioners say they would definitely try yoga in the next 12 months, and

18.3 million (8.3%) non-practitioners are interested in yoga. Additionally, 7.5% of the survey respondents tried yoga at least once in their lives and half of these had tried it within the previous 12 months. Women tend to dominate the practice, with 72% of practitioners being female and only 27% being male. A negative correlation was found between yoga use and age, with most yoga practitioners being aged 25 to 34 years old. Yoga practitioners tend to be well educated, with 71.4% holding a college degree and 27% holding a graduate degree. Half of yoga practitioners have household incomes of \$75,000 or greater and one quarter have household incomes exceeding \$100,000. This characterizes yoga practitioners as more educated and affluent than average adult consumers (Macy, 2008).

Birdee et al. (2008) used cross-sectional survey data from the 2002 National Health Interview Survey Alternative Medicine Supplement ( $n = 31,044$ ) to examine American citizens' use of yoga for health. Cushman (2000) observed that Western practitioners typically use yoga for "earthly aspirations [such as] relief from physical pain and tension; a taste of inner quiet and relaxation; the ability to be more present in their relationships and more focused in their work" (Cushman, 2000, p. 5). Birdee et al. (2008) found that 58% of yoga users considered the practice "an important part of maintaining their health and wellbeing," with 10.5% specifically using it for musculoskeletal conditions and 3.3% using it for mental health conditions (Birdee et al., 2008, p. 1656). Based on these findings, the researchers concluded that "patients with certain medical conditions, such as musculoskeletal, mental health, severe sprains, or asthma are more likely to use yoga than the general population" (Birdee et al., 2008, p. 1656). They further speculated that "patients with limited aerobic capacity or limitations that restrict use of conventional exercise" may find yoga particularly useful (Birdee et al., 2008, p. 1656). When used therapeutically, yoga is typically considered to be a form of complementary and alternative

medicine; however, McCall (2007) argued that yoga could be reasonably associated with alternative or conventional medicine.

**Practices and techniques.** Hatha yoga utilizes three elements as part of its practices: physical postures (*asanas*), controlled breathing (*pranayama*), and meditation (*dhyana*). These elements operate in an integrated and interdependent fashion to help strengthen the body, increase the ability to stay present in the moment, and to enhance focus (Chanen, 1998; Pilkington et al., 2005; “Yoga for anxiety and depression,” 2009).

In discussing the asanas, Kabat-Zinn (2009) explained that unlike traditional physical exercise that generally neglects a person's “being,” yoga focuses on “mobilizing our powers of attention and awareness during exercise” (p. 21). The asanas are believed to cultivate the “steadiness, health and lightness of limb” as well as mental training and discipline (Iyenger, 1979, p. 40). They help maintain strength and health and give the person the opportunity to observe reactions to obstacles, both during the movements and in life (Iyenger, 2005). Additionally, the asanas have the qualities of both steadiness and relaxation and help create an appreciation of how these opposites work together. The postures also allow the practitioner to become more adaptable as people as they become more aware of their body and how it works (Desikachar, 1995). The result is reduction of muscle tension, calming and rebalancing of the nervous system, and deep relaxation (McCall, 2007). However, to achieve these results and to avoid injuries, it is essential to incorporate the physical exercises gradually in accordance with the person's physical condition (Brown & Gerbarg, 2005).

Pranayama practice can be traced to ancient yogis' discovery that bringing the breath (normally automatic) under conscious and voluntary control had tremendous influence on both activation and relaxation (McCall, 2007). When the breath becomes the focus of attention, one's relationship to it changes. The practitioner is reminded of the connection between the mind and

body, which creates a sense of calm in the body and mind. By giving the mind a single point of focus, the mind is provided with a distraction from its habitual preoccupations (Kabat-Zinn, 2009). Additionally, the result of controlled breath work is heightened awareness and enhanced presence moment-by-moment. The breath is an indicator of what a person feels and what is going on in the body, the breath influences the state of mind, and the state of mind influences the breath (Desikachar, 1995). Pranayama is used in yoga to connect movements and to create an awareness of the connections. By focusing on the breath and becoming aware of the sensations it creates, without thinking about it, the practitioner is able to drop below the agitations of the mind and continuously reestablish a sense of inner calm (Kabat-Zinn, 2009).

Finally, dhyana is a mental practice designed to reveal the constant shifting stream of thoughts, emotions, sensations, and impulses in one's mind (Kabat-Zinn, 2009; McCall, 2007).

In most people, the mind constantly roams from topic to topic, provides a running commentary on how things are going, interspersed with a seemingly random stream of thoughts: worries, to-do lists, snatches of song lyrics, sexual fantasies, images from the media, and assorted memories. (McCall, 2007, p. 53)

The aim of dhyana practice is to develop nonjudgmental moment-by-moment awareness of these thoughts, which enables observation of one's filtering mechanisms and one's relationships to these thoughts and emotions (Klatt et al., 2009). The benefit of this awareness is less automatic and subjective filtering of experience and, ultimately, neutralizing overwhelming emotions and cognitions. Kabat-Zinn (2009) explained,

Our thoughts are so overpowering, particularly in times of crisis or emotional upheaval, that they easily cloud our awareness of the present. . . . Too often we let our own thinking and our beliefs about what we 'know' prevent us from seeing things as they really are. (pp. 1037-1044)

Developing a practice of meditation or dhyana can have a tremendous relaxing and calming effect.

**Benefits of Yoga.** Studies have demonstrated yoga's usefulness for reducing depression (Bennett, Weintraub, & Khalsa, 2008; Campbell & Moore, 2004), reducing stress (Campbell & Moore, 2004; C. Smith et al., 2007), treating migraines (John, Sharma, Sharma, & Kankane, 2007), and increasing job satisfaction (Jungman, 2005). Physical benefits include developing a conscious awareness of bodily sensations and an understanding of how to interpret them (Serber, 2000). In addition, movements and deep breathing involved with yoga help to release muscle tension; stimulate circulation and digestion; and calm autonomic functions, such as lowering blood pressure, heart rate, and stress hormone levels (Campbell & Moore, 2004; McCall, 2007). These effects can be tremendously rehabilitating for people with a sedentary lifestyle, such as most office workers or those who experience chronic pain or illness (Kabat-Zinn, 2009). Several studies also have demonstrated that yoga practice has been associated with overall increases in wellbeing (Baldwin, 1999; Fallon, 2008; Hirsch, 2009; Trotter, 2009).

**Applications to stress reduction.** Due to its combined focus on mental discipline, controlled breathing, and physical movements, yoga has become a popular form of mind-body therapy (John et al., 2007). Studies have found it to be particularly effective in moderating the stress response ("Yoga for anxiety and depression," 2009). It has been observed that yoga can interrupt the chain of reaction from stress to exhaustion to illness (Campbell & Moore, 2004). Perhaps more importantly, yoga becomes a tool for restoring the practitioner's homeostasis, enhancing immune function, and improving mental wellbeing, all of which are thrown out of balance when the stress response is triggered. This rebalancing is accomplished because the yogic postures and breath help reduce sympathetic nervous system activation and increase the parasympathetic nervous system activity, which in turn stops the stress reaction (Jacobs, 2001).

Additionally, the postures help release muscle tension (McCall, 2007) and the breathing and meditation help the practitioner to refrain from the anxious and negative thinking patterns that escalate distress (Jerard, 2007).

Due to these various effects, yoga and other mind-body interventions are increasingly being used to assist with stress reduction (C. Smith et al., 2007). Specifically, 20 studies were found that used yoga and or meditation as a direct intervention, or independent variable, measuring its effects on anxiety and stress (Altman, 2001; Broome, 1995; Campbell & Moore, 2004; Collins, 1982; Dunn, 2009; Fallon, 2008; Himelstein, 2011; Humphrey, 1999; Jungman, 2005; Klatt et al., 2009; Mars, 1987; Martin, 2009; Moane, 2003; Newsome, 2010; Oleshansky, 2004; Romano, 1995; C. Smith et al., 2007; J. Smith, 2007; Terathongkum, 2006; White, 2010). Participants in these studies included patients at treatment centers (Altman, 2001; John et al., 2007), students (Collins, 1982; Fallon, 2008; Newsome, 2010; J. Smith, 2007; Trotter, 2009; White, 2010), incarcerated youth (Himelstein, 2011), hospital workers (Dunn, 2009; Jungman, 2005), university employees (Klatt et al., 2009), company employee volunteers (Broome, 1995; Mars, 1987; Moane, 2003), and volunteers from the community (Altman, 2001; Baldwin, 1999; Campbell & Moore, 2004; Humphrey, 1999; Martin, 2009; Oleshansky, 2004; Romano, 1995; C. Smith et al., 2007; Terathongkum, 2006). Thirteen of the studies used asanas, pranayama, and dhyana, the three elements of Hatha Yoga (Altman, 2001; Baldwin, 1999; Bennett et al., 2008; Campbell & Moore, 2004; Collins, 1982; Dunn, 2009; Fallon, 2008; Himelstein, 2011; John et al., 2007; Jungman, 2005; Klatt et al., 2009; Martin, 2009; Moane, 2003; Newsome, 2010; C. Smith et al., 2007; J. Smith, 2007; Trotter, 2009; White, 2010), two of the studies used meditation and relaxation techniques (Humphrey, 1999; Mars, 1987), while others interviewed or surveyed already practicing yogis or mediators about the experienced impacts of yoga and

meditation (Hirsch, 2009; Moane, 2003; Oleshansky, 2004; Romano, 1995; Terathongkum, 2006).

While some used custom-designed instruments to measure stress levels (Fallon, 2008; Jungman, 2005), others measured stress levels using physiological stress markers (Altman, 2001; Broome, 1995; Collins, 1982; Terathongkum, 2006). The most common approach to assessing stress level, however, was self-report of participants' perceived states (Bennett et al., 2008; Broome, 1995; Campbell & Moore, 2004; Dunn, 2009; Himmelstein, 2011; Hirsch, 2009; Humphrey, 1999; John et al., 2007; Mars, 1987; Martin, 2009; Moane, 2003; Newsome, 2010; Oleshansky, 2004; Romano, 1995; C. Smith et al., 2007; J. Smith, 2007; Terathongkum, 2006; Trotter, 2009; White, 2010).

Eleven studies showed reduced stress levels in participants as a result of yoga practice (Altman, 2001; Baldwin, 1999; Campbell & Moore, 2004; Collins, 1982; Himmelstein, 2011; Hirsch, 2009; Klatt et al., 2009; Mars, 1987; Martin, 2009; Moane, 2003; Newsome, 2010; C. Smith et al., 2007; Terathongkum, 2006; Trotter, 2009). Fallon (2008) and Romano (1995) produced inconclusive results, and the remaining studies showed improvements for other indicators of mental wellbeing (Altman, 2001; Broome, 1995; Campbell & Moore, 2004; Collins, 1982; Dunn, 2009; Fallon, 2008; Humphrey, 1999; Jungman, 2005; Klatt et al., 2009; Oleshansky, 2004; Romano, 1995; C. Smith et al., 2007; J. Smith, 2007; White, 2010). These findings suggest that credible evidence exists for utilizing yoga as a means for reducing stress.

**Applications in the workplace.** Yoga, with its focus on movement, breathing, and meditation, offers employees a convenient and practical way to relieve stress on the job and provides employees with strategies to help decrease the risk of injury (Gura, 2002). While only a few studies were found that applied yoga specifically to the workplace, these studies showed that yoga had a positive effect on the participants. The effects included decreases in perceived stress

and stress symptoms, decreases in anxiety levels, improvements in mindfulness, and an increase in energy and wellbeing (Dunn, 2009; Hirsch, 2009; Jungman, 2005; Klatt et al., 2009; Mars, 1987; Moane, 2003) In all cases, the participants were volunteers and participated wholly of their own volition. An intervention was introduced in three of the five cases (Dunn, 2009; Jungman, 2005; Klatt et al., 2009). The interventions ranged from 3 to 6 weeks in length. In two cases, the participants were already practicing yoga (Hirsch, 2009; Moane, 2003).

While yoga can be taught rather easily and cost effectively and its teachings could offer employees tools for relieving stress and tension and decreasing injuries, obstacles do exist to implementing a yoga program in the workplace (Gura, 2002). Specifically, Klatt et al. (2009) found two primary barriers in their study: (a) people perceived that too much time out of the work day would be needed for yoga to be effective and (b) people believed that the yoga postures could not be performed onsite at work. The researchers minimized these barriers by keeping the practice to just 20 minutes daily and by designing yoga postures that could be performed in one's workspace (Gura, 2002). In the other studies (Dunn, 2009; Jungman, 2005), the interventions were more traditional, providing 45- to 75-minute classes, with participants participating on their own time, or at lunch.

It is critical to overcome the obstacles of time and feasibility in order to have an effective implementation of yoga for stress reduction in a work setting. The current study proposes to do this by providing an intervention that can be completed in 15 minutes and that will be done during the employees' workday. Overcoming these obstacles is especially important if this type of intervention is to produce the potential benefits. Payne (2010) found in a small study that yoga class participants had fewer absences due to illness and experienced less stress than those who did not participate in the yoga classes. Additionally, they experienced a greater sense of wellbeing and believed they could better communicate with others.

Another key to any organizational intervention using yoga for stress reduction is measuring the intervention to ensure it benefits both the individual and the organization. In the aforementioned studies, metrics focused on the individuals' response to yoga in terms of stress, mindfulness, anxiety, self efficacy, psychological wellbeing, and burnout (Dunn, 2009; Hirsch, 2009; Jungman, 2005; Klatt et al., 2009; Moane, 2003). It is proposed in the current study that stress and anxiety be measured, as stress is a major contributor to organizational costs. Additionally, this study will measure employee engagement in the workplace to see if the intervention impacts the employees' loyalty and engagement in the workplace..

### **Outcome Measures**

Several measures exist that assess stress level. Three particular stress inventories (along with other data) were used in this study to measure participants' stress levels. These measures are discussed in the sections below.

**Perceived Stress Survey.** In the current study, the PSS will be used to measure perceived stress. This measure has been used in several other studies focusing on yoga's impact on stress (Dunn, 2009; Himmelstein, 2011; Klatt et al., 2009; Martin, 2009; Newsome, 2010; Terathongkum, 2006) and has been established as an economical tool to assess perceived stress (Cohen, 1988). The PSS measures the degree to which a person perceives situations in her or his life to be stressful. The measure is predicated on the assumption that events are only harmful to the person if they are appraised by the person to be threatening or when coping resources are seen as being insufficient to deal with the threat (Cohen et al., 1983).

The PSS is designed to measure perceived stress—the implication being that the scale can help predict a wide range of health outcomes that are associated with stress. Items measure the extent to which the person sees life events as unpredictable, uncontrollable, and overwhelming (Cohen, 1988). The instrument is easy to understand and was developed to use in

population samples with at least a junior high school education. The PSS includes questions addressing both current levels and experienced levels of stress. Additionally, the instrument measures not only those events that occur in life, but also assesses the stress associated with life circumstances and the non-occurrence of events.

**State-Trait Anxiety Inventory.** The State-Trait Anxiety Inventory form Y1 (STAI-Y1) was used to provide an additional measure of stress and anxiety. This metric was also used in studies to determine the effectiveness of yoga interventions (Humphrey, 1999; Moane, 2003; Romano, 1995; C. Smith et al., 2007). The STAI differentiates between trait and state anxiety:

Trait anxiety (T-Anxiety) refers to relatively stable individual differences in anxiety proneness, that is, to differences between people in the tendency to perceive stressful situations as dangerous or threatening and to respond to such situations with elevations in the intensity of their state anxiety (S-Anxiety) reactions. (Spielberger et al., 1983, p. 5)

The STAI has been used extensively in research. The Y1 form measures S-Anxiety and how the respondent feels in the moment he or she is taking the survey. The Y2 form measures T-Anxiety, or how people generally feel (Spielberger et al., 1983). The Y1 form will be used in the current study, as this is a good indicator of anxiety experienced in behavior modification programs, counseling, psychotherapy, and the related changes in anxiety that can occur. It also allows for the researcher to alter the instructions so that a specific time period can be focused on when the person fills out the survey, thus, allowing the researcher to measure the effects of interventions. It was developed to use with college students or adults.

The STAI has been extensively validated: “More than 6,000 high school and college students, approximately 600 neuropsychiatric and medical surgical patients, and 200 prison inmates were tested in the development, standardization and validation of Form X and earlier versions of the inventory” (Spielberger et al., 1983, p. 27). While form Y is slightly different

than form X, no significant differences have been found in its reliability or validity. Additionally, “Individual STAI items were required to meet validity criteria at each stage of the test development process in order to be retained of further evaluation and validation” (Spielberger et al., 1983, p. 32).

Most of the studies that use the STAI have been conducted by psychologists or medical researchers; however, it has also been used in other disciplines such as counseling, education, physical education, and speech and hearing (Spielberger et al., 1983). The inventory has also been used in studies of psychological stress (Brook, 1976; Miller, 1979; Sarason, Johnson, & Siegel, 1978; Shipley, Butt, Horwitz, & Farbry, 1978), which is the focus of the current study. The STAI-Y1 will give another view as to whether the intervention affected the participants’ appraisal of their situation and their stress and anxiety.

**Work Engagement Profile.** The current study is also interested in the potential impacts on the organization. By inviting all of the employees in the organization to participate in the intervention versus just a small subset of employees there is the potential for change to the culture. To help understand these potential impacts the WEP will be administered to the participants. The WEP “is a 24-item questionnaire that measures four intrinsic rewards individuals can receive directly from their work: *meaningfulness, choice, competence, and progress*. Items are presented in a 7-point Likert format” (Thomas, 2009, p. 2).

The WEP was designed based on a conceptual model of work, self-management, engagement, and intrinsic rewards. “*Intrinsic* rewards are psychological rewards that workers get directly from their work” (Thomas, 2009, p. 3) and relate to how workers perceive their wellbeing, job performance, and commitment to the organization. Intrinsic awards are positive experiences the employee has. These are associated with higher levels of satisfaction with the organization, professional development, and having reduced stress—all of which contribute to

wellbeing. Job performance is affected by the function of intrinsic rewards being based on self-management, where higher levels of intrinsic rewards relate to higher levels of performance. Commitment is especially important to the current study, as it measures an employee's intention to stay with the organization. Low intention to stay is associated with diminished pride in the organization and heightened turnover. Additionally, higher WEP scores were found to relate to lower reported stress symptoms, which also relates to the current study.

The WEP was developed starting in 1988 and continued to be developed into its current form which was published by CPP, Inc. in 2009:

Factor analysis of the final version of the instrument show strong support for its structure across three diverse samples. Results show that individuals perceive the four intrinsic rewards [meaningfulness, sense of choice, sense of competence, and sense of progress] as distinct concepts and that the 24 items in the WEP are associated with their intended factors. (Thomas, 2009, p. 5)

The WEP has been proven to be reliable with United States applications of the final version (Burke, 2004) having reported coefficients of greater than 0.90. "Statistical relationships between the WEP scores and other variable provide promising evidence that the instrument is measuring what it is designed to measure" (Thomas, 2009, pp. 6-8).

**Other data.** The data collected from these three measurements provided a mixed representation of the impact the intervention in the current study had on the participants' stress, anxiety, and engagement in the workplace.

An open- and closed-ended questionnaire was also given to the participants at the end of the intervention to gain insight into their personal experiences of the intervention, and to elicit information that would improve the effectiveness of the treatment. The researcher also kept unstructured field notes to record her own observations of the treatment for the 4-week period,

and met with the company's COO to present the summary study findings, and to elicit further feedback on the study.

### **Conclusion**

The physiological and mental impacts of stress are many and far-reaching. While the stress response evolved to ensure human beings could garner the appropriate resources when facing imminent danger or threat, humans have adapted so that the stress response is activated by thoughts, emotions and worries, meaning that many people, not in imminent danger, are in a constant state of stress (Lazarus, 2007; Sapolsky, 2004; Sauter et al., 1999; Selye, 1991; Serber, 2000). Under normal threatening circumstances, the body returns to homeostasis when the stressful event is over; however, when the stress response is not shut off after the stressor is removed, the stress hormones and other physiologic changes to the body remain, causing damage to our reproductive, immune, and growth systems (National Institutes of Health, 2002; Ornish, 2007; Sauter et al., 1999; Selye, 1991). Additionally, chronic stress can contribute to heart disease, diabetes, depression, and other chronic illnesses (B. McEwen & Lasley, 2007; Sapolsky, 2004). All of these things can contribute to long-term health concerns as well as possible mental illnesses and anxiety, which has the ability to impact families, workplaces, and communities (C. Smith et al., 2007).

The impacts of stress on the workplace are of particular concern given the current focus of organizations on reducing healthcare costs and increasing productivity, both of which are necessary to stay competitive in a global market. The biggest costs of stress for an organization are in absenteeism, healthcare costs, and presenteeism ("Are You Working Too Hard?," 2005; Beehr & Newman, 1978; Garfinkel & Singhal, 1998; NIOSH, 2009; Spielberger & Reheiser, 1995; Van der Klink et al., 2001). Employee-reported stress levels peaked in 2008 with 17.1% reporting "that their job is 'very' or 'extremely' stressful" ("Number of stressed workers peaks in

2008,” 2008, p. 28). Additionally, “Americans reported more lost productivity at work due to stress in 2008 than they did in 2007. Sixty percent reported losing some amount of productivity during the last month compared to 55 percent in 2007” (American Psychological Association, 2008, p. 13). The lack of certainty about jobs and the economy also is contributing to employee stress (American Psychological Association, 2010). Given the potential harm to employees and cost to the organization, stress is a critical issue for business and must be managed effectively (CIPD, 2008).

However, one of the difficulties employers face is that it is difficult to determine if stress is job-related or non-work-related, as the two often are intermixed (CIPD, 2008). Therefore, while the recommended approach to workplace stress is a primary intervention focused on modifying the work environment or the nature of the work that contributes to job stress, these interventions can require changes to processes that can have implications for the organization’s performance (Murphy & Sauter, 2003; Sauter et al., 1999). On the other hand, secondary interventions may not resolve and reduce the job related stressors, although they do provide the employee with personal coping skills and the ability to manage their own stress, whether it is professionally or personally related (C. L. Cooper & Cartwright, 1997).

Hatha Yoga, the use of movement (asana), breath (pranayama), and meditation (dyana) has been shown to positively impact stress and its use as an intervention to decrease stress has been documented in several studies (Altman, 2001; Baldwin, 1999; Broome, 1995; Campbell & Moore, 2004; Chanen, 1998; Collins, 1982; Himelstein, 2011; Hirsch, 2009; Klatt et al., 2009; Mars, 1987; Martin, 2009; Newsome, 2010; Pilkington et al., 2005; C. Smith et al., 2007; Terathongkum, 2006; Trotter, 2009; “Yoga for anxiety and depression,” 2009). While there are potential constraints to using this approach in the workplace, they can be overcome. The potential is there for Hatha Yoga to improve employees’ physical and mental wellbeing as well

as general overall health (Klatt et al., 2009; “Workplace Yoga, Meditation Can Reduce Stress,” 2009). These impacts will thus provide benefits to the individual and the organization, and have the potential to contribute to lower health care costs, better productivity, and the potential to improve the organization’s culture.

The next chapter discusses the methods used in the study. The chapter starts with an overview of the study objectives and research questions. the study approach and design are discussed next, including the specific measures used. An overview of the experimental population and the organizational setting as well as ethical considerations are then provided. Data collection methods and the intervention are outlined in detail.

### **Chapter 3: Methodology**

This chapter outlines the design of the study, the protocol used in the study, and the intervention used as the treatment. The study involved the design and implementation of a 4-week researcher-developed, 15 minute per work day, 20 session, Stress Reduction Treatment in a work setting. The purpose was to measure the treatment's impact from a personal and organizational perspective. The study took place at a small start-up software company in Denver, Colorado beginning on August 5, 2013 and ending on August 30, 2013.

#### **Objectives and Research Questions**

The study investigated the impact of a researcher-developed stress reduction treatment on employees in a small company setting, where all the employees (including management) in the office were invited to participate. The treatment lasted 15 minutes and was administered 5 days a week for 4 weeks in the company office, in the main conference room or a general meeting area, depending on the availability. The overall research objectives were to determine (a) if the treatment has an impact on the measures of perceived stress, anxiety, and engagement of the employees and (b) if the employees observe a noticeable difference in themselves and the culture of the workplace as a result of the treatment. Five research questions guided this study:

1. Will a 4-week, 15 minute per day guided stress reduction intervention, using Yoga techniques, have an effect on the participants' perceived levels of stress as measured by the PSS?
2. Will a 4-week 15 minute per day guided stress reduction intervention, using yoga techniques, have an effect on the participants' perceived levels of anxiety as measured by the STAI-Y1?

3. Will a 4-week 15 minute per day guided stress reduction intervention, using yoga techniques, have an effect on the participants' perceived levels of engagement as measured by the WEP?
4. Will the number of sessions attended impact the change in pre and post test results on the three instruments?
5. Will the participants see a perceived effect of the stress reduction treatment as a result of their participation in the 4-week program?

Perceived stress, perceived anxiety, and engagement, were measured to determine the impact of the treatment. Additionally, the participants completed a post-treatment questionnaire which provided the estimated number of sessions attended, additional feedback on their level of engagement, possible improvements to the intervention, and observations of their own experiences. The researcher kept unstructured field notes for her own use, evaluation, and insight, on which she also captured the attendance at each of the sessions. The researcher additionally, conducted a follow-up meeting with the COO of the organization to share the study results and received additional feedback and information at this meeting. This chapter outlines the design of the study, the protocol used in the study, and the intervention used as the treatment.

### **Study Approach and Design**

The study used an exploratory mixed methods design to determine the potential efficacy of a 4-week, 20-session, guided stress reduction treatment in the workplace. The outcome measures used were perceived stress, anxiety, and workplace engagement. Additionally, the researcher collected and summarized the experience of the participants in the form of a post-treatment questionnaire. The researcher also met with the COO of the organization post study, to share the summarized results and she received further insight and information at this meeting.

The study used a concurrent or parallel triangulation approach, where the quantitative and qualitative data were collected concurrently and analyzed in an integrated fashion (Creswell, 2009; Teddlie & Tashakkori, 2009). In the research, the PSS (see sample in Appendix A), STAI-Y1 (see permission letter and sample items in Appendix B), and WEP (see sample in Appendix C) were collected, as a pre-survey on the first day of the treatment and as a post-survey at the end of the intervention. Additionally, a post-treatment questionnaire that gathered participants' open-ended responses (Appendix D) was given to the participants. The researcher also took unstructured field notes during the intervention period (Appendix E).

**Quantitative methods.** A pre-experimental design was used to measure the impact of the researcher-developed stress reduction treatment on the participants, using a one-group pretest-post test design, where a single group was provided with an intervention and the group takes the tests both before and after the intervention (Creswell, 2003, 2009). The population comprised of 30 employees who work at the main office a small startup software company in Denver, Colorado. The survey instruments used in the study were the PSS, STAI-Y1, and the WEP.

***Perceived Stress Survey.*** The PSS (Appendix A) survey contains 10 questions that are rated on a five-point scale ranging from “never” (0) to “very often” (4). The tool takes approximately 5 minutes to complete. This measure has been used in several other studies focusing on yoga's impact on stress (Dunn, 2009; Himelstein, 2011; Klatt et al., 2009; Martin, 2009; Newsome, 2010; Terathongkum, 2006) and has been established as an economical tool to assess perceived stress (Cohen, 1988). The instrument is easy to understand and was developed to use in population samples who had at least a junior high school education. The PSS includes questions addressing both current and experienced levels of stress. The instrument assesses the (a) events that occur in the individual's life, (b) non-occurrence of events, and (c) life circumstances that happen in other people's lives that may additionally cause stress for a person.

The questions used are general enough so as not have content that pertains to any sub-population group in particular (Cohen, 1988). Additionally, “The PSS is especially appropriate in studies investigating factors influencing or influenced by stress appraisal” (Cohen, 1988, p. 37). The PSS has been tested and has adequate test-retest reliability. It has been correlated to a range of self-report and behavioral criteria and is closely related to the life-event impact score, which is based on the respondent’s appraisal of an event versus a more objective measure of the number of events determined to be stressful in a given time period. It was also proven to be a better predictor of health-related outcomes than the two life event scales it was tested against. The validity criteria were unaffected by sex or age (Cohen et al., 1983).

The questionnaire was copyrighted by Sheldon Cohen in 1994, all rights reserved, and is made available at no cost by Mind Garden, Inc. There is no cost associated with using the PSS and the instrument is available to be used in research.

***State Trait Anxiety Indicator Form Y1.*** The STAI-Y1 (Appendix B) is a 20-item survey that takes approximately 6 minutes to complete. The survey uses a four-point scale that ranges from “not at all” (1) to “very much so” (4). The STAI has been used extensively in research and the Y1 form measures S-Anxiety, meaning how the respondent feels in the moment he or she is taking the survey or can focus on a specific time period (Spielberger et al., 1983). The Y1 form was used in the current study, as this is a good indicator of anxiety experienced in behavior modification programs, counseling, psychotherapy, and the related changes in anxiety that can occur. It also allows for the researcher to alter the instructions so that a specific time period can be focused on when the person fills out the survey, allowing the researcher to measure the effects of interventions. It was developed for use with college students or adults.

The STAI has been extensively validated. “More than 6,000 high school and college students, approximately 600 neuropsychiatric and medical surgical patients, and 200 prison

inmates were tested in the development, standardization and validation of Form X and earlier versions of the inventory” (Spielberger et al., 1983, p. 27). While Form Y is slightly different than Form X, no significant differences have been found in its reliability or validity.

Additionally, “Individual STAI items were required to meet validity criteria at each stage of the test development process in order to be retained of further evaluation and validation”

(Spielberger et al., 1983, p. 32)

The STAI was copyrighted by Charles D. Spielberger in 1968 and is published by Mind Garden, Inc. with all rights reserved. The researcher purchased 100 copies for her use in this study and all copyrights and permissions were acquired. The publishers of the instrument allowed a maximum of five sample items to be printed in the dissertation.

***Work Engagement Profile.*** The WEP (Appendix C) is a 24-question survey that uses a seven-point Likert Scale ranging from strongly disagree (1) to strongly agree (7) and takes approximately 10 minutes to complete. The WEP design is based on a conceptual model of work, self-management, engagement, and intrinsic rewards. “Intrinsic rewards are psychological rewards that workers get directly from their work” (Thomas, 2009, p. 3) and relate to how workers perceive their wellbeing, job performance, and commitment to the organization.

The WEP was developed starting in 1988 and continued to be developed into its current form, which was published by CPP, Inc., in 2009. Thomas (2009) explained,

Factor analysis of the final version of the instrument show strong support for its structure across three diverse samples. Results show that individuals perceive the four intrinsic rewards [meaningfulness, sense of choice, sense of competence, and sense of progress] as distinct concepts and that the 24 items in the WEP are associated with their intended factors. (p. 5)

The WEP has been proven to be reliable, with United States applications of the final version (Burke, 2004) having reported coefficients of greater than 0.90. “Statistical relationships between the WEP scores and other variables provide promising evidence that the instrument is measuring what it is designed to measure” (Thomas, 2009, pp. 6-8).

The WEP was copyrighted in 2009 by CPP, Inc., and is for licensed use only. The researcher had an agreement with CPP, Inc., to administer the WEP to the participants in compliance with the copyright and requirements of the publisher.

**Qualitative methods.** Qualitative methods included the evaluation of the open- and closed-ended post treatment questionnaire (Appendix D) completed by the participants at the end of the treatment. The post treatment questionnaire was developed in conjunction with the participating employer and was used to elicit additional information about the participants’ experience of the treatment. The researcher sought to understand the experience of the participants and was interested in any suggestions they had to make the treatment more effective. The researcher additionally met with the COO of the organization to share the results of the study. She took notes at this meeting as the comments provided her additional information on the study’s effectiveness and the perception of the people in the organization.

**Data analysis.** The following steps were used to analyze the quantitative data:

1. Descriptive statistics, including mean and standard deviation, were calculated for each of the three surveys. The PSS contains 10 items and the STAI contains 20 items answered on a 4-point Likert scale. The WEP contains 24 questions answered on a seven-point Likert scale.
2. Pre- and post-scores were analyzed by analyzed using a paired two-tailed *t* test to determine whether the scores across these periods are significantly different.

3. Additionally, correlations were run on two levels of participation, 10 or fewer sessions, and 11 to 20 sessions, to determine if the number of sessions the participants attended has an impact on the outcome results.

To analyze the qualitative data, the researcher tallied the six closed-ended post-treatment questionnaire questions (Appendix D) and transcribed the answers from the eight open-ended questions, into the results database. The researcher read through the responses and combined the answers when they were duplicative, and tried to ensure one person's answer would not necessarily be identifiable in the results report out, given the small number of participants. The researcher provided a summary of the findings to the COO of the organization in a meeting at the company's office. The conversation and feedback given during the meeting provided the researcher with additional insight and information that was used to enhance the findings in the study.

Additionally, the researcher took informal field notes (Appendix E) to record her thoughts, insights, observations, and attendance at each of the sessions, during the 4-week treatment period. The researcher reviewed these notes during the study, and found them useful as a day-to-day reference of her own reactions and observations. The notes helped her manage the levels of familiarity and distance she maintained with the participants, which was necessary to provide an effective program. It was important to maintain approachability while not becoming too familiar with the participants, which could have possibly skewed the participants scores. The researcher tallied the attendance information and used it to look for trends in the days of the week, time of day, and other aspects of the treatment. The researcher reviewed the field again as she developed her insights into issues which arise when performing research in a company setting.

**Participants**

The participants in the study were the 30 employees at small software start up located in Denver, Colorado. It is an ever changing, and fluid work environment, in which the employees have to adapt quickly. The company sells productivity and accuracy enhancing tools and processes to hospitals. Their tools provide easier access to patient records to both doctors and nurses, using their proprietary software and hardware.

The company had recently gone through a significant organizational change, and was in the process of defining its values and instilling an organizational culture. As the environment changed, the employees were required to do various new tasks and take on increasing challenges. The impetus for management to work with the researcher was to bring a benefit to the employees, help them better manage their stress, and potentially assist in building a more productive company culture.

The population consisted of 30 employees ranging in age from 20 to over 50 (see Table 1), located at the main office in Denver. The actual participating population was 14 employees, 50% female and 50% male. The employees have various responsibilities, ranging from front line customer support to senior management. The population was unique for this type of study in that all employees, at all levels of the organization, were invited to participate in the intervention. At no time was any identifying information collected from the participants other than the informed consent form, which the participants were required to sign prior to participating in the program activities. All other materials contained only the confidential numerical identifier.

Table 1

*Population for Study*

	<b>Population</b>			
	<b>Total</b>		<b>Participants</b>	
	<i>N</i> = 30	%	<i>N</i> = 14	%
Male	19	63.30%	7	50.00%
Female	11	36.70%	7	50.00%
<b>Total</b>	<b>30</b>	<b>100.00%</b>	<b>14</b>	<b>100.00%</b>

  

<b>Age</b>	<b>Number</b>	<b>%</b>
20-30	4	13.30%
30-40	15	50.00%
40-50	9	30.00%
> 50	2	6.70%
<b>Total</b>	<b>30</b>	<b>100.00%</b>

**Protection of research participants and ethical considerations.** The study involved the use of human subjects and approval was received from the Pepperdine University's Institutional Review Board (IRB) prior to the beginning of the study. The researcher's proposal for an expedited review was approved by the IRB on July 24, 2013 (Appendix G).

The researcher received authorization to conduct the study, on company premises, on a voluntary basis, with their employees of the participating organization, from the Chief Operating Officer of the company (Appendix F) prior to submitting the study for approval to the Institutional Review Board.

The researcher met with the staff in the main conference room of the office a week prior to the beginning of the intervention, and went over the introductory materials (Appendix I). She

discussed the nature and purpose of the study, the participants' role in the research, the time commitment necessary, the nature of the intervention, and what they should expect while participating. She reviewed their choice to participate and ability to withdraw from participating in the program at any time. The potential benefits and risks were explained to the employees, as was their access to the information. Additionally, she discussed the informed consent form and provided them with these forms so they could review them, ask her any questions they had about them, and sign them prior to the start of the program. There were 16 attendees at the meeting, which represented 53% of the employee population.

The researcher then emailed the introductory information and the informed consent form to the Human Resources Contact, so she could distribute the information to the entire employee population. The researcher's contact information was on the communication to provide the participants the opportunity to contact the researcher prior to the intervention.

On the first day of the program, the researcher again reviewed the purpose of the research, the informed consent form, the instruments that would be used, and then stayed to answer any questions. This was communicated verbally and in writing in the consent form (Appendix H). The consent forms were signed by the participants prior to any treatment or data collection. Fourteen informed consent forms, 46.7% of the population, were submitted, and only these employees participated in the intervention.

**Confidentiality and data collection.** The researcher explained the nature of the paper-and-pencil questionnaires to be used to the participants, as well as the data collection procedures so that the participants could understand the processes that had been put in place to ensure their confidentiality, and anonymity, as well as how the data would be used. The only identifier used on any of the data collected was a unique identifier that was personal and confidential to the individual. At no time did the researcher, the Human Resources Director or other management

team members have access to these numerical identifiers. No one from the company has access to the data collected by the researcher, including how the participants scored on the PSS, STAI-Y1, WEP or their responses to the final questionnaire.

Only summary data was provided to the COO of the company to ensure that no employee was at risk of having his or her responses shared directly with management or would be put at risk at any time due to any of the information provided to the researcher in the course of the treatment.

The PSS, STAI-Y1, and WEP survey data were collected on the first day of the intervention and after the last day of the intervention. The researcher distributed the surveys along with a brief review of each one, repeating what was reviewed in the introduction. Participants used their personal and confidential number as an identifier on the surveys. Each participant received an unmarked envelope to place their surveys in and submitted the envelope into a locked collection box located in the front office space outside the main conference room, to ensure confidentiality. At that point, the researcher collected the locked box. The data were kept by the researcher until the post-test data were collected, and after the dissertation is complete and published she will keep the data for a period of 5 years. The data are kept in a locked box stored in her home office. Only the researcher has access to the keys, which were kept at home during the intervention period to ensure the safety of the data.

A post-treatment questionnaire (Appendix D), which solicited participants' comments and general experiences with the intervention, was administered to the participants at the end of the study along with the PSS, STAI-Y1, and WEP. This data was collected in the same unmarked envelope. All envelopes were placed in a designated locked box at the same centrally located place in the office to ensure confidentiality.

### **Intervention Design**

The intervention used in the study was designed as a stress reduction treatment. The treatment was designed with the safety and wellbeing of the participants in mind by making allowances for the workplace setting as well as their current level of fitness. No movement in the intervention was more strenuous than the participants would normally experience in the course of their normal day. The researcher is a trained and certified yoga instructor and personally understands the benefits of a yoga practice, as she is a daily practitioner. Also, being a former corporate executive, she understands the time and cost constraints organizations face in providing benefits to their employees, as well as the time constraints that employees face in their own lives.

The treatment consisted of a 15-minute movement, breath, and mediation sequence, developed as a stress reduction intervention, based on the principles of Hatha yoga of movement(asana), breath (pranayama), and meditation (dyhana). Each of these three components was built in to every 15-minute session. The treatment design minimized any safety or health issues, starting and continuing with basic movements, which could be completed by anyone at any fitness level. The treatment acknowledges the fundamental of stabilization as the necessary first building block of fitness to ensure participant safety (Clark, Lucett, & Corn, 2008). The yoga movements are standard postures and sequences used in several yoga styles (Stephens, 2010). These postures can be done by anyone regardless of their physical abilities, and build upon each other to ensure that discomfort is minimized and positive impacts are maximized.

The 15-minute protocol was based on the practical consideration of the time constraints of a work environment, but also on Herbert Benson's work using mediation as a treatment. He found that traditional mind-body practices such as meditation, yoga, prayer, repetitive-worship music and rituals, and seemingly simplistic relaxation techniques can, in a period of 12 to 15

minutes a day, counter the stress response (Benson & Proctor, 2010). In another study, a 20 minutes per day, low-dose Mindfulness Based Stress Reduction program was implemented as a stress reduction intervention in the workplace. Results suggested this intervention was effective in lowering participants' perceived stress level (Klatt et al., 2009).

The sessions were designed to be repetitive to create a sense of continuity and to allow the participants to follow along easily without having to think about what comes next. This encouraged attention, awareness, and being present, which allowed the participant to more intuitively participate in the session. Ultimately, the goal was for the participants to learn the routine and adapt it to their own bodies and specific needs. The sessions started with more emphasis placed on the breath and movement aspects and moved toward later emphasis on meditation. An outline of the benefits of the specific postures is provided in Appendix J.

The 4-week period was chosen to create a timeframe that was both practical for the organization from a cost and time commitment perspective, but was also long enough to allow for effective knowledge transfer to the participants. The 4-week period minimized the disruption to the employees, while still allowing them to receive the full benefits of the program. The treatment was designed to be easy to understand and intuitive, allowing for the participants to learn the ways in which the elements of movement, breath, and meditation work for them personally and to give them the tools to continue the program on their own after the 4-week treatment is complete. The entire script for the 4-week program is attached in Appendix K. Additionally, handouts of the activities performed in the sessions were provided to the participants so they could continue the program on their own (see Appendix L).

The treatment was made available at 10:00 a.m. and 2:00 p.m. per the request of the employees in order to allow the organization to continue to function. The need for phones to be answered and other responsibilities the employees had did not allow for all of the participants to

join a single session. The participants were able to choose the time that worked best for them. However, the intervention was scripted, and the researcher performed both sessions, so the treatment remained the same at both time slots.

### **Researcher Credentials and Role**

The researcher directed the 4-week intervention, which included facilitating the introduction to the program, leading the daily 15-minute sessions, handing out the survey instruments, collecting the surveys from the designated collection point, and making herself available to answer any questions or concerns that arose before, during, and after the intervention.

The researcher is a certified yoga instructor who has completed more than 300 hours of teacher training. The researcher has a daily yoga practice and has also attended intensive Vipassana meditation trainings to better understand the use of meditation in conjunction to yoga. She is certified in cardiopulmonary resuscitation and automatic external defibrillation, and is insured as a yoga instructor by Philadelphia Insurance Companies. Additionally, she has spent more than 20 years in a corporate environment, most recently as the Vice President of Human Resources for the West Group of Waste Management, a Fortune 500 company. Her years of experience in leading teams and serving in the human resources department, along with her training as a yoga instructor, give her unique insight into organizational dynamics. She also is well versed in the need for confidentiality and the sensitivity this requires in the workplace. She has been in many positions where the need to gain people's trust was critical, and where she had business relationships with people whose behavior she had to monitor in her role in human resources.

The researcher understood the need to ensure that confidentiality was maintained at all times, for all of the participants, especially since all levels in the organization had the

opportunity to participate in the daily sessions. Special care was taken to ensure the participants were confident that everyone in the office was an equal participant in the process, and that no more information would be shared with one participant over another. The researcher took precautions to ensure her role was clear by arriving just in time to facilitate the sessions, remaining onsite to answer participants' questions and answers, and then leaving after the second session of the day.

Due to the fact that the study took place in a small company where everyone works closely together in the office, there were close relationships between the employees and management. In the study organization there was little or no differentiation between different levels of employees. Additionally, as it was a start-up environment, the employees were used to wearing various hats. The Director of Human Resources was the designated contact for the researcher, but did not have access to any more information than any of the other participants in the program. Chapter 4 presents the analysis of the data, the quantitative and qualitative results and the research findings.

### **Chapter 4: Results and Findings**

This study investigated the impact of a researcher-developed stress reduction treatment on employees in a small start up software company setting, in which all the employees (including management) in the office were invited to participate. The treatment lasted 15 minutes per day and was administered 5 days a week for 4 weeks in the company office, in a conference room or a general meeting area, depending on the availability. The overall research objectives were to determine (a) if the treatment has an impact on the measures of perceived stress, anxiety, and engagement of the employees and (b) if the employees observe a noticeable difference in themselves and the culture of the workplace as a result of the treatment.

Five research questions guided this study:

1. Will a 4-week, 15 minute per day guided stress reduction intervention, using Yoga techniques, have an effect on the participants' perceived levels of stress as measured by the PSS?
2. Will a 4-week 15 minute per day guided stress reduction intervention, using yoga techniques, have an effect on the participants' perceived levels of anxiety as measured by the STAI-Y1?
3. Will a 4-week 15 minute per day guided stress reduction intervention, using yoga techniques, have an effect on the participants' perceived levels of engagement as measured by the WEP?
4. Will the number of sessions attended impact the change in pre and post test results on the three instruments?
5. Will the participants see a perceived effect of the stress reduction treatment as a result of their participation in the 4-week program?

This chapter discusses the results of the study and the findings of the researcher based on those results. The study took place at a small start-up software company in Denver over the four- week period beginning on August 5, 2013, and ending on August 30, 2013. The results are presented in the order of the research questions, with the quantitative data and analysis presented first and the qualitative data presented after that. The chapter concludes with the researcher's observations and findings based on the data provided by the study in response to the research questions.

### **Results**

The population for the study consisted of the 30 employees located at the Denver office of a small start up software company, and the sample size consisted of the 14 employees who participated in the study. Fourteen of the employees completed the Informed Consent Form and pre-treatment questionnaires and 11 of the employees completed the post-treatment questionnaires. One of the 11 participants completed all the surveys pre treatment and only the final questionnaire and PSS post treatment. Therefore, there was a 71.4% and 78.6% participation rate respectively as shown in Table 2. Attendance varied from day to day and in response to research question number 4: "Will the number of sessions attended impact the change in pre and post test results on the three instruments?"

Table 2

*Population Participation*

Participation Rates	Number	%
Total Sample Size	14	100.0%
Informed Consent Form and Pre-Survey Completion	14	100.0%
Attended at least one session	14	100.0%
Completed Final Questionnaire and Post Surveys	10	71.4%
Completed Final Questionnaire and Perceived Stress Survey Only	1	7.1%
Total Participation in pre and post surveys and questionnaires	11	78.6%

Though the sample size was small, power of the outcome measurement was calculated post hoc by effect size, using the criterion for large effect size ( $r \geq .50$ ; Cohen 1988, 1992) and indicated sufficient power. Thus, the change in the PSS scores did prove to have practical significance in measuring the treatment. The PSS was also shown to have practical relevance in measuring the correlation between the change in scores in the instruments pre and post treatment, and the number of sessions attended. The STAI-Y1 and WEP, however, did not prove to have practical significance.

The results of the treatment are shown in response to each of the research questions, beginning with the four quantitative research measures, which show the efficacy of the treatment, based on the change in the pre and post treatment scores on the PSS, STAI-Y1, and WEP. Additionally, question four looks at whether or not the number of sessions participants attended had an impact on the post treatment scores. The qualitative data in a response to the fifth research question is then presented.

**Quantitative results.** As described in chapter 3, results of the measures were analyzed using descriptive statistics and a paired *t*-test for each measure, followed by a correlation of the change in scores from pre to post test for each of the three questionnaires, with the number of sessions attended by the individual participants. The results of the *t*-test and correlations are reported below.

***Research question 1. Will a 4-week, 15 minute per day guided stress reduction intervention, using Yoga techniques, have an effect on the participants' perceived levels of stress as measured by the PSS?*** The mean and standard deviation for the pre and post PSS scores are presented in Table 3. The change in the mean was an improvement of 21.1%, between the pre and post treatment scores. A paired *t*-test (Table 4) was conducted to compare the pre-treatment PSS scores and post-treatment PSS scores of the same population to determine if the change in the scores pre and post treatment was significant. Based on the results of the paired *t*-test the participants' perceived stress levels were significantly lower as measured by the difference between the pre-test ( $M = 19.36, SD = 6.11$ ) and the post-test ( $M = 15.27, SD = 4.96$ ) conditions;  $t(10) = 2.70, p = .02, r = .65$ , which indicates that the difference was statistically significant at the .05 level, and that it had practical significance based on the criterion that a large effect size ( $r \geq .50$ ; Cohen, 1988, 1992) indicates sufficient power.

Table 3

*Perceived Stress Survey Mean, Standard Deviation and Change in Means*

Variable	Pre-test		Post-Test		Variance	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	Change in Mean	% Change
Perceived Stress Survey (potential range 0-40, actual range 8-29)	19.36	4.96	15.27	6.11	4.09	21.1%

Table 4

*Perceived Stress Survey Paired T-Test*

	<i>Pre</i>	<i>Post</i>
Mean	19.36	15.27
Variance	24.65	37.41
Observations	11	11
Pearson Correlation	0.60	
Hypothesized Mean Difference	0	
Df	10	
t Stat	2.70	
P (T <= t) one-tail	0.01	
t Critical one-tail	1.81	
P (T <= t) two-tail	0.02	
t Critical two-tail	2.22	

***Research question 2. Will a 4-week 15 minute per day guided stress reduction intervention, using yoga techniques, have an effect on the participants' perceived levels of anxiety as measured by the STAI-YI?*** The mean and standard deviation for the pre and post STAI-YI scores are presented in Table 5. The change in the mean was an improvement of

10.2%, between the pre and post treatment scores. A paired t-test (Table 6) was conducted to compare the pre-treatment STAI-Y1 scores and post-treatment STAI-Y1 scores of the same population to determine if there was a significant change in the scores after the treatment. There was not a statistically significant difference between the pre-test ( $M = 45.2, SD = 12.84$ ) and the post-test ( $M = 40.6, SD = 12.47$ ) conditions;  $t(1.44) = 2.70, p = .18, r = .43$ , indicating that the difference is not statistically significant, and that it does not have practical relevance, based on the criterion that a large effect size ( $r \geq .50$ ; Cohen 1988, 1992) indicates sufficient power.

Table 5

*State Trait Anxiety Indicator Y1 Form Mean, Standard Deviation and Change in Means*

Variable	Pre-test		Post-Test		Variance	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	Change in Mean	% Change
State Trait Anxiety Indicator Y1 Form (potential range 20-80, actual range 27-66)	45.2	12.84	40.6	12.47	4.6	10.2%

Table 6

*Paired T-Test: State Trait Anxiety Indicator Y1 Form*

	<i>Pre</i>	<i>Post</i>
Mean	45.2	40.6
Variance	165.06	155.6
Observations	10	10
Pearson Correlation	0.68	
Hypothesized Mean Difference	0	
Df	9	
<i>t</i> Stat	1.44	
P (T <= <i>t</i> ) one-tail	0.09	
<i>t</i> Critical one-tail	1.83	
P (T <= <i>t</i> ) two-tail	0.18	
<i>t</i> Critical two-tail	2.26	

These results suggest that although there was a decrease of 4.6 in the median scores between the pre and post test scores, the difference is not statistically significant and that the change could be attributed to a random result.

***Research question 3. Will a 4-week 15 minute per day guided stress reduction intervention, using Yoga techniques, have an effect on the participants' perceived levels of engagement as measured by the WEP?*** The mean and standard deviation for the pre and post WEP scores are presented in Table 7. The change in the mean was an improvement of 2.6%, between the pre and post treatment scores. A paired *t* test (Table 8) was conducted to compare the pre-treatment WEP scores and post-treatment WEP scores of the same population to determine if there was a significant change in the scores after the treatment. There was not a statistically significant difference between the pre-test ( $M = 126.4, SD = 17.13$ ) and the post-test ( $M = 129.7, SD = 25.71$ ) conditions;  $t(9) = -.757, p = .46, r = .24$ , indicating that the difference does not have practical relevance based on the criterion that a large effect size ( $r \geq .50$ ; Cohen 1988, 1992) indicates sufficient power.

Table 7

*Work Engagement Profile Mean, Standard Deviation and Change in Means*

Variable	Pre-test		Post-Test		Variance	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	Change in Mean	% Change
Work Engagement Profile (potential range 24 - 168, actual range 95-157)	126.4	17.13	129.7	25.71	3.3	2.6%

Table 8

*Work Engagement Profile Paired T-Test*

	<i>Pre</i>	<i>Post</i>
Mean	126.40	129.70
Variance	293.60	661.34
Observations	10	10
Pearson Correlation	0.867711842	
Hypothesized Mean Difference	0	
Df	9	
<i>t</i> Stat	-0.76	
P (T< = <i>t</i> ) one-tail	0.23	
<i>t</i> Critical one-tail	1.83	
P (T< = <i>t</i> ) two-tail	0.47	
<i>t</i> Critical two-tail	2.26	

These results suggest that although there was a slight increase of 3.3 in the median scores between the pre and post test scores, the change is not statistically significant which would indicate that the change in pre and test scores was a random result.

***Research question 4. Will the number of sessions attended impact the change in pre and post test results on the three instruments?*** Attendance was tracked by the researcher each

day by writing down the number of attendees at the morning session and the afternoon session (see Table 9).

Table 9

*Number of Attendees by Session*

<b>Attendance</b>					
<b>Date</b>	<b>Day of Week</b>	<b>10am</b>	<b>11am</b>	<b>2pm</b>	<b>Total</b>
5-Aug	Monday	3		11	14
6-Aug	Tuesday	1		5	6
7-Aug	Wednesday	2		10	12
8-Aug	Thursday	1		7	8
9-Aug	Friday	3		7	10
12-Aug	Monday	14			14
13-Aug	Tuesday	3		5	8
14-Aug	Wednesday	3		6	9
15-Aug	Thursday	5		7	12
16-Aug	Friday	5		4	9
19-Aug	Monday	4		3	7
20-Aug	Tuesday	3		3	6
21-Sep	Wednesday	2		2	4
22-Aug	Thursday	2		3	5
23-Aug	Friday	3		3	6
26-Aug	Monday	3		3	6
27-Aug	Tuesday	2		6	8
28-Aug	Wednesday	2		5	7
29-Aug	Thursday	4		3	7
30-Aug	Friday	3		8	11
	<b>Totals</b>	<b>54</b>	<b>14</b>	<b>101</b>	<b>169</b>

The 2:00 p.m. session was more heavily attended than the 10:00 a.m. session. This was likely due to a standing 9:45 a.m. meeting that occurred daily and was attended by all of the developers. Although the meeting was scheduled to end at 10:00 a.m., it usually ran over. For this reasons the participants who attended the standing meeting were unable to attend the

morning session. On one Monday, August 12, 2013, only one session was held due to an all-hands meeting, where everyone who wanted to participate did so at 11:00 a.m., instead of the usual 10:00 a.m. and 2:00 p.m. times.

Attendance at the treatment sessions varied from 4 participants to 14 participants with Mondays having the highest attendance and Tuesdays session having the lowest attendance (see Table 10). There was a drop in attendance in Week 3 when the Microsoft Outlook calendar appointment for the daily sessions that had been previously scheduled on the employees' calendars was discontinued, because the human resources manager had erroneously created appointments for only the first two weeks of the program (see Table 11). She added the appointments back at the end of Week 3. In Week 4, schedules were tighter than usual due to the deadline to complete the Beta version of the company's new software release. On Tuesdays, the developers worked from home, which decreased the population of employees in the office. The researcher discovered this after the study began.

Table 10

*Number of Attendees by Day of the Week*

Day of the Week	Total
Monday	41
Tuesday	28
Wednesday	32
Thursday	32
Friday	36
Total	169

Table 11

*Number of Attendees by Week*

Week	Number of Attendees
1	50
2	52
3	28
4	39
Total	<u>169</u>

The final questionnaire, which was co-developed with the organization and contained both closed and open ended questions to garner more information about the participants' experiences (see Appendix D), asked the participants to categorize themselves in one of three attendance categories: five or less sessions, 10 or less sessions, or 11 to 20 sessions. These results are presented in Table 12. The other questions and information from the final survey are discussed in more detail in the section on research question five.

Table 12

*Estimated Number of Sessions Attended***Reported Number of Sessions Attended**

5 or Less	10 or less	11 to 20
1	4	6

One person responded that he or she had attended five or less sessions, four people responded they had attended 10 or less sessions, and six of the respondents responded to attending 11 to 20 sessions. As there was only one respondent, in the first category of five or less sessions attended, it was decided to run the correlation between the number of sessions

attended and the change in the scores on the pre and post surveys for the PSS, STAI-Y1, and WEP, on two groups: 10 or less sessions attended and 11 or more sessions attended.

The results of the correlations varied among the three survey instruments. A Pearson correlation coefficient was computed to assess the relationship between the number of sessions the participants attended and the change in their pre and post test scores on the PSS, STAI-Y1, and WEP (see Table 13).

Table 13

*Correlation Between the Instruments and Number of Sessions Attended*

Perceived Stress Survey	Number of Sessions $r = .903$ $p = .036$
State Trait Anxiety Indicator_Form Y1	$r = .338$ $p = .578$
Work Engagement Profile	$r = .231$ $p = .709$

$N = 10$

The Pearson correlation results revealed that the PSS was positively correlated to the number of sessions,  $N = 10$ ,  $r = .903$ ,  $p = .036$ . This correlation was significant at the .05 level and, based on the criterion that a large effect size ( $r \geq .50$ ; Cohen 1988, 1992) indicates sufficient power, the difference had practical relevance.

The STAI-Y1 was positively correlated to the number of session,  $N = 10$ ,  $r = .338$ ,  $p = .578$ . However, this correlation was neither significant nor of sufficient power. Similarly, the WEP was positively, but not significantly correlated to the number of sessions,  $N = 10$ ,  $r = .231$ ,  $p = .709$ .

The PSS was the only instrument that showed both a statistically significant and practical reliance in the  $t$  test and correlation measures. The STAI-Y1 and WEP did not have either

statistically significant or practical reliability in either the *t* test or correlation measure, and thus could not be viewed as useful tools to measure the impact of the treatment in the study environment.

**Qualitative results.** Qualitative data were used to answer research question number 5: Will the participants see a perceived effect of the stress reduction treatment as a result of their participation in the 4-week program?

The final questionnaire, which was designed by the researcher in conjunction with the participating organization and included open and closed questions, provided data to answer research question 5. The researcher also analyzed her notes from her post intervention meeting with the company's COO, and the general observations she had noted while in her role as facilitator of the program. The responses to the final questionnaire are presented in Tables 14 and 15.

Table 14

*Answers to the Closed Ended Questions in the Final Questionnaire*

Question	Yes	No	No Answer
1. Did You Find the 15 Minutes per day a valuable use of your time?	11	0	
2. Are there parts of the program you will continue on your own?	11	0	
3. Did you continue to practice on the weekends and/or vacations?	11	0	
4. Was the dailyness of the instruction useful?	11	0	
5. Did you see changes in yourself as a result of the program?	9	2	
6. Did you notice any changes in your work environment as you participated in the study?	5	4	1

Based on the feedback of the 11 participants who completed the questionnaire, 11 of the 11 participants found the 15 minute per day session valuable. Some of the comments communicated in the answers to the open ended question were as follows: it reminded me of the

benefits and importance of taking breaks, having a daily reminder helped the respondent to take breaks; the sessions gave the respondent the chance to step away from what they were working on, the sessions allowed the respondent to clear their head for a few minutes; even though one person reported having to rush to get to the session, the calming effect on the mind proved to be invaluable for the remainder of the day, and the sessions allowed a respondent to get back in touch with the body and mind (see Table 15).

All 11 of the respondents found the dailyness of the instruction useful. Some of their comments to the open ended question were: the dailyness prevented them from forgetting to take a break, they noticed an improvement in their abilities when they participated, it was difficult to create a new pattern of behavior, but the daily instruction helped to do this. All 11 respondents also responded yes, that there were parts of the program they would continue on their own, and that they continued some aspect of the program on weekends and/or vacations. Some of their comments included: they continued the stretching, that they had and will continue with the breathing, and the mediation, although from the comments, the meditation seemed to be the most difficult component of the treatment to do on their own. In addition, they continued on their own time, in the car, when they worked remotely, and the stretching at home.

Nine of the 11 participants responded that they saw changes in themselves as a result of the program. Participants reported recognizing the need for more quiet time, breathing to calm themselves, of having a noticeable relief in their shoulder strain

Table 15

*Answers to Open Ended Questions from the Final Questionnaire*

Questions:	Responses
<p>1. Did You Find the 15 Minutes per day a valuable use of your time? Please explain. – Seven Responses</p>	<ul style="list-style-type: none"> <li>• It is important to take breaks and the program reminded me to do just that.</li> <li>• Yes, it was good to step away from whatever I was working on, just clearing my head for a few minutes. One trouble, afternoons I was always too busy to go, and it was when I needed it more</li> <li>• I was always in a rush to get there, but calming my mind proved invaluable for the remainder of the day.</li> <li>• Relaxing and reset mentally.</li> <li>• I like taking a short break anyway so having a structure and routine was important to me.</li> <li>• It was a good time to step away from daily issues to reflect and get back in touch with the body and mind.</li> <li>• Having a set time, making it part of the routine to break and reset. Otherwise you can run all day.</li> </ul>
<p>2. Are there parts of the program you will continue on your own? If yes which parts. – Eight responses</p>	<ul style="list-style-type: none"> <li>• Definitely the stretching</li> <li>• The breathing and the stretching, the meditation is hard for me by myself because I lack the self discipline here at work to give myself the time.</li> <li>• Stretch more often during the day.</li> <li>• Meditation.</li> <li>• Stretching for sure. Breathing on occasion. Meditation less.</li> <li>• Breathing exercises.</li> <li>• Breathing and meditation, stretching.</li> <li>• Meditation.</li> </ul>
<p>3. Did you continue to practice on the weekends and/or vacations?</p>	<ul style="list-style-type: none"> <li>• In the car actually</li> <li>• Some- those times are typically more relaxing</li> <li>• When I worked remotely I did do the practice, not on weekends</li> <li>• Breathing and some stretching</li> <li>• I'd stretch at home</li> </ul>
<p>There was no open ended question, however, five participants responded with comments.</p>	
<p>4. Was the dailyness of the instruction useful?</p>	<ul style="list-style-type: none"> <li>• Yes – good</li> <li>• Without dailyness it could be easier to forget to do/out of habit. I also noticed a difference in my abilities when I hadn't done it for a day.</li> <li>• Yes – it is difficult to create a new pattern, but daily instruction helped</li> </ul>
<p>There was no open ended question however, three Participants responded with comments.</p>	

(continued)

Questions:	Responses
<p>5. Did you see changes in yourself as a result of the program? If yes how?</p>	<ul style="list-style-type: none"> <li>• Yes - I realized I need more quite time/still time</li> <li>• Yes - Mildly – I breathe through more things now</li> <li>• Yes - Breathe when I need to calm myself</li> <li>• Yes - More mindful of how I physically feel during the day</li> <li>• Yes - Could tell a noticeable difference in the level of shoulder stress before de-stressing versus immediately afterwards.</li> <li>• Yes - I feel calmer and more level headed.</li> <li>• Yes - Calmer more aware.</li> <li>• Yes - Feel focused after meditation.</li> <li>• No - Not enough focus for me.</li> </ul>
<p>Eight of the Nine participants that responded yes to the closed ended question provided comments – One did not</p>	
<p>One of the two participants that responded No to the closed ended question provided a comment – One did not</p>	
<p>Totaling Nine Comments Provided</p>	
<p>6. Did you notice any changes in your work environment as you participated in the study? If yes, what were they?</p>	<ul style="list-style-type: none"> <li>• Yes - It was like hitting the reset button for all those who participated on the most stressful of days it was an opportunity to re-focus for everyone. Very worthwhile. Thank you.</li> <li>• Yes - Those who participated seemed calmer.</li> <li>• Yes - Good way for people across roles to have a common “hobby” and a common language around stress.</li> <li>• Yes - People were a bit more understanding.</li> <li>• Yes - With increase in stress of work, the stress level hasn’t raised as much as I expected. It has also been great to spend time with people I don’t normally work with .</li> <li>• No - Uncertain - there have been a great deal of changes in our organization the last 3-4 months, so I see a lot of change, but uncertain which variable had an influence.</li> <li>• No- Hard to say. I think things are calmer but we've still had some outbursts over conflicts, but that happens.</li> <li>• No - Sadly no, I think the people that MOST NEEDED the program did not participate.</li> </ul>
<p>Five participants responded yes to the closed ended question and all of the respondents provided comments to the open ended question.</p>	
<p>Four participants responded no to the closed ended question and three responded to the open ended question.</p>	
<p>Any changes you would make to the program?</p>	<ul style="list-style-type: none"> <li>• Add more stretching exercises.</li> <li>• More leg stretches - hammies get tight, may help back.</li> <li>• Continue having it.</li> <li>• Lower lights during meditation.</li> <li>• Keep doing it.</li> <li>• Eliminate the first part of breath control in favor of more stretching, since that's mostly what the meditation is about anyway.</li> <li>• None - I loved it for our company and for myself personally.</li> <li>• Going forward I would make it mandatory to do 5 Min of stretching at 9am and 3-m and then an additional breathing session at 3pm as well.</li> </ul>
<p>Eight participants responded to this question</p>	

following the session, being more mindful of their physical sensations and being calmer and more aware following meditation. One of the people who answered no to the question about seeing a change in himself or herself mentioned that it was not enough focus for them.

There was a mixed reaction to the question of whether the participants noticed a change in the work environment, which corresponds with the unreliability of the WEP as a measurement of the treatment's impact. Five of the eleven respondents responded that they noticed changes to the work environment, while four did not and one respondent did not answer. The comments from the participants who reported they had noticed a change included: it was like hitting the reset button for all those who participated; those who participated seemed calmer, participation gave a good way for people to have something in common, and created a common language around stress; that people seemed a bit more understanding, and it was good to spend time with people they don't normally work with. On the other hand, a participant noted that there had been a lot of changes recently in the organization, and there were a lot of things changing all at once, which would make it difficult to determine what specifically had contributed to the changes in the environment. Another person noted that some of the people that might have benefited most from the program chose not to participate.

The changes the participants reported that they would like to see to the program were as follows: to add more stretching especially to the hamstrings; to continue the program; to eliminate the controlled breathing, and focus more on stretching. A couple of participants said they would not make any changes. One person recommended doing the stretching two times per day, and the breathing exercise in the afternoon. There was also a mention of having a computer application to accompany the program.

The researcher had the opportunity to meet with the COO of the organization to share the summary results of the study. This conversation helped provide additional insight into the

program's impact. These were the COO's personal reflections, and could not be interpreted to represent the entire group.

The COO felt that the participation rate was probably hampered by the fact that the program was part of a research project. Her feeling was that some of the employees might have felt like "mice under a microscope" by participating in the study. She also communicated that the employees had wanted to continue the program on their own after the researcher left. She was personally supportive of their efforts, and was more than willing for them to take the time out of their day to continue the program.

The employees who continued with the program decided on a 2:00 p.m. time each day to go through the exercises. Three or four employees had agreed to facilitate the sessions and they felt that doing the breathing exercises and stretching everyday would be beneficial. In addition, they would practice the meditation once or twice a week. The employees had started the follow-up program the week before the researcher met with the COO, and she was not sure how the sessions had gone as she had been out of the office. She was also hopeful that some of the people that had not participated in the sessions during the study period would start to attend, now that the program was no longer part of a research project and was being facilitated by their fellow employees. She herself had continued a meditation practice on her own and has also continued to use the other tools taught in the program such as controlled breathing and stretching.

### **Findings**

The findings from the results of the data collected to answer the research questions are presented in three categories: the impact and findings from the survey instruments, the impact of the treatment as seen by the participants, and observations by the researcher based on the data collected, and her role as facilitator of the treatment.

**Impact and findings from the survey instruments.** While the PSS, STAI-Y1, and WEP all showed an improvement in the mean score between the pre and post treatment test scores, the PSS was the only instrument that showed statistical significance and practical relevance in measuring the effects of the treatment in the results of the paired  $t$  test:  $t(10) = 2.70, p = .02, r = .65$ , indicating that the difference between the pre and post test scores was statistically significant at the .05 level, and that the PSS had practical reliability based on the criterion of a large effect size ( $r \geq .50$ ; Cohen, 1988, 1992) indicating sufficient power.

The PSS was easy to administer, and took the participants only minutes to complete. The PSS measures the degree to which a person perceives situations in her or his life to be stressful. The measure is predicated on the assumption that events are only harmful to a person if they are appraised by the person as threatening, or when coping resources are seen as being insufficient to deal with the threat (Cohen et al., 1983). The PSS was also used in other studies where an intervention was implemented and where pre and post intervention surveys were used (Dunn, 2009; Klatt et al., 2009; Newsome 2010). The decrease in the PSS was significant in two of these studies (Klatt et al., 2009; Newsome, 2010).

Stress impacts both the organization and individual (“Are You Working Too Hard?,” 2005; Beehr & Newman, 1978; Garfinkel & Singhal, 1998; Klatt et al., 2009; NIOSH, 2009; Sauter et al., 1999; Spielberger & Reheiser, 1995; Van der Klink et al., 2001), which is the reason it was the primary focus of the study. The results from the change in PSS scores pre and post treatment indicate the PSS would be a useful survey tool for further research of this kind. The PSS results also indicate that further research of this kind could be beneficial, as the treatment was effective in contributing to the change in the participants’ perceived stress levels.

The STAI-Y paired  $t$  test results;  $t(1.44) = 2.70, p = .18, r = .43$ , indicated that the difference between the pre and post treatment scores was not statistically significant, and did not

have practical relevance, based on the criterion that a large effect size ( $r \geq .50$ ; Cohen 1988, 1992) indicates sufficient power. The STAI-Y1 was used in this study to provide an additional measure of stress and anxiety. The STAI-Y1 has been used extensively in research, and the Y1 form measures state anxiety, or how the respondent feels in the moment he or she is taking the survey (Spielberger et al., 1983).

The STAI-Y1 was also utilized in a previous study in which an intervention was implemented, and pre and post intervention surveys were utilized (Mars, 1987). In that study there was a significant decrease in the STAI following the intervention. The STAI was also utilized in a study that measured the efficacy of yoga and aerobic exercise on anxiety and mood on the days the participants in the study participated in either yoga or aerobic exercise (Moane, 2003). In this study the STAI scores were shown to be significantly affected on the days the participants practiced yoga. In both cases however, the sample populations were larger, with an  $N = 60$  (Mars, 1987), and an  $N = 30$  (Moane, 2003).

The STAI-Y1, as mentioned above, asks the participant how they are feeling the particular day they take the survey, as opposed to the PSS, which asks the participant to rate how often they felt a certain way over the last month. In the current study, the last day of the program happened to be the day the Beta version of the company's newest version of their software was due, and the developers and other team members had been working extra hours to meet the deadline. This situation may have had something to do with their reported anxiety levels.

The WEP results to the paired  $t$  test:  $t(9) = -.757$ ,  $p = .46$ ,  $r = .24$ , indicate that the difference between the pre and post treatment scores were not statistically significant and that it does not have practical relevance based on the criterion that a large effect size ( $r \geq .50$ ; Cohen 1988, 1992) indicates sufficient power. The WEP was the longest of the surveys with 24 questions. The WEP measures the intrinsic rewards individuals can receive directly from their

work. It was designed based on a conceptual model of work, self management, engagement, and intrinsic reward (Thomas, 2009), and relates to how workers perceive their wellbeing, job performance, and commitment to the organization.

It was hoped that adding a measure of this type would give greater insight to the impact of the treatment on the individual's engagement with the organization, however, the results of change in WEP scores were not statistically significant or reliable, therefore in the case of this study the WEP was not a useful survey.

Additionally, in retrospect, it may have been over zealous on the part of the researcher to include more than one survey in the study, considering the exploratory nature of the study, and that the primary focus of the program was stress relief. Given that the study was performed in the workplace where time is at a premium, the time requirement to fill out three surveys might have been daunting to the participants. This may explain why there was a drop off in the participation rate in filling out the surveys from 14 participants completing the pre treatment surveys and 11 participants completing the post treatment surveys.

Based on these results, the PSS was a useful survey instrument to use in the measurement for this exploratory study. The PSS showed both statistical significance and practical reliability to indicate that the treatment was effective in contributing to the decrease in the participants' perceived stress. This result was also consistent with findings in other studies (Klatt et al., 2009; Newsome, 2010), and due to this, the researcher would recommend using the instrument in further studies of this type.

**Reported impact by participants.** The final questionnaire and the meeting with the COO were both used to interpret the results of the quantitative analysis and to provide insight into the experience of the participants. Based on the final survey responses, the dailyness and repetitious nature of the treatment were well received by the participants, and the goal of creating

a habit was reinforced by both of these aspects of the treatment. Additionally, all of the participants reported that they continued to perform some or all of the components of the treatment on their own. This indicates that the goals of ease of use and knowledge transfer were met. This finding was further reinforced by the COO's saying that some of the participants had organized to continue the program in the office once the treatment was complete.

Changes reported by each of the participants in the final questionnaire were individual in nature, as would be expected due to the individual nature of stress (C. L. Cooper & Cartwright, 1997). Of the nine participants who answered yes to the closed ended question asking whether they had seen changes in themselves as a result of the program, eight participants commented. There were a variety of answers and participants reported being more mindful of their physical states and recognizing specific areas of their body that were more relaxed. Other respondents felt changes in their mental states, such as feeling calmer, more aware, more level headed. Another commented they felt more focused after meditation, and the on-going use of the breathing techniques was also mentioned. One of the two participants that responded no to the close ended question provided a comment and noted that there was not enough focus for them. These comments showed the differences in how the participants responded to the treatment.

The range of responses from the participants to the question of what changes the participants saw in themselves as a result of participating in the program, reinforced the researchers expectation that different people would respond differently to the program and its various components. Other studies that looked at the impact of an intervention in the workplace, viewed the treatment as a whole, and did not ask for feedback on the individual components of their treatments (Dunn, 2009; Klatt et al., 2009; Mars, 1987; Newsome, 2010). In the current study participants were able to provide the researcher with additional information regarding how they perceived they had changed as a result of participation in the study and indicated in their

answers that they responded to different aspects of the program. This reinforces not only the individual nature of stress (C.L. Copper & Dewe, 2007; Lazarus, 2007; Selye, 1984), but also the fact that stress reduction efforts can also be individual in nature and not one size fits all even if the treatment is consistent; by combining different modalities people experienced changes in different ways (Gebhardt & Crump, 1990). My own observations reinforced the answers from the participants to the open ended questions on the surveys. I was able to see a visible difference in the participants' facial and body language before and after the treatment. In many cases they would come in with frowns or tight upraised shoulders and when they left they would be smiling and their shoulders would be relaxed.

While it had been anticipated that the treatment would also provide an organizational impact, with a participation rate of less than 50% of the population, it is the researcher's view that too small a percentage of the population participated in the treatment for it to have an overall impact on the organization. However, small changes in the organization were reported by some of the participants on the final questionnaire. One participant reported that interactions were calmer. Another reported that the treatment provided a reset button for the participants. One participant noted that a more common understanding of stress was gained in general. However, in order to assess whether a treatment of this type could achieve a stronger organizational impact, it would be desirable to have a larger population and participation rate. Additionally, the WEP did not prove to be a valuable tool in measuring the organizational impact of the treatment in this study and other measures would be required.

In future research, absenteeism could be a useful way to measure the impact of a stress management program on the organization. Absenteeism, tardiness, turnover, conflict, as well as diminished productivity, performance and decision making are all organizational costs associated with stress ( "Are You Working Too Hard?," 2005; Beehr & Newman, 1978; Garfinkel &

Singhal, 1998; Klatt et al., 2009; NIOSH, 2009; Sauter et al., 1999; Spielberger & Reheiser, 1995; Van der Klink et al., 2001). Additionally, Cooper and Dewe (2008) reported that stress, depression, and anxiety alone “accounted for 13.8 million days lost or 46% of all reported illnesses, making this the single largest cause of absenteeism attributed to work related illnesses” (Cooper & Dewe, 2008, p. 522). Absenteeism data, specifically, could be analyzed before, during and after the intervention to determine if the stress management program had an impact on the time employees were away from work, which drives costs and lowers their productivity. Based on the researcher’s human resource experience, most organizations capture this information for their employees and it could be easy to access. This data is also objective, as it is reported in a standard manner in most organizations, where as other measures of engagement are self reported.

The intervention was purposely designed to require less than the 45 minutes to one hour that a typical yoga class entails, (Gura, 2002) and also was designed to be completed on company time versus other programs that required the participants to use their personal time (Dunn, 2009; Gura 2002; Jungman, 2005; Klatt et. al., 2009). Based on the responses from the participants on the final questionnaire, and the conversation with the COO, the length was appropriate for an office environment. The participants reported that the time was effective and a good use of their time, and the management team had no problem allowing the employees to take the time each day to participate in the program. This is a critical aspect of the treatment, in that it is something that could be incorporated into the workday without being seen as burdensome, and the participants felt more productive, not less, as a result of taking the time to participate in the study.

Additionally, the focus on the ease of knowledge transfer of the treatment was effective, as the participants were able to continue the program on their own during the time frame of the

program. After the program was over, the participants decided to put together a small group of facilitators to continue the program in the office. This indicates the effectiveness in the choice of the tools taught in the treatment. These tools were designed to be used on an on-going basis, and it appears that the participants were motivated and felt able to use them in this manner. This is important for the longer term effects of the treatment, as only with the use of the tools could the participants continue to see the benefits of eliciting the relaxation response (Benson & Proctor, 2010).

The researcher designed the program components and modalities to maximize the likelihood of participants' personal ongoing use of the tools. However, the researcher had not anticipated that the employees would self organize and continue the program on their own. This outcome further indicates the effectiveness of the treatment. The ongoing program creates an added benefit for those employees who continued to participate, as it gives them the much needed time to step away from what they are doing to elicit the relaxation response, and thus receive the benefits daily at work. The program also eliminates the need for them to take time on their own, off work hours, to gain the benefits. Community building among participants, while not measured in this study, could also be an added benefit to the organization, and appears to have occurred in the study period, as the participants wanted to continue the program as a group, rather than just individually.

**Observations by the researcher.** The results and findings discussed thus far contain the information gathered from the participants' questionnaires and surveys and the discussion with the company COO. There were, however, other factors that were not captured by the instruments used to collect qualitative and quantitative data for this study. The researcher observed these factors in facilitating the program. The researcher was able to observe the

organization informally during her comings and goings as well as the interaction between the employees, both those who participated in the treatment and those that did not.

It was evident to the researcher that, in an organizational setting, and especially in a young, small organization, there is constant change and crises arising. While some employees realized the 15 minutes they spent a day in the program provided them the time to step back, relax and reset, and then be more productive during the day, others felt they were too busy to stop and attend a session.

*Factors affecting participation.* There was also a big difference in participation, when leadership was visible in supporting the program. When two of the key leaders in the office participated in the daily sessions there was a much better turn out. Having the leadership team on board with any kind of initiative, especially where it is new to the organization, is critical. In the early days of change the leaders' behavior is looked at by their team, and their participation, commitment to the change, and perseverance with the program is critical. The presence of the leaders is one of the most powerful ways to communicate and encourage the change (Burke, 2002; Cummings & Worley, 2001; Kotter, 1996). By the leadership team making the program a priority, it sends a message to the rest of the team that attendance is not only acceptable, but also is important (Burke, 2002). This was clear in the study organization and the researcher was fortunate to have this support.

Another observation made by researcher and reinforced by the COO, was that some employees displayed behavior that indicated uneasiness about participating in the study. There are several possible explanations for employee reticence. The COO thought that it may have been that the program was presented a part of a research study, and that the employees felt uncomfortable with the possibility they would be treated as research subjects and be evaluated. This could be difficult to mitigate due to the necessity of the informed consent form, the explicit

language used to describe the research, approach to the participants prior to the start of the program, and the effort made by the researcher to not become too familiar to the participants to assist in trying to keep her influence to a minimum. A study completed by someone already in the organization that the participants trusted may help to overcome some of these barriers.

Another explanation of the employees' reluctance to participate in the program, is that some of the employees may have felt like they were being forced into participating and chose to resist (Schein, 1992), even though the researcher assured them that their participation was entirely voluntary. The leaders were vocal in their support and promotion of the program, and this may have felt coercive to some employees. In a coercive environment members will drop out if possible, and peers may develop a defense against authority (Cummings & Worley, 2001; Schein, 1988, 1992). This effect would be difficult to control, and is the negative side of the above mentioned benefits, of having the leadership team be on board and active participants in the program. Overall, there appeared in this case to be more gained than lost in having the leadership team on board and supportive of the process, however, it must be taken into account that for some people this could be a deterrent.

***Modalities used.*** The participants were asked on the final questionnaire which components of the program they would continue on their own. All 11 of the respondents answered yes to the closed ended question of whether they would continue parts of the program on his own, and 8 of the 11 respondents commented on which parts of the program they would continue. The answers are summarized in Table 16.

Table 16

*Components Participants Would Continue On Their Own*

Component	# of Responses
Breathing	1
Stretching	2
Meditation	2
Breathing and Stretching	1
All Three Components	2
Total	8

The researcher also observed the participants during the sessions and her expectations that having the three distinct components in the treatment would make the treatment more accessible to all of the participants were confirmed through observation. Participants' varied responses on the aspects of the treatment they would continue on their own, further confirmed this observation. These data validated the purposeful design to incorporate the three components of hatha yoga, physical postures (asanas), controlled breathing (pranayama), and meditation (dhyana) into the program to ensure it resonated with the participants. Each of the components operates in either an integrated or independent manner, and each can elicit the relaxation response (Benson & Proctor, 2010; Chanen, 1998; Pilkington et al., 2005).

The researcher had been concerned that the movement component might be seen as too elementary for participants who were physically active and fit. However, to the contrary, the participants seemed to appreciate the time in the sessions to be in their bodies with the only goal of the movement being to create relaxation, and to counteract the daily strain of working in an office. Five of the eight respondents who answered question number 2 in the final questionnaire, reported they would continue stretching on their own. I also observed that the participants looked much more relaxed after the session, particularly in the shoulders. Therefore, in future

offerings, the researcher would keep each of the components since each seemed to provide a benefit.

*Observations based on interaction with participants.* The participants made a point of greeting the researcher each day, and often would stop by the conference room or meeting room to let her know they would be attending the session, as she was there a few minutes early to ensure the sessions began on time. Participants would also let her know if they would be attending the afternoon session if they were busy in the morning. Several of the participants mentioned verbally to the researcher how much they were enjoying the sessions and that they wished they could continue on, which was also noted by two respondents in the final questionnaire.

The researcher took precautions to be in the office only for the treatment, and she stayed just long enough after the sessions to answer any questions the participants had. The researcher's intent was to avoid becoming too familiar with the participants, and hence introduce an intervening variable, which could have influenced the study results. However, the employees, whether they participated in the program or not, greeted the researcher, and were helpful to her any time she needed assistance. This acceptance of the researcher, by both participants and non-participants, and the expressed appreciation for the time taken each day to facilitate the program, helped make facilitating the program personally rewarding.

### **Limitations of the Study**

The size of the population, 30 employees, and participation group of 11 employees who completed both the pre and post treatment survey instruments and questionnaires, was a definite limitation of the study. However, finding an organization that was willing to allow employees to participate in a program for even 15 minutes a day on the clock was a challenge and took many months to achieve. Ideally, the population size would be much larger and a control group would

have been used. Statistical significance was also sacrificed due to the small number of participants, although in the case of PSS the number of participants ended up being adequate.

Another potential drawback is that the researcher conducted the intervention, which could have created a conflict and bias on the participants' participation and perception. Data collection methods were in place to insure confidentiality and encourage candid responses, and the researcher was careful to limit interaction to brief encounters before and after the sessions to attempt to minimize this risk.

There was also an inability to report on the individual components of the treatment, as the 20 sessions varied in design, building upon one another. Therefore, the 4 weeks of data were aggregated and examined as a whole. The measures were also limited by the fact that the researcher was not able to collect data that measured the overall organizational impact of the study as the WEP was not found to be practically reliable nor statistically significant in measuring the impact of the treatment.

The researcher was not able to measure the long-term impacts of the intervention, as no data were collected beyond the final surveys and questionnaires at the end of the 4-weeks of treatment. Additionally, the measures used were not physiological, nor performance based, but self-reported. It was also not possible to measure or control intervening variables that could have potentially affected the participants during the treatment, such as family emergencies, natural events that keep the participants from being able to come to work, organizational changes, or personal crises.

### **Summary of Results and Findings**

The results and findings were somewhat inconclusive as two of the three instruments used to measure the impact of the treatment were found to be both statistically insignificant and not practically reliable as measures of the program's effectiveness, nor as a measure of whether

or not the number of sessions had an impact on the change in pre-test and post treatment survey scores. However, the PSS was found to be practically reliable, both as a measure of the impact of the treatment in the  $t$  test, and when looking at the correlation of the number of sessions attended. This would indicate that the improvement of the participants' perceived stress as measured by the PSS was not random in nature, and that the number of sessions did not necessarily impact the changes in scores.

As stress in the workplace is the primary focus of the study, the results of the study indicate that the treatment was effective in contributing to the participants' decrease in perceived stress. As stress can be a major contributor to workplace disengagement, absenteeism, and ultimately chronic disease, the treatment proposed in this study could provide benefit to an organization by providing benefit to the perceived wellbeing of the employees. The participants' responses to the final questionnaire indicate that some employees will continue parts of the program on their own. This provides evidence that the knowledge transfer and the ease of use of the treatment were effective. I also observed that the participants were easily able to follow the program and in some cases towards the end, were looking to take more of a lead in the sessions.

Implementing a treatment of this kind in an organizational setting comes with its own set of complexities as there is seldom a steady state where nothing is changing, or no additional pressure is being applied to employees. These organizational/environmental factors become intervening variable which cannot be controlled by a researcher. A small start up software company is also likely to be less stable than a well established large organization.

Based on the observations by the researcher and the company's COO, the program proved to be useful to the employees, but the effects were hard to measure, due to the instruments chosen. In studies of this type, and specifically when the researcher is the facilitator of the intervention, observable data may be easier to collect and more reliable than traditional

surveys. The participation rate of less than 50% of the population, not only limited analysis of the data, but also limited the potential of the treatment reaching the population that could have most benefited from the program. This is can be one of the drawbacks of secondary interventions, in that they can fail to reach those individuals at the most risk. Often this is because stress management efforts are only directed at the executive level in the organization. This was not the case in the current study. However, in order to reach those employees that may be most in need of the programs the organization must put in place strategies, communication and incentives to recruit these individuals (Gebhardt & Crump, 1990; Lazarus 1995). This was not possible in the current study, as the researcher did not have access to the employees, or the organization prior to the beginning of the study, and there was no way of knowing what individual issues may need to be addressed based on the confidentiality of the program.

Stress is also very specific to the individual (C. L. Cooper & Cartwright, 1997), and what may energize or challenge one individual may create a threat or feel like harm to another. Having a stress management program implemented at the organizational level, which could alleviate the effects of workplace stressors such as workload, locus of control, pay etc., would seem to be optimally effective (Murphy & Sauter, 2003). In reality however, it is providing individuals with tools and methods to regulate and manage his or her own stress that will lead to less stress, and hence less risk for organizations.

From the comments provided by the participants to the open ended questions on the final questionnaire, having a common way to speak about stress, and a forum to interact with each other in ways not usually available in the work place, can create a sense of community that may not otherwise be experienced. This seems to have been the case for those individuals who did participate in the treatment.

Given the results, findings, and limitations of the current study, more research would have to be done in order to better demonstrate results of the treatment. A larger sample size and a control group, would provide a researcher more reliable data, and would potentially decrease the variability of the outcomes, and increase the reliability of the measures.

There is also the opportunity to take a more detailed qualitative approach to this type of a study. The most useful information in this study came from the final questionnaire, the meeting with the COO, and the researcher's own observations. With the understanding that stress is highly individual, and that there is much variation in what creates stress for people, and which stress management tools are effective for them, doing research that is more detailed about the individual experiences and outcomes could be beneficial. This would also allow for smaller population sizes and more robust feedback about each of the individual components of the treatment.

Chapter 5 discusses the conclusions from the researcher's perspective, discusses additional opportunities for research and wraps up the research, results, and findings.

## Chapter 5: Conclusion

I chose this research project with the hopes of providing employees in the workplace with tools that could help them better manage and cope with their stress, both at work and in their personal lives, and to learn whether or not a short daily treatment using Hatha yoga principles would be effective for this purpose. I spent over twenty years in the corporate environment and my career provided me with many developmental and enriching opportunities. Yet, at the same time, I often felt overworked and overwhelmed by too many deadlines. As a result, I started to look for ways to create a better sense of congruence between my work and personal life.

I began practicing meditation and yoga as ways of creating some balance for myself, and found that both practices started to change my life in subtle ways. I could cope better with my stress, better manage my emotions, and actually be more productive at work. However, I was dedicating much more time to these practices than is practical for most people. I wanted to find a way to bring the same benefits I was experiencing to the workplace, in a way that was practical and time effective, and also reach a broader audience.

I discovered in my review of the literature that the effects of stress are a very real, and an often downplayed or misunderstood phenomenon by both employees and organizations (American Psychological Association, 2013; “Are You Working Too Hard?,” 2005; NIOSH, 2009; Sauter et al., 1999; Van der Klink et al., 2001). In our current culture, organizations and individuals sometimes look at stress as a badge of honor, or a necessity, when in fact chronic stress is a contributing factor to both short term and long-term health issues for individuals. It also drives up organizational costs due to absenteeism, turnover, and lost productivity (“Are You Working Too Hard?,” 2005; Beehr & Newman, 1978; Garfinkel & Singhal, 1998; Klatt et al., 2009; NIOSH, 2009; Sauter et al., 1999; Spielberger & Reheiser, 1995; Van der Klink et al., 2001).

Twenty-one percent of American adults report that their stress levels are high or extremely high (American Psychological Association, 2013). Additionally, the highest reported causes for stress remain work related; Money (71%), work (69%), and the economy (59%), (American Psychological Association, 2013). While “stress” is a commonly used term of complaint in our culture, and the negative impacts of stress on our health have been documented, 39% of adults in America still believe that stress has little or no impact on their physical health, and 43% believe it has little or no impact on their mental health (American Psychological Association, 2013). Although, stress is a natural part of life, it is now known that there are ways people can better manage their reactions to the events and thoughts that trigger the stress response in their bodies.

Human beings are able to think themselves into the same physiological stress response that occurs if they are actually being physically threatened or harmed. The physiological stress response that evolved as a highly effective mechanism to protect people from danger, or to help them respond to an immediate threat or harm, has now in many instances, become a chronic condition. This is largely due to our ability to elicit the stress response with our thoughts (Sapolski, 2004; Selye, 1984).

Research shows that stress is costly to organizations in terms of annual health care costs, absenteeism, turnover, and lost productivity. These are times when competitive pressure is increasingly high, so it is critical for organizations to have employees that are present and contributing at their highest levels of performance. Their performance levels can be impeded if they are in the stress reaction cycle.

There is value for organizations teaching employees easy to use, time effective tools to help them, not only relieve their stress, but to also learn how to better manage their stress by understanding its underlying causes. With coaching, employees can start to teach themselves to

better regulate their individual triggers, which is in my view essential to successful organizations. Employees with the skills to cope, relieve and manage stress will not only be healthier, but more productive.

This study sought to provide stress management tools to employees in a small start up software company and then to measure whether the treatment had an impact on the participants in the areas of stress, anxiety and workplace engagement. The remainder of this chapter provides an overview of the effects of stress on the individual and the organization, describes the study focus and study results, and makes recommendations for further research.

### **Effects of Stress on Individual and Organization**

**Individual stress.** The stress response evolved in human beings to react to triggers that elicit a protective reaction in response to an imminent threat; a tiger chasing us, a stranger from another tribe trying to take something from us, or as could happen to us today, being mugged, or threatened verbally or physically. The response triggered in the human body allows a person to fight or flee from the threat; once the event is over the body naturally returns to homeostasis, the stress chemicals and hormones dissipate, and the system returns to a steady state (National Institutes of Health, 2002; Sapolsky, 2004). This mechanism works incredibly well. If the only time a person triggered the stress response was in the case of a threat or challenge, and each time they got safely through the situation they recovered, stress would not become a debilitating factor for many people. This is essentially true for people who live in a relatively safe environment and have most of their basic needs met.

However, factors exist in our culture that can create triggers that elicit the stress response. Triggers arise when a person starts worrying, or ruminating about past events, or projecting or imagining about something that may happen in the future. The stress response can even be triggered by events that are considered positive such as a promotion, marriage or the purchase of

a new house (Holmes & Rahe, 1967). The thoughts associated with these events send signals to the brain and body that a person is being threatened or harmed, and the physiological stress response can then be triggered (Sapolsky, 2007). This means that at any-time day or night, a person can trigger the physiological stress response, and if the cycle continues repetitively the system can be thrown into a chronic stress cycle (Selye, 1984; C. Smith et al., 2007).

Chronic stress can contribute to health issues both in the short term: anxiety, sleeplessness, depression, aggression, and the suppression of the immune system, and in the long term: cardiovascular disease, type II diabetes, hypertension and obesity (B. S. McEwan & Lasley, 2007; B. S. McEwan & Lasley, 2002; Ornish et al., 1983; Sapolsky, 2004).

In the 2013 American Psychological Association's Stress in America studies Americans have continued to report high levels of stress, with 21% reporting either extreme or high levels of stress, reporting a level of 8, 9, or 10 on a 10 point scale. The number of people reporting high or extreme stress has declined from 32% in 2007 to 21% in 2013 (American Psychological Association, 2008, 2013); yet, Americans still report that their stress levels are higher than what they think are healthy. Moreover, 44% of adults reported they are not doing enough or are not sure they are doing enough to effectively manage their stress (American Psychological Association, 2013).

These findings are consistent with what I encountered in this research. As I spoke to, and interacted with the participants in the study, as the facilitator of the treatment, I found that some of the participants appeared to be proud of their stress, see it as an indicator of how hard they were working, and of their contribution to the organization. Other participants seemed to know that their stress levels were high and they communicated that they were looking for ways to better manage their stress so they could be more at ease. My own experience and the APA statistics above would concur, is that often the link between the feeling of being "stressed" and

understanding what actions a person can take to lessen the effects of stress are not always understood.

Until I began to understand the link between being “stressed” and the physiological implications of the stress response on my body, I thought the issue was just in my mind. I thought that the events contributing to the stress I was experiencing were just part of life and that if the stress became overwhelming, I needed to reduce the external events that were creating it. Once I began to understand the links between my thoughts and the physiological stress response, I realized there were tools and techniques available, which could assist in changing my perceptions and how I reacted to my personal stress triggers, both internal and external.

The participants in the study began to understand there was a difference between what he or she was feeling as stress, and the physiological response that occurred in his or her body when he or she triggered the stress response. The participants also began to understand that there were different approaches they could use to mitigate the stress response. One method was to use the relaxation practices that he or she was learning in the treatment sessions, and another way was to become more aware of what was triggering the stress response in the first place. By combining these two practices the person could cultivate ways to both relieve and manage their stress, and the events or thoughts that trigger the stress response.

**Organizational stress.** Organizations have dedicated time and resources to designing and implementing stress management programs (LeFevre et al., 2006; Nash, 2010; Pelletier & Lutz, 1991). Some organizations are also acknowledging that they have a role to play in their employees’ wellness, with only 13% of companies saying they are not responsible for the wellness of their employees in the 2012 Buck Consulting Wellness Survey (Buck Consultants LLC, 2012). The management team in this study was in alignment with this thinking. As the COO expressed to me, the company leadership felt they had a role in providing their employees

tools and training to improve their overall wellness, and also acknowledged that the current organizational changes were likely impacting people's feelings of job security and their productivity.

Research shows that there are both short term and long term effects of stress on the organization. These effects contribute to losses in productivity and increased health care costs, among other issues. In addition, employees may bring their personal stressors to work, which complicates the issue for the organization to manage the effects of stress. Thus, organizations can only go so far in creating a stress free environment for employees by engaging in interventions focused on directly improving the workplace (C. L. Cooper & Cartwright, 1997). As employees may have stressors at home that they bring to the office and since stress is highly individual in nature, a change in the work environment or culture that is intended to reduce stress, may in fact do so only for some employees while increasing the stress levels for others. Due to these considerations, organizations could benefit by helping individual employees to take increased ownership of their coping mechanisms and wellbeing (C. L. Cooper & Dewe, 2007; Lazarus, 2007).

United States employers named the following as their top wellness program objectives: reducing health care or insurance premium costs, improving worker productivity and reducing presenteeism and employee absences due to sickness or disability (Buck Consultants LLC, 2012). Each of these objectives is impacted by stress and the stress reaction is highly individualized, therefore implementing programs that could help employees develop skills to better manage their stress could contribute positively to these objectives.

One way to assist management teams who are focused strictly on costs, and who do not see their responsibility in helping their employees better manage their stress, would be to deliver the treatment to the management team themselves. It is difficult to intellectually explain the

physiological and mental effects a person feels when performing the treatment without him or her having personal experience the actual protocol of the treatment. By delivering the program to the management team first and providing them with the firsthand experience of how the tools could benefit them in relieving their own stress they could be more inclined to provide the employees with the same tools and techniques. This approach could assist in creating buy-in from the management teams in organizations to encourage the use of this treatment in the future.

### **Study Focus, Design and Objectives**

The study program focused on the white-collar population of working adults, who may or may not have implemented other stress management techniques into their lives. Fifty percent of adults report that they engage in stress relief activities a few times a month or less, and 10% reported they do not engage in any stress management activities at all (American Psychological Association, 2013). This program was open to all levels of employees in the organization, and the daily sessions were completed during company hours to eliminate the need for preparation, change of clothes, and travel time. The cost to the organization was the 15 minutes they allowed their employees to take out of the workday to participate in the four week, 20 session program.

These 20 sessions used the mind body techniques of Hatha yoga as stress management tools. Mind body approaches and techniques have been shown to reduce stress (“Yoga for Anxiety and Depression,” 2009; Campbell & Moore, 2004; Jerard, 2007; C. Smith et al., 2007), and Hatha yoga in particular has shown signs of reducing stress and evoking the relaxation response gene, which counteracts the stress response (Benson & Proctor, 2010). Three elements of Hatha yoga, breath (pranayama), postures (asana), and meditation (dyanna) were chosen for the treatment used in the study, based on their reported benefits.

The conscious and voluntary control of the breath has tremendous influence on relaxation (McCall, 2007). When the breath becomes the focus of attention the person’s relationship to it

changes, and the practitioner is reminded of the connection between the mind and the body. This creates a sense of calm in the body and the mind (Kabat-Zinn, 2009). Yoga postures help cultivate a sense of steadiness and ease in the body, and create an awareness of how these two elements complement each other. The postures also allow the practitioner to become more aware of his or her body and how it works (Desikachar, 1995). This can help reduce muscle tension, calm and rebalance the nervous system, and create a sense of deep relaxation (McCall, 2007).

Meditation is a mental practice designed to reveal the constant shifting stream of thoughts emotions, sensations, and impulses in one's mind (Kabat-Zinn, 2009; McCall, 2007). The aim of a meditation practice is to develop a nonjudgmental moment-by-moment awareness of the thoughts, which enables the practitioner to observe his or her filtering mechanisms and the relationship these mechanisms have to their thoughts and emotions (Kabat-Zinn, 2009; Klatt et al., 2009). Each of the three components used in the study treatment can be easily taught to anyone at any fitness level, in the office setting, as stress management tools.

Utilizing these three components, breath, postures, and meditation, the program was designed to be 15 minutes in length, long enough to meet the 12 to 15 minutes required to elicit the relaxation response (Benson & Proctor, 2010), and short enough not to interfere with the daily productivity of employees. The protocol and movements used were developed based on the Hatha yoga principles mentioned above, and did not require the employees to do anything more physically challenging than they would be required to do in a normal office setting. The sessions were designed to be performed in office attire and in a conference room or other office setting. No preparation was necessary to participate.

Yoga language was purposely kept out of the treatment protocol to help ensure the participants' comfort and acceptance of the program. In my experience there can still be a

stigma with yoga and the practices associated with it, in the workplace, and I felt that in order to reach the greatest population of employees that using common language and terms would better serve the protocol. There is also no need in this environment to use yoga terms, as there are commonly used terms and language that the participants could relate to available to facilitate the various modalities used in the program. The language used with the participants focused on them becoming aware of and controlling their breathing, on stretching to counteract office strain, and in sitting quietly with themselves to improve their awareness of their thought patterns and to improve focus.

The sessions built upon each other for the first 2 weeks. However, the routine was simple enough that if a person missed one or two sessions that person was still able to participate easily in the current day's treatment. The last ten sessions were identical to each other to build in repetition and knowledge transfer, so that participants would be able to continue the program on their own once the study was complete; several of the participants did continue the program on their own in the office. Participants were provided with handouts (Appendix L) that detailed each exercise which provided them with a reference tool to use once the study was concluded. This meant the organization did not have to provide additional training or incur future ongoing expense in order for the participants to be able continue with the entire program or the pieces of it that worked best for them individually.

The design of the sessions was found to be effective, in that it allowed participants to come to as many or few sessions as they could, based on their schedules and time in the office. For example the programmers at the study company worked from home on Tuesdays, and could not attend the in person session. However, they were still able to participate with ease on the days they were in the office. Fifteen minutes seemed to be the right amount of time for people to both receive the benefit, yet not have their participation be too intrusive in their day. The COO

of the participating organization did not look at the time as a cost to the company, as she felt the benefit received out-weighed the time the participants spent in the sessions.

There was a strong commitment by the management team to the program, and they encouraged the employees to take the time each day to participate in the sessions. On one day during the study period, the company held an all hands meeting, and I was invited to provide the employees with the daily session during the meeting, to ensure the participants did not miss that day. The management team had wanted to ensure that the employees did not miss the opportunity to participate in the session. This created public support for the program and encouragement for the employees to continue their participation in the program through the remainder of the study period.

This particular organization was interested in providing their employees with tools to help them better manage their stress, and the environment was very supportive of the employees' wellbeing in general. The management team seemed to understand that by helping their employees' improve their wellbeing they were not only helping the employee, but they were also benefitting the organization as a whole. In other words, this management team was willing to implement programs and policies that they thought would be beneficial to the employees even if a cost was incurred by the company for these programs. It is not my experience that this is true in all organizations. This understanding by management that the wellbeing of their employees is critical to the wellbeing of the organization is crucial to the implementation and success of this type of a program.

### **Study Results and Findings**

The quantitative study results were mixed as reported in Chapter 4. Two of the three instruments, the STAI-Y1 and WEP (Tables 5 and 7), in a paired *t* test, of the scores pre and post treatment, did not show statistically significant or practically reliable results. The PSS, however,

in the paired  $t$  test,  $t(10) = 2.70$ ,  $p = .02$ ,  $r = .65$  (see Table 3), did show statistical significance and practical reliability, indicating that the treatment had a measurable effect on the change in scores. In future research, I would not use as many standardized surveys in a study in the workplace. The COO had mentioned that some of the employees may have felt uncomfortable participating in a research project, and the number of surveys required to be filled out may have contributed to this perception.

Additionally, based on the study results and my observations physiological markers could provide a more accurate reading of the participants stress levels. The surveys indicate the level of a person's self-perceived stress, however, the stress response is physiological and therefore measures of cortisol levels, blood pressure, and heart rate variability may be more accurate indicators of the participants actual physiological stress levels. This however, would add a layer of complexity to the research protocol, as medical information would be collected from the participants requiring that Health Insurance Portability and Accountability Act of 1996 (HIPAA) protocol be followed, and this would also create an ever greater sense, in an office environment, of the participants being put under a microscope.

In the office environment, I observed that keeping the research terminology to a minimum and focusing on the treatment was the best approach. The participants seemed very interested in the information presented in the overview presentation, explaining the stress response and how the stress response affected them as individuals. They also continued to ask clarifying questions as the treatment progressed. However, the participants did not appear to be interested in the outcome of the study or results from the surveys they had completed.

The qualitative results, which included the responses by the participants to the final questionnaire, the researcher's observations, and the final meeting with the company COO, provided me with additional information on the usefulness of the study. These data sources

indicated that the dailyness of the program was considered helpful, the treatment was viewed as beneficial, that people would continue at least one of the modalities on their own once the study was complete, and that people resonated with different modalities within the treatment.

In addition to continuing the practices on their own, some of the participants decided they wanted to continue with the daily program as a group, at 2:00 p.m. in the office. Three to four participants volunteered to facilitate the program and the employees received permission from the COO to continue the program on company time. The program had been designed as a group treatment for practicality during the treatment period, however, I had not expected that the management would be supportive, of the employees continuing to take 15 minutes out of their day to practice. This was based on the difficulty I had in finding an organization to participate in the program initially, and I had anticipated that taking 15 minutes per day for 4 weeks would be as much time as the organization would be willing to commit to, as this was a disruption in the employee's day. However, both the participants and management felt that the daily time was well spent. The feeling was that the time spent in the sessions created more of a benefit to the employees and the organization, than the cost of the time used while they employees participated in the session. This willingness on managements' part and desire on the participants part was a strong indicator of the impact that the program had on the organization.

It is also congruent with the feedback on the usefulness of the 15 minute treatment and the dailyness of the program. A commitment to continuing the practice would help ensure the participants received the value of the program during the workday, which would also provide the organization with the benefit. Additionally, if more employees were to begin participating, as the COO hoped would be the case, as the program could become part of the company culture rather than a part of a research study, and there could be a broader benefit to the organization.

One of the most difficult hurdles to overcome when recruiting organizations to participate in the research study was the requirement that they allow their employees to take 15 minutes out of their day, on company time, to participate in the treatment. I believed that the participants and management would feel that the benefit outweighed the time commitment, however, this type of treatment is experiential in nature, and I could not convince the employer of this based on intellectual reasoning. This study has shown that the experience of the participants and the management team resulted in both groups valuing the time spent in the treatment when compared to the cost. The company's experience in this study could be used when discussing future implementations with other organizations.

Participants also, reported resonating with different aspects of the training (Table 16), and the program was designed purposely to address this. I felt that it was likely that not everyone would be comfortable with, or resonate with just one particular mode of relaxation. Therefore, the three program components consisted of meditation, movement and controlled breathing exercises, and the data indicate that this was indeed a sound decision and that the treatment as designed is well-suited for replication in other organizations.

Several of the participants, communicated to me, in conversation, that they had not taken the time to just sit still, by themselves, in a long time, and that the daily sessions provided them with the quiet time they needed. A premise of the treatment development was that in order to counteract our natural thinking habits, that contribute to the thoughts that create our stress, we have to become aware of what they are. One of the most effective ways to do this is to sit quietly and simply observe thoughts as they come up. In this way, a person can begin to see how temporary and quickly her mind moves from one thought to another. This is a process that lessens the anxiety that is created by negative thinking. The daily meditation aspect of the program allowed participants to begin to develop an awareness of their own thought patterns.

I was surprised that the movement aspect of the treatment resonated with so many of the participants. Many of the participants had regular exercise routines, and the movements used in the treatment were basic, easy and fundamental in nature. What I had not considered was that for many people exercise is very goal orientated, and that when exercising some people are often pushing themselves and their bodies to achieve these goals. The sole purpose of the movements in the sessions was to relax the body and counteract office specific strain. The movements were done in conjunction with the breath to further promote relaxation and to cultivate the mind body connection. In summary, it felt good for people to move in this way. This was critical information. As mindfulness and mind-body programs become more prevalent in the workplace (Marturano, 2014; Tan, 2012; Wong, 2014), it is important to recognize that movement can offer something of added value to employees that just meditation or breath work cannot.

The controlled breathing exercises provided the participants with tools they could use any time and any place to bring themselves back to the present moment and focus on the matter at hand. Controlled and purposeful breathing calms the central nervous system and helps a person to become more relaxed in the face of situations that may otherwise be stress inducing, and can also help a person find a quick reset button when they realize they are becoming agitated by someone or something. The participants reported experiencing this phenomenon and mentioned they used the technique effectively in various situations throughout the day. They reported using the breathing techniques to calm themselves in meetings, when they felt themselves become agitated, while they were driving, and even to help themselves to fall to sleep at night.

The controlled breathing exercises are in my view, and based on my personal experience with them, one of the most useful tools of the program. A person can access her breath and use the tools at any time during the day, she does not have to close her eyes, or in any way indicate to others that she has slowed and controlled her breathing. The participants' communicated that

they had found other ways to use the controlled breathing techniques other than just during the treatment sessions. Based on my observations, this technique is also something that could be used in other offices settings such as at the beginning of meetings, when a group needs to become focused and present in order to be effective.

Each of the components utilized in the treatment could be used alone or in conjunction with the others to evoke the relaxation response (Benson & Proctor, 2010). Seeing that all participants reported they would use all, some, or one of the techniques they learned they should experience ongoing benefits from the program, as was the goal of the treatment design.

### **Recommendations for Further Research**

Based on the results, findings and my personal observations of the study, I concluded there is a place for further research in this area, especially with a larger population, using a control group. In a larger setting creating a control group, even with voluntary participation, could be relatively easy to accomplish. Once people volunteered they could be split into two groups, one that received the treatment immediately and one that could receive the treatment later, after the study was completed, if they wished to. However, I also learned from doing this research in a business environment, where many are not familiar with research protocol, that participating in a research project may seem foreign and unappealing to some employees.

To mitigate this problem, the researcher could limit the number of standardized surveys, or could administer the standardized surveys on day one or two of the treatment. Although this would not conform to a strict pre-post test design (Creswell, 2003) it may help the participants to feel more comfortable about participating in a research study. Additionally, if the researcher had a relationship with the participants prior to the study, and trust was already established, this problem could possibly be averted.

Also, given the physiological nature of the stress response, standardized surveys could be eliminated altogether and physiological markers, such as cortisol levels, blood pressure, or heart rate variability, could be used to measure the participants stress levels. These measures may be more accurate indicators of the participants' actual physiological stress levels, instead of the individuals' perception of their own stress. However, collecting this data would add a layer of complexity to the research protocol, as medical information would be collected from the participants requiring that HIPAA protocol be followed.

The treatment used in the study, in my view, would be of at least some help to anyone who participated in the sessions. Forty seven percent of the employees eligible to participate in the study organization participated in the treatment. It would have been beneficial to the integrity of the study to have a higher rate of participation, and also to have more insight into the reasons people chose not to participate. This information was not available in the current study setting, as participation was voluntary, and data was captured only from those employees who participated in the program. I would recommend in further research, collecting this data confidentially, so that in future implementations the reasons for not participating could potentially be addressed.

Having advanced knowledge of product deadlines, meeting schedules and other influencing factors that could potentially impact participation would be helpful to the researcher. In this particular case, there seemed to be both the elements of leadership support impacting participation in a positive manner, and a possible feeling of coercion, impacting participation in a negative manner (Cummings & Worley, 2001; Schein, 1988, 1992). Also, there was a product deadline at the end of the last week of the study, that seemed to influence participation. I would recommend soliciting more organizational scheduling and deadline information when setting up further studies and attempting to schedule the treatment sessions with these variable in mind.

The protocol held up during the delivery of the program, although there were times during the facilitation of the treatment that sticking to a script felt forced. However, this adherence to script was necessary to ensure the safety of the participants and to comply with IRB requirements.

Considering the use of instruments for future research, I would look at administering a more elaborate final questionnaire to the participants, and recommend the researcher develop a more extensive protocol for formally documenting their observations and notes. The PSS could be used as a survey instrument, as it effectively identifies the perceived stress of the participants and also provided, in this case and others (Dunn, 2009; Klatt et al., 2009; Newsome, 2010), a statistically significant measure of the treatment. However, standardized surveys could be eliminated, if the researcher had the ability to measure biometric markers in the participants.

### **Conclusion**

The study was rewarding both from a personal and professional standpoint. One of the most rewarding aspects of facilitating the treatment was being able to observe the noticeable difference in the participants from when they walked into the room and when they walked out. Many times one or more of the participants came in with a frown on their face, their shoulders hunched over, or with other observable signs of tension, and when they left they had smiles on their faces, were standing up straight and much lighter in their demeanor. In retrospect taking on a project where I needed an employer to allow me to come into the office and provide their employees with 15 minute sessions during their work hours, may have been ambitious. However, considering the results of the study, the response of the participants, my observation of the impact on the individuals, their desire to continue the program on their own, and the knowledge I gained in the process, I feel it was well worth the effort.

I still believe there is an opportunity to help organizations, and the individuals within them, better understand how the stress response is triggered, what the implications are when the response is triggered chronically, and how easily it can be better managed with simple, easy-to-use and effective tools. I also observed that while stress is a commonly used term, most people do not really understand what it is, and how it may be affecting them both physically and mentally. Most people know how to relieve their stress after the fact, but do not have an understanding of how to manage it or to respond differently to triggers so as to lessen their stress response. I certainly did not have this knowledge myself until I explored the research and starting practicing the different techniques I learned.

There is a growing awareness about the use of mind body techniques in the workplace (Marturano, 2014; Tan, 2012; Wong, 2014); however, in most cases the techniques and training are still focused primarily on productivity and leadership, with less focus on training the employee how to manage and cope with the stresses that confront them on a daily basis. If a person can use tools to better cope with and manage his or her stress, he or she will by default become less agitated, more productive and make better decisions, however, understanding the dynamics that create our stress is an imperative for this to happen.

Because of my familiarity and practice in the practices of yoga and meditation, I tended to forget that these modalities are not as commonplace as I might think. This research experience has served to remind me that there is a need to seek out people who have a different perspective than I do, to keep an open mind, and to approach people from where they are, not where I am, or where I think they should be. Facilitating the study helped reinforce the need to be open to learning from all the people I met.

I believe organizations could benefit from teaching their employees easy to access and use tools that will help them manage their stress and provide them with a way to reduce the stress

that is part of all of our lives. Once a person can understand what triggers his or her stress and that stress can be self-induced by the thinking process, whether or not real danger or threat exists, he or she can learn to deactivate the physiological response. This self-understanding can help people become healthier and productive. The bonus for the employer is that healthier people create healthier organizations. For this to happen a greater value must be placed on the physical and emotional wellbeing of employees, not just the bottom line organizational costs (Buck Consultants LLC, 2012) when it comes to wellness programs.

## REFERENCES

- Allen, H., & Sullivan, S. (2006). Seeing the “health” in health care costs. *Harvard Business Review*, 84(2), 48-56. Retrieved from [www.hbr.org](http://www.hbr.org).
- Altman, K. E. R. (2001). *A brief therapy model to reduce stress by practicing breathing exercises, mindful meditation, and yoga stretching* (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. 3002453)
- American Psychological Association. (2008). *Stress in America*. Retrieved from <http://www.apa.org/news/press/releases/2008/10/stress-in-america.pdf>
- American Psychological Association. (2010). *Stress in America findings*. Retrieved from <http://www.apa.org/news/press/releases/stress/national-report.pdf>
- American Psychological Association (2012). *Stress in America: Missing the health care connection*. Retrieved from <http://www.apa.org/news/press/releases/stress/2012/full-report.pdf>
- American Psychological Association (2013). *Stress in America: Are teens adopting adults' stress habits?* Retrieved from <http://www.apa.org/news/press/releases/stress/2013/stress-report.pdf>
- Are you working too hard? (2005). *Harvard Business Review*, 83(11), 53-58. Retrieved from [www.hbr.org](http://www.hbr.org).
- Baicker, K., Cutler, D., & Zirui, S. (2010). Workplace wellness programs can generate savings. *Health Affairs*, 29(2), 304-311. doi: 10.1377/hlthaff.2009.0626
- Baldwin, M. C. (1999). *Psychological and physiological influences of Hatha Yoga training on healthy, exercising adults* (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. 9928187)
- Baptiste, B. (2002). *Journey into power: How to sculpt your ideal body, free your true self, and transform your life with yoga* (The Fireside ed.). New York, NY: Fireside.
- Beehr, T. A., & Newman, J. E. (1978). Job stress, employee health, and organizational effectiveness: A facet analysis, model, and literature review. *Personnel Psychology*, 31(4), 665-699. Retrieved from <http://onlinelibrary.wiley.com/journal/10.1111/%28ISSN%291744-6570>
- Bennett, S. M., Weintraub, A., & Khalsa, S. B. S. (2008). Initial evaluation of the LifeForce Yoga Program as a therapeutic intervention for depression. *International Journal of Yoga Therapy*, 18, 49-57. Retrieved from <http://www.iayt.org/?page=IJYTBackIssues>
- Benson, H., & Proctor, W. (2010). *Relaxation revolution: Enhancing your personal health through the science and genetics for mind-body healing*. New York, NY: Scribner.

- Birdee, G. S., Legedza, A. T., Saper, R. B., Bertisch, S. M., Eisenberg, D. M., & Phillips, R. S. (2008). Characteristics of Yoga users: Results of a national survey. *JGIM: Journal of General Internal Medicine*, 23(10), 1653-1658. doi: 10.1007/s11606-008-0735-5
- Brook, R. M. (1976). Psychological evaluation stress on adolescents. *Journal of Clinical Psychology*, 32(3), 565-567. Retrieved from [http://dx.doi.org/10.1002/1097-4679\(197607\)32:3%3C565::AID-JCLP2270320315%3E3.0.CO;2-2](http://dx.doi.org/10.1002/1097-4679(197607)32:3%3C565::AID-JCLP2270320315%3E3.0.CO;2-2)
- Broome, J. R. N. (1995). *Stress management and organisation development: Effects of Transcendental Meditation on psychological, physiological, and organisational variables at the worksite* (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. 9809606)
- Brown, R. P., & Gerbarg, P. L. (2005). Sudarshan Kriya Yogic breathing in the treatment of stress, anxiety, and depression. Part II--clinical applications and guidelines. *Journal of Alternative and Complementary Medicine*, 11(4), 711-717. Retrieved from <http://www.liebertpub.com/overview/journal-of-alternative-and-complementary-medicine-the/26/>
- Buck Consultants LLC. (2010). *Working well: A global survey of health promotion and workplace wellness strategies*. San Francisco, CA: Buck Consultants.
- Buck Consultants LLC. (2012). *Working well: A global survey of health promotion and workplace wellness strategies*. San Francisco, CA: Buck Consultants.
- Burke, M. M. (2004). *Exploring differences in intrinsic motivation based on Keirseyan Temperament type* (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. 3133430)
- Burke, W. W. (2002). *Organizational change: Theory and practice*. Thousand Oaks, CA: Sage.
- Campbell, D. E., & Moore, K. A. (2004). Yoga as a preventative and treatment for depression, anxiety, and stress. *International Journal of Yoga Therapy*, 14, 53-58. Retrieved from <http://www.iayt.org/?page=IJYTBackIssues>
- Cannon, W. B. (1920). *Bodily changes in pain, hunger, fear and rage*. Whitefish, MT: Kessinger.
- Chanen, J. S. (1998). Just say "om." *ABA Journal*, 84(1), 78. Retrieved from <http://www.abajournal.com/>
- Chong, C. S. M. B. S., Tsunaka, M., Tsang, H. W. H. P., Chan, E. P. B. A., & Cheung, W. M. P. (2011). Effects of Yoga on stress management in healthy adults: A systematic review. *Alternative Therapies in Health and Medicine*, 17(1), 32-38. Retrieved from <http://www.alternative-therapies.com/>

- CIPD. (2008). *Building the case for managing stress in the workplace*. Retrieved from <http://www.cipd.co.uk/hr-resources/guides/building-business-case-managing-stress-workplace.aspx>
- CIPD. (2011). *Absence management*. Retrieved from [http://www.cipd.co.uk/binaries/5632%20Annual%20AbMan%20\(WEB\).pdf](http://www.cipd.co.uk/binaries/5632%20Annual%20AbMan%20(WEB).pdf)
- Clark, M. A., Lucett, S. C., & Corn, R. J. (Eds.). (2008). *NASM Essentials of Personal Fitness Training: Course manual* (3rd ed.). Baltimore, MD: Lippincott Williams & Wilkins.
- Cohen, S. (1988). Perceived stress in a probability sample of the United States. In S. Spacapan & S. Oskamp (Eds.), *The social psychology of health* (pp. 31-67). Thousand Oaks, CA: Sage.
- Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior*, 24(4), 385-396. Retrieved from <http://dx.doi.org/10.2307/2136404>
- Collins, L. A. (1982). *Stress management and yoga* (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. 8318834)
- Cooper, C., & Dewe, P. (2008). Wellbeing: Absenteeism, presenteeism, costs and challenges. *Occupational Medicine*, 58(8), 522-524. doi: 10.1093/occmed/kqn124
- Cooper, C. L., & Cartwright, S. (1997). An intervention strategy for workplace stress. *Journal of Psychosomatic Research*, 43(1), 7-16. doi: 10.1016/s0022-3999(96)00392-3
- Cooper, C. L., & Dewe, P. (2007). Stress: A brief history from the 1950s to Richard Lazarus. In A. Monat, R. S. Lazarus, & G. Reevy (Eds.), *The Praeger handbook on stress and coping* (Vol. 1, pp. 7-31). Westport, CT: Praeger.
- Corliss, R., Fowler, D., Funderburg, L., Hequet, M., Park, A., Moffett, A., . . . Stukin, S. (2001). The power of yoga. *Time*, 157(16), 54. Retrieved from <http://time.com/>
- Corner, P. D. (2009). Workplace spirituality and business ethics: Insights from an eastern spiritual tradition. *Journal of Business Ethics*, 85 (3), 12. Retrieved from <http://www.springer.com/social+sciences/applied+ethics/journal/10551>
- Creswell, J. W. (2003). *Research design: Qualitative, quantitative, and mixed method approaches* (2nd ed.). Thousand Oaks, CA: Sage.
- Creswell, J. W. (2009). *Research design: Qualitative, quantitative, and mixed methods approaches*. Thousand Oaks, CA: Sage.
- Cummings, T. G., & Worley, C. G. (2001). *Essentials of organization development and change*. Cincinnati, OH: South-Western.

- Cushman, A. (2000). The new Yoga: From health clubs to corporations, yoga has entered the American mainstream. But is it becoming too popular for its own good? *Yoga Journal*, 68, 151. Retrieved from <http://www.yogajournal.com/>
- de Vicq, R. (2009). *The effects of meditation on the mental and physical health of healthcare workers* (Master's thesis). Available from ProQuest Dissertations and Theses database. (UMI No. 1466196)
- Desikachar, T. K. V. (1995). *The heart of yoga: Developing a personal practice*. Rochester, VT: Inner Traditions International.
- Dunn, K. (2009). *The effectiveness of Hatha yoga on symptoms of anxiety and related vulnerabilities, mindfulness, and psychological wellbeing in female health care employees* (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. 3367062)
- Fallon, J. (2008). *Yoga as an intervention for stress reduction and enhanced wellbeing in African American athletes* (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. 3306466)
- Faulds, R., & Senior teachers of Kripalu Center for Yoga and Health. (2006). *Kripalu yoga: A guide to practice on and off the mat*. New York, NY: Bantam Dell.
- Gannon, S., & Life, D. (2002). *Practices for liberating body and soul: Jivamukti Yoga*. New York, NY: Random.
- Garfinkel, M. S., & Singhal, A. (1998). Yoga-based intervention for carpal tunnel syndrome. *JAMA: Journal of the American Medical Association*, 280(18), 1601-1603. Retrieved from <http://dx.doi.org/10.1001/jama.280.18.1601>
- Gebhardt, D. L., & Crump, C. E. (1990). Employee fitness and wellness programs in the workplace. *American Psychologist*, 45(2), 262-272. doi: 10.1037/0003-066x.45.2.262
- Griffin-Blake, C. S., Tucker, P. J., & Liburd, L. (2006). Mind over matter: Exploring job stress among female blue-collar workers. *Journal of Women's Health*, 15(10), 1105-1110. doi: 10.1089/jwh.2006.15.1105
- Gura, S. T. (2002). Yoga for stress reduction and injury prevention at work. *Work: Journal of Prevention, Assessment & Rehabilitation*, 19(1), 3-7. Retrieved from <http://iospress.metapress.com/content/103190/?p=c5ed7ccbb563496db992cdbf5e8e73fc&pi=0>
- Himmelstein, S. (2011). *A mixed method study of a mindfulness-based intervention on incarcerated youth* (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. 3390411)
- Hirsch, G. (2009). *Psychologists' perception of the influence of a regular yoga regimen on their professional practice* (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. 3343588)

- Holmes, T. H., & Rahe, R. H. (1967). The social readjustment rating scale. *Journal of Psychosomatic Research, 11* (2), 213-218. doi: 10.1016/0022-3999 (67)90010-4
- Humphrey, C. W. (1999). *A stress management intervention with forgiveness as the goal* (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. 9927887)
- Iyenger, B. K. S. (1979). *Light on yoga*. New York, NY: Schocken.
- Iyenger, B. K. S. (2005). *Light on life: The yoga journey to wholeness, inner peace, and ultimate freedom*. Emmaus, PA: Rodale.
- Jacobs, G. D. (2001). Clinical applications of the relaxation response and mind—body interventions. *Journal of Alternative & Complementary Medicine, 7*(6), 93-101. doi: 10.1089/107555301753393850
- Jerard, P. (2007). The yogic approach to coping with panic attacks and anxiety. Retrieved from [http://www.yoga-teacher-training.org/2007/10/14/the\\_yogic\\_approach\\_to\\_coping\\_with\\_panic/](http://www.yoga-teacher-training.org/2007/10/14/the_yogic_approach_to_coping_with_panic/)
- Jex, S. M., Spector, P. E., Gudanowski, D. M., & Newman, R. A. (1995). Relations between exercise and employee responses to work stressors: A summary of two studies. In R. Crandall & P. L. Perrewé (Eds.), *Occupational stress: A handbook* (pp. 283-301). Philadelphia, PA: Taylor & Francis.
- John, P. J., Sharma, N., Sharma, C. M., & Kankane, A. (2007). Effectiveness of yoga therapy in the treatment of migraine without aura: A randomized controlled trial. *Headache: The Journal of Head & Face Pain, 47*(5), 654-661. doi: 10.1111/j.1526-4610.2007.00789
- Jungman, M. (2005). *Effects of yoga on job satisfaction and stress reduction: An occupational adaptation perspective* (Master's thesis). Available from ProQuest Dissertations and Theses database. (UMI No. 1428777)
- Kabat-Zinn, J. (2009). *Full catastrophe living: Using the wisdom of your body and mind to face stress, pain and illness* (15<sup>th</sup> anniversary ed.). New York, NY: Bantam Dell.
- Klatt, M. D., Buckworth, J., & Malarkey, W. B. (2009). Effects of low-dose mindfulness-based stress reduction (MBSR-ld) on working adults. *Health Education & Behavior, 36*(3), 601-614. doi: 10.1177/1090198108317627
- Korte, S. M., Koolhaas, J. M., Wingfield, J. C., & McEwen, B. S. (2005). The Darwinian concept of stress: Benefits of allostasis and costs of allostatic load and the trade-offs in health and disease. *Neuroscience and Biobehavioral Reviews, 29*(1), 3-38. doi: 10.1016/j.neubiorev.2004.08.009
- Kotter, J. P. (1996). *Leading change*. Boston, MA: Harvard Business School Press.
- Lazarus, R. S. (1995). Psychological stress in the workplace. In R. Crandall & P. L. Perrewé (Eds.), *Occupational stress: A handbook* (pp. 3-14). Philadelphia, PA: Taylor & Francis.

- Lazarus, R. S. (2007). Stress and emotion: A new synthesis. In A. Monat, R. S. Lazarus, & G. Reevy (Eds.), *The Praeger handbook on stress and coping* (Vol. 1, pp. 33-51). Westport, CT: Praeger/Greenwood.
- Le Fevre, M., Kolt, G. S., & Matheny, J. (2006). Eustress, distress and their interpretation in primary and secondary occupational stress management interventions: Which way first? *Journal of Managerial Psychology*, *21*(6), 547-565. doi: 10.1108/02683940610684391
- Macy, D. (2008). *Yoga Journal* releases 2008 "Yoga in America" market study. Retrieved from [http://www.yogajournal.com/advertise/press\\_releases/10](http://www.yogajournal.com/advertise/press_releases/10)
- Mars, D. S. (1987). *Stress relaxation training: Evaluation of effects on industrial shiftworkers and managers* (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. 8725049)
- Martin, K. (2009). *The role of yoga as a therapeutic tool and practice for improving cognitive, emotional, and spiritual wellbeing: A pilot study* (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. 3394521)
- Marturano, J. (2014). *Finding the space to lead: A practical guide to leadership excellence through mindfulness*. New York, NY: Bloomsbury.
- McCall, T. (2007). *Yoga as medicine: The yogic prescription for health and healing: A yoga journal book*. New York, NY: Bantam Dell.
- McEwen, B., & Lasley, E. N. (2007). Allostatic load: When protection gives way to damage. In A. Monat, R. S. Lazarus, & G. Reevy (Eds.), *The Praeger handbook on stress and coping* (Vol. 1, pp. 99-109). Westport, CT: Praeger/Greenwood.
- McEwen, B. S. (2005). Stressed or stressed out: What is the difference? *Journal of Psychiatry & Neuroscience*, *30*(5), 315. Retrieved from <http://jpn.ca/>
- McEwen, B. S., & Lasley, E. N. (2002). *The end of stress as we know it*. Washington, DC: Joseph Henry.
- Miller, S. M. (1979). Coping with impending stress: Psychophysiological and cognitive correlates of choice. *Psychophysiology*, *16*(6), 572-581. Retrieved from <http://onlinelibrary.wiley.com/journal/10.1111/%28ISSN%291469-8986>
- Moane, F. M. (2003). *The effect of yoga, in comparison to aerobic exercise, on anxiety and mood in a workplace setting* (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. 3093602)
- Murphy, L. R., & Sauter, S. L. (2003). The USA perspective: Current issues and trends in the management of work stress. *Australian Psychologist*, *38*(2), 151-157. doi: 10.1080/00050060310001707157
- Nash, J. (2010). Taking the stress out of work. *Risk Management*, *57*(1), 42-47. Retrieved from <http://dx.doi.org/10.1109/EMR.2010.5645753>

- National Institutes of Health. (2002, September 9). *Stress system malfunction could lead to serious, life threatening disease*. Retrieved from <http://www.nih.gov/news/pr/sep2002/nichd-09.htm>
- Newsome, S. (2010). *Effects of a mindfulness course on helping professionals in training: Examining levels of perceived stress, mindfulness, and self-compassion* (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. 3391951)
- NIOSH. (2009, July 1, 2009). *Work organization and stress-related disorders*. Retrieved from <http://www.cdc.gov/niosh/programs/workorg/>
- Number of stressed workers peaks in 2008. (2008). *Occupational Health*, 60(11), 28. Retrieved from <http://edc-connection.ebscohost.com/c/articles/35440800/number-stressed-workers-peaks-2008>
- Oleshansky, M. B. (2004). *The effects of Hatha yoga on stress and coping* (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. 3129153)
- Ornish, D. (2007). Dr. Dean Ornish's program for reversing heart disease. In A. Monat, R. S. Lazarus, & G. Reevy (Eds.), *The Praeger handbook on stress and coping* (Vol. 1, pp. 117-126). Westport, CT: Praeger/Greenwood.
- Ornish, D., Scherwitz, L. W., Doody, R. S., Kesten, D., McClanahan, S. M., Brown, S. E., . . . , Antonio, M. (1983). Effects of stress management training and dietary changes in treating ischemic heart disease. *Journal of the American Medical Association*, 248(1), 54-59. Retrieved from <http://jama.ama-assn.org/content/249/1/54.full.pdf+html>
- Payne, L. (2010). *The business of teaching yoga*. Los Angeles, CA: Samata.
- Pelletier, K. R., & Lutz, R. (1991). Healthy people—healthy business: A critical review of stress management programs in the workplace. In A. Monat & R. S. Lazarus (Eds.), *Stress and coping: An anthology* (3rd ed., pp. 483-498). New York, NY: Columbia University Press.
- Pilkington, K., Kirkwood, G., Rampes, H., & Richardson, J. (2005). Yoga for depression: The research evidence. *Journal of Affective Disorders*, 89(1-3), 13-24. doi: 10.1016/j.jad.2005.08.013
- Rahe, R. H., Meyer, M., Smith, M., Kjaer, G., & Holmes, T. H. (1964). Social stress and illness onset. *Journal of Psychosomatic Research*, 8, 35-44. Retrieved from [http://dx.doi.org/10.1016/0022-3999\(64\)90020-0](http://dx.doi.org/10.1016/0022-3999(64)90020-0)
- Romano, J. M. (1995). *The effects of Hatha yoga on trait anxiety* (Master's thesis). Available from ProQuest Dissertations and Theses database. (UMI No. 1374619)
- Rosch, P. J. (1958). Growth and development of the stress concept and its significance in clinical medicine. In H. Gardiner-Hill (Ed.), *Modern trends in endocrinology* (pp. 279-298). London, UK: Butterworth.

- Saper, H. B., Eisenberg, D. M., Davis, R. B., Culpepper, L., & Phillips, R. S. (2004). Prevalence and patterns of adult yoga use in the United States: Results of a national survey. *Alternative Therapies in Health & Medicine, 10*(2), 44-49. Retrieved from <http://www.alternative-therapies.com/>
- Sapolsky, R. M. (2004). *Why zebras don't get ulcers* (3rd ed.). New York, NY: Henry Holt and Company.
- Sapolsky, R. M. (2007). Why zebras don't get ulcers: Stress, metabolism, and liquidating your assets. In A. Monat, R. S. Lazarus, & G. Reevy (Eds.), *The Praeger handbook on stress and coping* (Vol. 1, pp. 181-197). Westport, CT: Praeger/Greenwood.
- Sarason, I. G., Johnson, J. H., & Siegel, J. M. (1978). Assessing the impact of life changes: Development of the life experiences survey. *Journal of Consulting and Clinical Psychology, 46*(5), 932-946. Retrieved from <http://dx.doi.org/10.1037//0022-006X.46.5.932>
- Sauter, S., Murphy, L., Colligan, M., Swanson, N., Hurrell, J., Scharf, F., . . . , Tisdale, J. (1999). *STRESS . . . at work*. Retrieved from <http://www.cdc.gov/niosh/docs/99-101/>
- Schein, E. H. (1988). *Process consultation: It's role in organization development* (2nd ed., Vol. 1). Reading, MA: Addison-Wesley.
- Schein, E. H. (1992). *Organizational culture and leadership*. San Francisco, CA: Jossey-Bass.
- Selye, H. (1984). *The stress of life* (rev. ed.). San Francisco, CA: McGraw-Hill.
- Selye, H. (1991). History and present status of the stress concept. In A. Monat & R. S. Lazarus (Eds.), *Stress and coping: An anthology* (3rd ed., pp. 21-35). New York, NY: Columbia University Press.
- Serber, E. (2000). Stress management through yoga. *International Journal of Yoga Therapy, 10*, 11-16. Retrieved from <http://www.iayt.org/?page=IJYTBackIssues>
- Shiple, R. H., Butt, J. H., Horwitz, B., & Farby, J. E. (1978). Preparation for a stressful medical procedure: Effect of amount of stimulus preexposure and coping style. *Journal of Consulting and Clinical Psychology, 46* (3), 499-507. Retrieved from <http://www.apa.org/pubs/journals/ccp/>
- Smith, C., Hancock, H., Blake-Mortimer, J., & Eckert, K. (2007). A randomised comparative trial of yoga and relaxation to reduce stress and anxiety. *Complementary Therapies in Medicine, 15*(2), 77-83. doi: 10.1016/j.ctim.2006.05.001
- Smith, J. (2007). *Effects of yoga on stress among college students in a post-Katrina population* (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. 3289751)

- Spielberger, C. D., Gorsuch, R. L., Lushene, R., Vagg, P. R., & Jacobs, G. A. (1983). *State-Trait Anxiety Inventory for Adults: Sampler set, manual, instrument and scoring guide*. Palo Alto, CA: Consulting Psychologists Press.
- Spielberger, C. D., & Reheiser, E. C. (1995). Measuring occupational stress: The job stress survey. In R. Crandall & P. L. Perrewé (Eds.), *Occupational stress: A handbook* (pp. 51-69). Philadelphia, PA: Taylor & Francis.
- Stephens, M. (2010). *Teaching Yoga: Essential foundations and techniques*. Berkeley, CA: North Atlantic.
- Swenson, D. (2007). *Ashtanga Yoga: The practice manual*. Austin, TX: Ashtanga Yoga Productions.
- Tan, C.-M. (2012). *Search inside yourself: The unexpected path to achieving success, happiness (and world peace)*. New York, NY: HarperCollins.
- Teddle, C., & Tashakkori, A. (2009). *Foundations of mixed methods research: Integrating quantitative and qualitative approaches in the social and behavioral sciences*. Thousand Oaks, CA: Sage.
- Terathongkum, S. (2006). *Relationships among stress, blood pressure and heart rate variability in meditators* (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. 3213319)
- Thomas, K. W. (2009). *Technical brief for the Work Engagement Profile: Content, reliability and validity*. Retrieved from [https://www.cpp.com/Pdfs/WEP\\_Tech\\_Brief.pdf](https://www.cpp.com/Pdfs/WEP_Tech_Brief.pdf)
- Trotter, M. (2009). *Effects of participation in a Mindfulness-based Stress Reduction program on college students' psychological wellbeing* (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. 3383537)
- Van der Klink, J. J. L., Blonk, R. W. B., Schene, A. H., & Van Dijk, F. J. H. (2001). The benefits of interventions for work-related stress. *American Journal of Public Health, 91*(2), 270-276. Retrieved from <http://ajph.aphapublications.org/loi/ajph>
- Wallace, M., Levens, M., & Singer, G. (1994). Blue collar stress. In C. L. Cooper & R. Payne (Eds.), *Causes, coping and consequences of stress at work* (pp. 53-76). Oxford, UK: John Wiley & Sons.
- White, L. (2010). *Reducing stress in school-age girls: Mindful awareness for girls through yoga (MAGY)* (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. 3404763)
- Wong, K. A. (2014). There's no price tag on a clear mind: Intel to launch mindfulness program. *The Guardian*. Retrieved from <http://www.theguardian.com/sustainable-business/price-intel-mindfulness-program-employee>

Workplace yoga, meditation can reduce stress. (2009). *EHS Today*, 2(9), 21. Retrieved from <http://ehstoday.com/>

Yoga for anxiety and depression. (2009). *Harvard Mental Health Letter*, 25(10), 4-5. Retrieved from [http://www.health.harvard.edu/newsletters/Harvard\\_Mental\\_Health\\_Letter/2009](http://www.health.harvard.edu/newsletters/Harvard_Mental_Health_Letter/2009)

## APPENDIX A

## Perceived Stress Survey

**Perceived Stress Scale****Sheldon Cohen**

The *Perceived Stress Scale* (PSS) is the most widely used psychological instrument for measuring the perception of stress. It is a measure of the degree to which situations in one's life are appraised as stressful. Items were designed to tap how unpredictable, uncontrollable, and overloaded respondents find their lives. The scale also includes a number of direct queries about current levels of experienced stress. The PSS was designed for use in community samples with at least a junior high school education. The items are easy to understand, and the response alternatives are simple to grasp. Moreover, the questions are of a general nature and hence are relatively free of content specific to any subpopulation group. The questions in the PSS ask about feelings and thoughts during the last month. In each case, respondents are asked how often they felt a certain way.

**Evidence for Validity:** Higher PSS scores were associated with (for example):

- failure to quit smoking
- failure among diabetics to control blood sugar levels
- greater vulnerability to stressful life-event-elicited depressive symptoms
- more colds

**Health status relationship to PSS:** Cohen et al. (1988) show correlations with PSS and: Stress Measures, Self-Reported Health and Health Services Measures, Health Behavior Measures, Smoking Status, Help Seeking Behavior.

**Temporal Nature:** Because levels of appraised stress should be influenced by daily hassles, major events, and changes in coping resources, predictive validity of the PSS is expected to fall off rapidly after four to eight weeks.

**Scoring:** PSS scores are obtained by reversing responses (e.g., 0 = 4, 1 = 3, 2 = 2, 3 = 1 & 4 = 0) to the four positively stated items (items 4, 5, 7, & 8) and then summing across all scale items. A short 4 item scale can be made from questions 2, 4, 5 and 10 of the PSS 10 item scale.

**Norm Groups:** L. Harris Poll gathered information on 2,387 respondents in the United States

**Norm Table for the PSS 10 item inventory**

Category	N	Mean	SD
<b>Gender</b>			
Male	926	12.1	5.9
Female	1406	13.7	6.6
<b>Age</b>			
18-29	645	14.2	6.2
30-44	750	13.0	6.2
45-54	285	12.6	6.1
55-64	282	11.9	6.9
65 & older	296	12.0	6.3
<b>Race</b>			
white	1924	12.8	6.2
Hispanic	98	14.0	6.9
black	176	14.7	7.2
other minority	50	14.1	5.0

## Perceived Stress Scale

The questions in this scale ask you about your feelings and thoughts during the last month. In each case, you will be asked to indicate by circling how often you felt or thought a certain way.

Identification Number \_\_\_\_\_ Date \_\_\_\_\_

**0 = Never 1 = Almost Never 2 = Sometimes 3 = Fairly Often 4 = Very Often**

- |  |   |   |   |   |   |
|--|---|---|---|---|---|
| 1. In the last month, how often have you been upset because of something that happened unexpectedly?                 | 0 | 1 | 2 | 3 | 4 |
| 2. In the last month, how often have you felt that you were unable to control the important things in your life?     | 0 | 1 | 2 | 3 | 4 |
| 3. In the last month, how often have you felt nervous and “stressed”?  | 0 | 1 | 2 | 3 | 4 |
| 4. In the last month, how often have you felt confident about your ability to handle your personal problems?         | 0 | 1 | 2 | 3 | 4 |
| 5. In the last month, how often have you felt that things were going your way?                                       | 0 | 1 | 2 | 3 | 4 |
| 6. In the last month, how often have you found that you could not cope with all the things that you had to do?       | 0 | 1 | 2 | 3 | 4 |
| 7. In the last month, how often have you been able to control irritations in your life?                              | 0 | 1 | 2 | 3 | 4 |
| 8. In the last month, how often have you felt that you were on top of things?  | 0 | 1 | 2 | 3 | 4 |
| 9. In the last month, how often have you been angered because of things that were outside of your control?           | 0 | 1 | 2 | 3 | 4 |
| 10. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them? | 0 | 1 | 2 | 3 | 4 |

Please feel free to use the Perceived Stress Scale for your research.

### Mind Garden, Inc.

info@mindgarden.com  
www.mindgarden.com

#### References

The PSS Scale is reprinted with permission of the American Sociological Association, from Cohen, S., Kamarck, T., and Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior*, 24, 386-396.

Cohen, S. and Williamson, G. Perceived Stress in a Probability Sample of the United States. Spacapan, S. and Oskamp, S. (Eds.) *The Social Psychology of Health*. Newbury Park, CA: Sage, 1988.

## APPENDIX B

## State Trait Anxiety Indicator Y1 Form

For use by Jenny Gumm only. Received from Mind Garden, Inc. on June 22, 2013



[www.mindgarden.com](http://www.mindgarden.com)

To whom it may concern,

This letter is to grant permission for the above named person to use the following copyright material for his/her thesis or dissertation research.

Instrument: ***State-Trait Anxiety Inventory for Adults***

Authors: ***Charles D. Spielberger, in collaboration with R.L. Gorsuch, G.A. Jacobs, R. Lushene, and P.R. Vagg***

Copyright: ***1968, 1977 by Charles D. Spielberger***

Five sample items from this instrument may be reproduced for inclusion in a proposal, thesis, or dissertation.

The entire instrument may not be included or reproduced at any time in any other published material.

Sincerely,

A handwritten signature in black ink, appearing to read "Robert Most", with a long horizontal line extending to the right.

Robert Most  
Mind Garden, Inc.  
[www.mindgarden.com](http://www.mindgarden.com)

For use by Jenny Gumm only. Received from Mind Garden, Inc. on June 22, 2013

**SELF-EVALUATION QUESTIONNAIRE STAI Form Y-1**

**Please provide the following information:**

ID Number \_\_\_\_\_ Date \_\_\_\_\_

**DIRECTIONS:**

A number of statements which people have used to describe themselves are given below. Read each statement and then circle the appropriate number to the right of the statement to indicate how you feel *right now*, that is, *at this moment*. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe your present feelings best.

VERY MUCH SO  
MODERATELY SO  
SOMEWHAT  
NOT AT ALL

- 1. I feel calm..... 1 2 3 4
- 2. I feel secure ..... 1 2 3 4
- 3. I am tense ..... 1 2 3 4
- 4. I feel strained ..... 1 2 3 4
- 5. I feel at ease ..... 1 2 3 4

## APPENDIX C

## Work Profile Inventory

## Sample Items

From the

## Work Engagement Profile

By Kenneth W. Thomas and Walter G. Tymon Jr.

Instructions: On the following pages are 24 statements describing different perceptions you might have about your work. For each statement, circle the number, from 1 to 7, that best describes how strongly you agree or disagree with that statement. Do not skip any of the items. Although some of the statements appear to be similar, your response to each of them is important.

My work serves a valuable purpose.	Strongly Agree					Strongly Disagree
	1	2	3	4	5	6 7
I have a sense of freedom in what I am doing.	Strongly Agree					Strongly Disagree
	1	2	3	4	5	6 7
I am doing my work capably.	Strongly Agree					Strongly Disagree
	1	2	3	4	5	6 7
I am accomplishing my objectives.	Strongly Agree					Strongly Disagree
	1	2	3	4	5	6 7

From the Work Engagement Profile by Kenneth W. Thomas & Walter G. Tymon Jr. Copyright 2009 by CPP, Inc. All rights reserved. Further reproduction is prohibited without the Publisher's written consent.

You may change the format of these items to your needs, but the wording may not be altered. You may not present these items to your readers as any kind of "mini-assessment." This permission only allows you to use these copyrighted items as an illustrative sample of items from this instrument. We have provided these items as samples so that we may maintain control over which items appear in publisher media. This avoids an entire instrument appearing at once or in segments which may be pieced together to form a working instrument, protecting the validity and reliability for the instrument. Thank you for your cooperation.

## APPENDIX D

## Post-Treatment Questionnaire

## Follow-up Survey

ID Number: \_\_\_\_\_

Date: \_\_\_\_\_

I participated in approximately the following number of sessions:

\_\_\_\_\_ 5 or Less

\_\_\_\_\_ 10 or less

\_\_\_\_\_ 11 to 20

Did you find the 15 minutes per day a valuable use of your time?

Y or N

Please explain:

Are there parts of the program you will continue on your own?

Y or N

If Yes, which parts?

Did you continue to do the practice on weekends and/or vacation?

Y or N

Was the dailyness of the instruction useful?

Y or N

Please explain:

Did you see any changes in yourself as a result of participating in the program?

Y or N

If Yes, how?

Did you notice any changes in your work environment as you participated in the study?

Y or N

If Yes, what were they?

What changes would you make to the program?

Any Additional Comments:

APPENDIX E

Field Notes Form

**Researcher Field Notes**

Week: -----

Day: -----

General Group Observations

Self Observations:

General Observations about feelings and emotions

Things to focus on for tomorrow.

## APPENDIX F

## Letter from Participating Company

June 13, 2013

Jenny Gumm

**Re: Authorization for Stress Reduction Study**

Jenny,

Aventura HQ, Inc. ("Aventura") is pleased to work with you on your dissertation study entitled: "Stress Reduction in the Workplace" ("Study"). This letter is to affirm the authorization of offering your Study to our employees on a voluntary basis. We look forward to having you work with our employees, providing them with stress management techniques that they will be able to utilize daily in their work and personal lives.

Aventura understands that the research will be under the supervision of the Pepperdine University's Institutional Review Board, and your dissertation chair Dr. Susan Nero. We also understand that all information and data will be confidential, and all participants and Aventura will remain confidential in your study with no one having access to the names of the participants aligned with their responses.

Aventura also acknowledges that the information that you collect from our employees is your property and that Aventura will not have access to the data. After the analysis phase of the Study, you will present data to Aventura. This will not include any identifiable information of employees and will instead show common themes expressed by participants. Notwithstanding this does not restrict your ability to present or publish data extracted from this study, so long as all participants and Aventura remain confidential. In any public presentation or publication of the study, you will maintain the confidentiality of Aventura HQ, Inc. as the company participating in the study and the identity of the participants.

Please continue to keep me informed on your progress and we will finalize the details once you have full approval to move forward with your study.

Regards,

  
Brandi Narvaez  
Chief Operating Officer

AVENTURA™

T 303.217.8029  
F 303.292.4014  
aventurahq.com

1001 17th Street  
Suite 51-100  
Denver, CO 80202

## APPENDIX G

Approval from Pepperdine IRB

# PEPPERDINE UNIVERSITY

## Graduate & Professional Schools Institutional Review Board

July 24, 2013

Jenny Gumm  
xxxProtocol #: E1011D17-CR1  
Project Title: Stress Relief in the Workplace

Dear Ms. Gumm,

Thank you for submitting a request for modifications to your previously approved application and an application for continuing review to the Pepperdine Graduate and Professional Schools Institutional Review Board (GPS IRB). The nature of your research continues to meet the federal requirements for expedited review under 45 CFR 46.110 (Research Category 7). Your request to modify your research to utilize Aventura as the participating organization and subsequent changes to the informed consent form has been approved. The GPS IRB has also granted a continuation of your research study. The new approval shall commence on **July 24, 2013** and terminate on **July 23, 2014**.

Please note that your research must be conducted according to the protocol that was submitted to the GPS IRB. If changes to the approved protocol occur, a revised protocol must be reviewed and approved by the GPS IRB before implementation. For any additional proposed changes in your research protocol, please submit a **Request for Modification** form to the GPS IRB. Please be aware that changes to your protocol may require submission of a modified IRB application or other materials to the GPS IRB. If contact with subjects or data analysis will extend beyond **July 23, 2014**, a **Continuation or Completion of Review Form** must be submitted at least one month prior to the expiration date of study approval to avoid a lapse in approval.

Your consent form has been stamped with the new expiration date of study approval. One copy of the consent form is enclosed with this letter and one copy will be retained for our records. You can only use copies of the consent form that have been stamped with the GPS IRB expiration date to obtain consent from your participants.

A goal of the IRB is to prevent negative occurrences during any research study. However, despite our best intent, unforeseen circumstances or events may arise during the research. If an unexpected situation or adverse event happens during your investigation, please notify the GPS IRB as soon as possible. If notified, we will ask for a complete explanation of the event and your response. Other actions also may be required depending on the nature of the event.

Please refer to the protocol number denoted above in all further communication or correspondence related to this approval. Should you have additional questions, please contact Veronica Jimenez, GPS IRB Manager at [gpsirb@pepperdine.edu](mailto:gpsirb@pepperdine.edu). On behalf of the GPS IRB, I wish you success in this scholarly pursuit.

Sincerely,

A handwritten signature in black ink, appearing to be 'DL' with a horizontal line extending to the right.

Doug Leigh, Ph.D.  
Chair, Graduate and Professional Schools IRB

cc: Dr. Lee Kats, Vice Provost for Research and Strategic Initiatives  
Ms. Alexandra Roosa, Director Research and Sponsored Programs  
Dr. Susan Nero, Graduate School of Education and Psychology

## APPENDIX H

## Informed Consent Form

**Informed Consent for Participation in Research Activities**

**Title:** Stress Relief in the Workplace

**Principle Investigator:** Jenny A Gumm

**Invitation to take part:**

You are invited to take part in a research project called the “Stress Relief in the Workplace” conducted by Jenny Gumm. There are questionnaires to be completed as part of the study, however, you may choose not to fill them out. A decision to not take part in the surveys does not preclude you from participating in the program. Should you choose to take part in the study any information you provide will be confidential and anonymous.

**Description of the Research:**

The researcher will study whether movement, breath and mediation has the potential to reduce the stress and anxiety of the program participants, and improve their engagement. The researcher proposes to evaluate the effect of movement, breath and meditation techniques as tools to identify and manage potential stress both on the job and at home. The goal is to give Aventura employees tools and techniques they can use on an on-going basis.

I will be conducting the study at the Aventura offices over a 4-week period, the sessions will be daily for 15 minutes. You will complete a pre and post program questionnaire, which will measure your perceived levels of stress and anxiety and levels of engagement.

**Time Commitment:**

The program will be offered daily during the work week for four weeks . Each session is 15 minutes in length. The sessions will be 30 minutes on the first and last day of the study to complete questionnaires and to allow time for any questions and concerns to be addressed.

**Benefits:**

By participating in the study, you may learn a variety of movement, breath, and mediation techniques that may be used in the workplace and at home. Potential benefits may include:

- Understanding of how to manage stress, and increase focus and attention
- Understanding how the mind and thought process work to help manage and reduce stress and increase focus
- Understanding of the connection between the physical body and the mind
- Understanding meditation and how to use it to manage and reduce stress and improve focus
- Enhanced work relationships
- Increased flexibility, balance and core strength
- Understanding of stretching movements specific to body parts and their relationship to other body parts (kinetic chain)

**Risks and Discomforts:**

There is little risk as the movements are similar to what you would experience in your daily movements and are intended to create an awareness in the body not to exert it. However, with any physical activity a risk of injury is present and cannot be entirely eliminated. This program is not a substitute for medical attention, diagnosis or treatment.

**Study Withdrawal:**

Your participation in the study is completely voluntary, and you may withdraw from the study at any time with no penalty or risk to you or your employment.

**Confidentiality:**

The researcher will take all responsible measures to protect the confidentiality of the records, and your identity will not be revealed in any publication that may result from this project. You will not be personally identified in any report or publication that may result from this study. Any personal information about you that is gathered during this study will remain confidential to every extent of the law. A special number will be used to identify you in the study, to ensure anonymity, and the researcher will not know the identity of any person on any of the forms or questionnaires completed. All information will be kept by the researcher and will not be shared with your employer or management except in summary form.

**Questions:**

The principle investigator will be glad to answer any inquiries or questions you have at any time. Please call Jenny Gumm at xxx. Jenny is being supervised by Susan Nero, Ph.D., who can be contacted at xxx. Additionally, if you have any questions regarding your rights as a research participant, you may contact Veronica Jiminez, CIP Manager, GPS IRB, Pepperdine University, Graduate School of Education & Psychology at xxx.

**Signature:**

Sign Below, only if you understand the information given to you about the research and choose to take part in the study. Make sure that any questions have been answered and that you understand the study. If you decide to participate in this research study, a copy of this signed consent form will be given to you.

---

Printed Name of Participant

---

Signature of Participant

---

Date

---

Time

I have explained and defined in detail the research procedures in which the subject has consented to participate. Having explained this and answered any questions, I am cosigning this form and accepting the person's consent.

---

Principal Investigator

---

Date

## APPENDIX I

## Introductory Presentation

- 1) Purpose:
  - a) The meeting today is to review a program that will implemented over a 4 week period at Aventura.
    - i) We will discuss stress and its implication for you and the workplace, the design of the program that will be implemented, the actual components of the program, and have time for questions and answers.
  - b) In today's work environment there are many factors that affect stress in and out of the workplace. This is something that hasn't traditionally been taught in school, from our parents or even discussed among friends. Some people have the ability to overcome stress easily but most of us are affected by stress even if we don't realize it.
  - c) It is the purpose of this program to provide you with the awareness and tools you can use to help you to reduce stress, and improve focus in the your workplace and personal life through simple, quick and easy techniques that can be used throughout your lifetime.
  - d) It is the goal of the program to help reduce stress, maintain balance, enhance work relationships, focus and productivity by teaching basic exercises and techniques on how to reduce and manage stress through self-awareness.
- 2) Stress Overview
  - a) The study of stress is new to the twentieth century and was greatly influenced by Hans Selye's research in the 1940's and 50's which first identified the way stress affects our bodies, and the implications that has on a person's wellbeing Selye's and subsequent researchers also began to see that the mind had a lot to do with how our stress is created, and they began to look at the extent to which thoughts and attitudes contribute to and cause disease.
  - b) Causes of Stress
    - i) Stress can be caused anywhere at any time by demands placed on us. These demands can be pleasant or unpleasant, real or imagined, and the stress response affects almost every part of the body regardless of the cause.
    - ii) Stress is highly individual and it is not so much what actually happens to you, but how you perceive it. So what may be stressful to one of you, for example being caught in traffic, will not be stressful to another person, and on one day we may react differently to a situation than we had the day before. So stress is also very selective and changing.
  - c) Effect of Stress
    - i) On the Person
      - (1) When the stress response is triggered it sets in motion a whole range of physiological mechanisms that manifest similarly in everyone's body regardless of the stimulant. The sympathetic nervous system is activated which releases stress hormones into the body while inhibiting other hormones the body uses for

growth, reproduction and memory among other things. This response creates changes in most of the body's major systems.

- (2) The stress response is thought to have evolved to allow humans the ability to garner the physical and mental resources to facilitate the best possible response to a short-lived crisis. There are two Types of Stress:
- (3) The first is Acute
  - (i) With acute stress the stress response is activated due to a stressor and as soon as the crisis is over the body returns to normal, so there is little risk to the body.
  - (b) The second type is Chronic Stress
    - (i) In chronic stress the body is in a constant state of activation and the stress hormones and other physiological changes that occur in the body remain in place. Since the body is not triggered to shut off the stress response and the chemical stay in the blood stream, chronic stress can put strain on the heart, compromise the immune system, and lead to chronic illness.
    - (ii) Chronic stress can also be fairly common as there is evidence that most stress related disease comes from our ability to activate the stress response by both real and perceived threats.
- ii) On the Workplace
  - (1) Stress is also one of the leading contributors and often unmanaged costs for organizations. It can impact organizations in the form of increased health care costs, accidents and injuries, absenteeism, tardiness, and diminished productivity and performance.
  - (2) Americans reported that their stress levels increased from 2007 to 2008 and have remained the same through 2010 in Studies done by the American Psychological Association.
  - (3) The cost to your organization and others have generally been categorized into the following buckets:
    - Increased health care costs
    - Accidents and injuries
    - Absenteeism
    - Tardiness
    - Turnover
    - And Conflict
- d) To date little has been done to organizationally address stress. Although, there are some techniques that have been shown to help counteracts stress:
  - i) Mind Body Treatments have been shown to increase awareness, calm the mind and body, and thus help counteract the effects of stress on the individual. These methods have traditionally been used in a clinical setting to help people that have been diagnosed with an issue or a disease. They have not been used very often with a healthy working population, although when they have they have been shown to have positive effects.
- 3) The program that will be implemented in your workplace is designed based on a couple of principles.
  - i) Relaxation Response and other stress reduction methods

- (1) Research has been done on the Relaxation Response, which is a simple meditative technique, which can be done for as little as 12 Minutes a day to reduce stress, promote wellbeing and lessen pain.
  - (2) Other stress reduction techniques using movement, breath and mediation were also reviewed and incorporated.
  - b) The program that will be implemented in your workplace uses the following components:
    - (1) Movement is used to create an awareness in the body and to start the process of understanding how your mind and body connect. The movements in the program have the qualities of steadiness and relaxation and will help to create an appreciation of how these opposites work together.
    - (2) Breath is used by bringing a normally automatic process under conscious and voluntary control. This has an influence on both activation and relaxation, and helps remind of us the connection between the mind, and body, which helps create a sense of calm in the body.
    - (3) Meditation is a mental practice designed to help us become aware of our thoughts and impulses of the mind. The aim is to develop a non-judgmental moment to moment awareness of these thoughts and to help us become an observer of them.
    - (4) The program starts more heavily focused on the movement aspect and then moves towards more emphasis on the meditation.
  - c) The program is designed around you and the workplace it will be:
    - i) 15 Minutes/Day—5 days a week for 4 weeks
    - ii) There will be two sessions per day scheduled around your lunch time to make it convenient for you to attend.
    - iii) It will be done in your conference Room to make it easy for you to access.
  - d) The program is designed with your safety and comfort in mind
    - i) You can wear your Regular Clothes
    - ii) No movement will be any more strenuous than what you would do in the course of the day in the office
    - iii) As discussed above you will Start with movement and move towards meditation
    - iv) The principles used to design the program have stress management and reduction at the foundation—realizing that on any given day we may not feel stressed, but that all of us can periodically be under stress
- 4) Overview of Program
- a) The Movements are all easy to do and to understand. Many of them will be performed sitting in a chair.
  - b) The Breath work will be about bringing awareness to your breath and paying attention to it to provide you with a focal point in the movement and meditation aspects of the program. Additionally, you will learn to use the breath as a gauge of your present state of mind.
  - c) The Meditation will be breath focused and relatively short.
  - d) The programs is 15 Minutes in duration and may at times seem repetitious, but this is by design as the goal is to help you create a sense of memory in your body, and to give you the tools to be able to continue the practice own your own once the program is complete.

- 5) The reason this program is being implemented is that you can reasonably expect to receive some of the following benefits:
  - a) Understanding how the mind and thought process work to help manage and reduce stress
  - b) Understanding of the connection between the physical body and the mind
  - c) Understanding meditation and how to use it to manage and reduce stress
  - d) Increased physical flexibility, balance and core strength
  - e) Understanding of stretching movements specific to body parts and their relationship to other body parts (kinetic chain)
  - f) Potential injury prevention through stress management techniques
  - g) Enhanced self awareness and balance
  
- 6) As this program will be part of a research project it is very important that the protocol follows the guidelines set out by the Institutional Review Board or IRB. These guidelines are in place to assure that no one who participates in a study is harmed in any way, and that all participants have been fully informed about the program prior to consenting to participation. The consent form is therefore a key item for you to understand.
  - a) The main components of the Consent Form are:
    - i) A Brief Description of the research, the time commitment required, potential benefits, potential risks and discomforts, the ability to withdraw at any time, cost and compensation and the confidentiality that will be in place throughout the program.
    - ii) Again the purpose is to allow you the opportunity to understand the elements of the program and then decide for yourself if you would like to participate in the study.
  
- 7) Additionally, as part of this program, you will be completing three surveys which measure your perceived stress, anxiety and work engagement. All information will be completely confidential, at no time will any of the data be given to Lori or anyone else in the company, except in summary form with no personal identifiers. This is critical to both your safety and comfort ability with sharing information.
  - a) The Perceived Stress Survey or PSS is a ten-question scale that is easy to understand and used to identify how you have felt in the last month.
  - b) Self Evaluation Questionnaire is twenty quick statements that you respond to based on the time you complete the survey.
  - c) The Work Engagement Profile is used to look at employees level of engagement in the workplace and contains twenty-four questions.
  - d) Questionnaire- a final survey will be used to elicit your feedback on the program and to help me better understand your experiences with the program and any changes or recommendations you have to improve or change the program.
  - e) All the information you submit on these surveys will be kept absolutely confidential. At no time will I have access to your identify any of you or report in any way what you have recorded on the surveys.
  
- 8) Questions and Answers
  - a) At this time I would be happy to answer any questions you may have.
  - b) My contact information is email: xxx and phone number is xxx should you have any additional questions or concerns that need to be addressed.

## APPENDIX J

## Benefits of the Postures in the Series

The yoga postures in this series were chosen from standard yoga postures used in many different schools of yoga. They were sequenced to help the participant find their core stability first, to help them move their spines in several different directions, and to help to stretch and strengthen the various muscle groups in the body. The postures are modified, when necessary, to ensure that the participants do not harm themselves and that they could perform the postures in their work clothes in an office environment. The series focuses on increasing the participants' body awareness and the ability to focus on one thing, the breath.

Stretching is important in allowing the muscles to relax and receive increased blood flow and oxygen, a muscle that is too tight starts to lose its power due to lack of mobility. The postures also help to create a sense of balance and focus while stretching muscles and additionally begin to strengthen the muscles. The postures create a steadiness and ease to create patience and tolerance for sitting meditation.

The series is focused on having the student begin where they are each day, being present to their current physical, emotional and mental condition, and move them from simple movements to more complex movements as they build upon what they have previously experienced. The series emphasizes linking breath with movement which allows the body to open, for a mind body connection to be made, and helps create awareness and focus for the individual. The entire program is experiential in nature

The following is a brief outline of the benefits of each of the postures in the series:

**Proper Seated Position**

- Creates a sense of awareness of the body, proper seated posture and the alignment of the joints
- Strengthens the muscles of the chest and helps lengthen and support the spine

**Proper Standing Position/Mountain Posture**

- Helps to correct poor posture, to strengthen the spine, and to improve alignment in the body
- Helps the participant experience a stable foundation, and to create support from the feet to the head.
- Lengthens and creates space in the torso, neck, chest and shoulders.
- Helps create a sense of poise and centering and grounding.

**Hands Over Head Side Stretch Posture and variation**

- Stretches the side body, abdominals and triceps.
- Increases flexibility of the spine, arms, rib cage
- Helps realign the spine, and gently open the side body
- Bends spine laterally (to the side)

**Standing Forward Bend**

- Releases the back of the body, and flushes the brain with blood
- Increases the limberness of the spine gradually to help reduce back pain
- Helps the body recover from mental exhaustion
- Slows the heart rate
- Strengthens and stretches hamstring muscles

**Seated Spine Twist**

- Strengthens the muscles of the erector spinae group
- Limbers the vertebra in the spine
- Helps tone the abdominals and obliques
- Teaches the participant how to rotate their spinal column effectively
- Increases flexibility of back and torso
- Reduces stiffness in neck and shoulders

**Single Leg Balance**

- Stabilizes core muscles
- Firms the standing leg and helps to engage all the muscles in the legs
- Helps to tone the stabilizing muscles in the legs
- Improves posture and balance
- Improves flexibility

**Eagle Arms Instruction**

- Opens shoulders and stretches upper back
- Stretches the arms and wrists

**Sun Salutation A**

- Warms up the body, helps set and maintain breathing rhythms and flow
- Brings the focus inward and helps to mobilize the body
- Creates an awareness of the link between breath and movement
- Creates an experience of the link between breath and movement

**Wall Plank Posture**

- Supports a strong foundation from standing position
- Engages the biceps, triceps, shoulders and chest muscles
- Starts to prepare participant for plank pose on the ground
- Strengthens the wrists, arms, and spine

**Seated Cat & Cow Posture**

- Improves flexibility and circulation in the spine
- Improves respiration and stretches the front and back torso and neck
- Provides an easy to understand breath/movement experience

**Standing Back Bend**

- Opens the front of the body, and strengthens the respiratory and cardiovascular systems
- Opens the shoulders and strengthens back muscles

### **Breath Awareness/Meditation**

- Focuses the mind on one thing, in this case the air coming in at the tip of the nose, so there is no mind space for thinking or intrusions
- Helps the participant become aware of their thoughts and the role those thoughts play in their life
- Creates a sense and space for stillness and observation

### **References**

- Baptiste, B. (2002). *Journey into power : how to sculpt your ideal body, free your true self, and transform your life with yoga* (The Fireside Edition ed.). New York, NY: FIRESIDE.
- Choudry, B., & Jones Reynolds, B. (2000). *Bikram's beginning yoga class*. New York, NY: Jeremy P. Tarcher/Putnam.
- Iyenger, B. K. S. (1979). *Light on yoga* (Paperback ed.). New York: Schocken Books, Inc.
- Iyenger, B. K. S. (2008). *B.K.S. Iyenger Yoga: the path to holistic health* (Revised ed.). New York, NY: DK Publishing.
- Stephens, M. (2010). *Teaching Yoga: Essential Foundations and Techniques*. Berkeley, CA: North Atlantic Books.
- Stiles, M. (2005). *Structural yoga therapy: adapting to the individual* (Hardcover ed.). San Francisco, CA: Red Wheel/Weiser, LLC.
- Swenson, D. (2007). *Ashtanga Yoga : the practice manual practice manual*. Austin, TX: Ashtanga Yoga Productions

## APPENDIX K

## Intervention

## Stress Reduction Program

**Introduction**

- 4 week program
- 15 minutes daily for all employees—exempt and non-exempt
- Optional practice at home repeating any segment of 4 week program

**Purpose**

- Establish/develop and increase mind/body awareness through group participation in breathing and stretching exercises to manage stress and wellness

**Safety**

- Program is accessible to all participants
- No strenuous movement is planned
- Participants will learn proper joint alignment and stretching techniques
- Participants will complete an Informed Consent Form

**Process**

- Baseline Metrics—Perceived Stress Survey (PSS), State Trait Inventory—Form Y1 (STAI-Y1) and Work Engagement Profile (WEP) (15 Minutes to complete), and introduction with questions and answers first day of program
- Activity consists of simple beginner level physical body movements specific to parts of the body while working towards connecting trained breathing to movements and meditation focused on the breath
- Initial focus will be on introduction to basic stretches, breathing and meditation gradually working towards longer periods of meditation
- Introduction to breathing exercises and meditation will be introduced towards the beginning of program and expanded as the program progresses

**Employee Benefits**

- Understanding of stretching movements specific to body parts and their relationship to other body parts (kinetic chain) and how to prevent injury
- Understanding of how the mind and thought process work and how to manage stress
- Understanding of the connection between the physical body and the mind
- Understanding meditation and how to use it to manage stress
- Increased flexibility, balance and core strength

**Organization Benefits**

- New sense of community with employees
- Potential for:
  - Improved productivity
  - Decreased absenteeism

- Increased engagement
- Increased awareness in the workplace

### **Program Design**

Week 1 of program begins with basic seated and standing positions/postures and the importance of core stability. Breathing and meditation exercises are used to introduce the connection between breath, mind and movement. The initial seated and standing postures are exercises that can be performed in any type of clothing and shoes. Typical exercise attire allows for easy movement. In a work setting with limited time it is not practical to change clothing. Therefore the selection of postures throughout the program takes work clothing into consideration. This in no way diminishes the practice. Movement between postures (flow) is added on Day 5 introducing breathing and movement.

### **Day 1—Week 1**

#### **Introduction**

#### **Baseline Metrics Inventory—PSS, STAI-Y1, WEP Questions and Answers**

#### **1. Introduction**

- Purpose
- Safety
- Process
- Benefits

#### **2. Baseline Metrics Inventory—PSS, STAI-Y1, WEP**

#### **3. Questions and Answers**

### **Day 2**

#### **Program Overview Review**

#### **Proper Seated Position**

#### **Proper Standing Position**

#### **Introduction to Core Stability**

#### **Abdominal Draw Exercise**

#### **Seated Breath Exercise**

#### **1. Review from Introduction, Purpose, Safety, Process, and Benefits**

#### **2. Proper Seated Position - Active**

##### *Instruction:*

- Prepare to sit in chair, tail bone to back base of chair—utilizing back support
- Feet flat, legs at 90°
- Shoulder blades draw together on back, chest lifts and opens

- Place hands palm down on thighs for additional shoulder and chest support
- Chin level, eyes are focused forward with soft gaze
- Focus now on steady controlled in and out breaths for an even 3 to 6 counts of each inhalation and exhalation
- Inhale 1—2—etc.; exhale 1—2—etc.; repeat

### *Introduction to Core Stability*

#### **3. Abdominal Drawing In Maneuver**

In core training the drawing in maneuver is the most important core exercise you can perform to increase the stability of your lower back.

##### *Instructor demonstration:*

- Standing side view
- Place palm just below the navel to locate position of concern
- Draw in abdominal wall and hold

The core is where the center of gravity is located and where all physical movement begins. This exercise recruits the *core-stabilization system*: transverse abdominis, internal obliques, pelvic floor musculature, diaphragm, transversospinalis, and multifidas and the *core-movement system*: rectus abdominal, erector spinae, external obliques, latissimus dorsi, adductors, hamstrings and iliopsoas to ensure optimal coordination of the lumbo-pelvic complex and work synergistically as the *stabilization system*. Physical Therapists use the drawing in maneuver to re-train the deep muscles of the core and improve spine stabilization.

##### **Group Instruction:**

- Place hand just below navel to locate position of concern
- Feel the abdominal drawing in action with hand
- Draw in and hold for count of 6 to 20 seconds to properly stimulate the motor units, release, rest and repeat increasing length of hold up to 20 seconds or more
- Hold can continue for any length of time with steady inhalations and exhalations
- Notice how your breathing may have shortened during this exercise; continue with steady, even breaths in and out as you perform this exercise
- Try to maintain your steady breathing pattern as you repeat exercise
- Should you become short of breath, release, pause and wait for normal breathing to return and begin again

As established above, this exercise strengthens the abdominal wall muscles and more specific those muscles that support the spine and lower back. Regular daily practice and movement of this basic exercise can be done while seated or standing and can be performed at any time throughout the day with a commitment to the exercise.

#### **4. Proper Standing Position - Active**

*Instruction:*

- Standing with feet flat gently rock backward and forward and side to side to find equal weight distribution settling on a neutral position
- Stand rooted through feet - ground down through the triad of the feet
- With calves and quadriceps engaged, note that kneecaps may have naturally lifted—inner ankles back and outer ankles down
- Lift the front of the pelvis so the tail-bone descends. With pelvic bowl neutral, draw abdominals in (Abdominal Draw Maneuver)
- Open palms of hands towards front to roll shoulders back and open chest
- Chin level, eyes are focused forward with soft gaze
- Release tension in jaw/mouth by gently pressing tip of tongue to back of top front teeth

**5. Seated Breath Exercise**

Creates a seated foundation to build other postures from

*Beginning with Proper Seated Position instruction and adding:*

- a. Breathing normal through the nose follow the flow of air as it comes in through the tip of the nose
- b. Now begin to take note of the length of each inhalation and exhalation acknowledging the present breathing pattern which may be shallow, steady, or deep
- c. Begin to regulate each inhalation and exhalation by counting
- d. Count off starting at 4 counts per inhalation and 4 counts per exhalation for several rounds; then 5 counts several rounds; then six counts several rounds
- e. During the balance of today's practice, come back to these steady breaths whenever possible

**Day 3****Proper Seated Posture and Seated Breath Exercise****Proper Standing Position****Mountain Posture****Hands Over Head Side Stretch Posture****Standing Forward Bend****Seated Spine Twist****Breath Awareness/Meditation Practice****1. Proper Seated Position adding Seated Breath Exercise**

Creates a seated foundation to build other postures from

*Beginning with Proper Seated Position instruction and adding:*

- Breathing normal through the nose follow the flow of air as it comes in through the tip of the nose
- Now begin to take note of the length of each inhalation and exhalation acknowledging the present breathing pattern which may be shallow, steady, or deep
- Begin to regulate each inhalation and exhalation by counting

- Count off starting at 4 counts per inhalation and 4 counts per exhalation for several rounds; then 5 counts several rounds; then six counts several rounds
- During the balance of today's practice, come back to these steady breaths whenever possible

## 2. Proper Standing Position

Develops new patterns of posture and personal stature

*Instruction:*

- Feet together with balanced weight distribution—ground through the four corners of the feet
- Stand rooted through feet with calves and quadriceps engaged—inner ankles back, and outer ankles down
- Lift the front of the pelvis so the tail-bone descends. With pelvic bowl neutral, draw abdominals in (Abdominal Draw Maneuver)
- Open palms of hands towards front to roll shoulders back and open chest
- Chin level

Eyes are focused forward with soft gaze

- Hold for 30—60 counts

Proper Seated Position and the Proper Standing Position are practiced throughout the 4-week program with the Abdominal Draw Maneuver reiterated into all other positions/postures when standing or sitting.

## 3. Mountain Posture

Reverses and relieves the gravitational stress on the body

*Instruction:*

- Expands from Proper Standing Posture
- Remain rooted through feet
- Arms extended up overhead
- Shoulders relaxed
- Pelvis tilts forward, pelvis is neutral to the spine
- Palms face each other with arms extended straight overhead
- Shoulders drop and relax with while reaching with fingertips over head
- Lift out of the waist to avoid crunching lower back

Gaze is towards hands

- Hold for 15—30 counts

## 4. Hands Over Head Side Stretch Posture

Stretches the side bodies including triceps/biceps, chest, abdominals

*Instruction:*

- Transitioning from Mountain Posture
- Feet together
- Hands clasped together, index finger extended
- Arms straight as possible and moving towards the ears
- Extend to the right and hold for 10 to 20 counts

Come back to center

- Extend to the left and hold for 10 to 20 counts
- Release to center

Gaze is forward head between your arms

## 5. Standing Forward Bend Posture

Calming and soothing posture that moves you from distraction and external focus to internal focus

*Instruction:*

- Feet hip distance apart, balanced weight distribution in feet
- Hands at hip crease for support, knees bent, fold forward bringing abdomen to thighs
- Elbows may rest on legs above knees
- Head hanging relaxed, while lengthening from back side body including calves, hamstrings, gluteus muscles
- Any strain in the lower back can be relieved with bent knees and backing out the posture as needed
- Weight is forward in feet to relieve any stress in lower back and hips are over heels bringing the stretch into the hamstrings
- To advance posture cross arms and hold opposite biceps with hands
- Steady long inhalations and exhalations
- Hold for 30—60 counts based on observations and ability  
Gaze is at navel or between feet
- Exit: Place hands on knees, avoid rolling the spine to come up. Reaffirm the length of the front torso; press your tailbone down and into the pelvis and come up on an inhalation with a long front torso.

## 6. Seated Spine Twist

Twists spine from top to bottom, improving spine flexibility, while increasing circulation to the spine, and strengthening the neck and shoulders

*Instruction:*

- Take Proper Seated Position
- Feet flat, legs at 90°
- Hips and sit bones remain level in chair
- Cross right leg over left
- Slowly twist to right from waist allowing shoulders to lead
- Left hand to right knee; right hand at lower back or extend arm over back of chair
- Shoulders remain level, chin level
- With each inhalation lift up through chest; each exhalation twist further for 3 rounds breath

Repeat other side

- Cross left leg over right
- Slowly twist to left from waist allowing shoulders to lead
- Right hand to left knee; left hand at lower back or extend arm over back of chair
- Shoulders remain level, chin level

- With each inhalation lift up through chest; each exhalation twist further for 3 rounds breath

As the shoulders turn the head follows, the eyes/gaze lead the twist

### **7. Breath Awareness/Meditation Practice**

The nose is the more refined and refining organ for filtering air into the body and conditioning, purifying, and humidifying the air. The olfactory and other nerves in the nose allow subtle sensitivity to the flow of breath, considerably more so than air flowing through the mouth. This exercise is simply to follow or trace air as it comes in and out of the tip of the nose creating single pointed focus.

Instruction:

- Proper Seated Posture, review as necessary
- If comfortable, close the eyes

Note that when the eyes are closed, the focus goes inward, as opposed to any distractions as a result of the eyes leading the mind. By intently focusing the mind on one thing, in this case the air coming in at the tip of the nose, there is no mind space for thinking or intrusions.

- Begin by clearing your mind of any thoughts of prior events, conversations or future concerns about the day—the focus is on the present moment you are experiencing.
  - o Do this by closing your eyes, taking several rounds of deep breath before returning to your normal breathing patterns
  - o Simply follow the air flow through the tip of your nose tracing each inhalation and exhalation, while noting the short pause at the top and bottom of each breath
- Notice the quality of each breath with each inhalation and exhalation
- Do not try and control the breath, but simply trace the air flow as it comes in and out of the nostrils, through the tip of the nose
- Let the natural breathing pattern exist
- As thoughts rise, acknowledge them as such, and then return to the air flow through the tip of the nose
- Continue to focus on the trace of air flow at the tip of the nose for the next minute to few minutes
  - You can take a couple of deep breaths through the nose to focus your mind and always begin again at any point
  - When time has passed you will be instructed to open your eyes

How long you practice breath awareness is a matter of your patience with the exercise. If possible the above component of should be practiced every day.

## **Day 4**

**Proper Seated Position**  
**Seated Breath Exercise**  
**Proper Standing Posture**  
**Mountain Posture**

**Hands Over Head Side Stretch Posture Variation**  
**Single Leg Balance**  
**Eagle Arms Instruction**  
**Seated Spine Twist**

**1. Proper Seated Position**

**2. Seated Breath Exercise**

Creates awareness of normal vs. controlled breathing patterns

*Instruction:*

- Breathing normally, through the nose, follow the air coming in through the tip of the nose
- Count off starting at 4 counts inhalation and 4 counts exhalation for several rounds; then 5 counts several rounds; then six counts several rounds; then a 1 count hold at the start and finish of each 6 count round for several rounds

Eyes are focused forward with soft gaze

**3. Proper Standing Position**

*Instruction:*

- Feet together with balanced weight distribution—ground through the four corners of the feet
- Stand rooted through feet with calves and quadriceps engaged—inner ankles back, and outer ankles down
- Lift the front of the pelvis so the tail-bone descends. With pelvic bowl neutral, draw abdominals in (Abdominal Draw Maneuver)
- Open palms of hands towards front to roll shoulders back and open chest
- Chin level

Eyes are focused forward with soft gaze

**4. Mountain Posture**

*Instruction:*

- From Proper Standing Position
  - Remain rooted through feet
  - Arms extended up overhead
  - Shoulders relaxed
  - Pelvis tilts forward, pelvis is neutral to the spine
  - Palms face each other with arms extended straight overhead
  - Shoulders drop and relax with while reaching with fingertips overhead
  - Lift out of the waist to avoid crunching lower back
- Gaze is towards hands

**5. Hands Over Head Side Stretch Posture Variation**

Stretches the side bodies including triceps/biceps, chest, abdominals

*Instruction:*

- Feet hips width apart or greater
- Capture left wrist with right hand

- Extend to the right and hold for 10 to 20 counts
- Come back to center
- Capture right wrist with left hand
  - Extend to the left and hold for 10 to 20 counts
  - Release to center
- Gaze is forward
- Repeat

## 6. Single Leg Balance

Strengthens the standing leg and hip flexor muscles that connect from the spine and pelvis onto the top of the thighbone while promoting balance

*Instruction:*

- Ground down through the left foot
  - Engage the left leg as in Proper Standing Posture, ground through the four corners of the feet, inner ankle back, outer ankle down
  - Engage muscles to the bone notice the knee cap may have lifted
- Choose a focal point and fix soft gaze for balance
- Raise the right leg to bend at 90°
- Gaze is forward; if you fall out begin again
- Hold leg in position for 15 to 30 counts and release
- Repeat opposite side
- Engage the right leg
  - Raise the right leg to bend at 90°
  - Hold leg in position for 15 to 30 counts and release

## 7. Eagle Arms Instruction

Shoulder and upper back stretch with inward focus

*Instruction:*

- Extend arms over head
  - With a reverse sweeping motion draw the right arm under the left
  - Clasp hands or place palms on shoulders
  - Hold for 15 to 30 counts and release to arms over head
- Repeat opposite side
- With a reverse sweeping motion draw the left arm under the right
  - Clasp hands or place palms on shoulders
  - Hold for 15 to 30 counts and release to arms over head
- Gaze is forward

## 8. Seated Spine Twist

*Instruction:*

- Take Proper Seated Position
- Feet flat, legs at 90°
- Hips and sit bones remain level in chair
- Cross right leg over left
- Slowly twist to right from waist allowing shoulders to lead
- Left hand to right knee; right hand at lower back or extend arm over back of chair

- Shoulders remain level, chin level
- With each inhalation lift up through chest; each exhalation twist further for 3 rounds breath

Repeat other side

- Cross left leg over right
- Slowly twist to left from waist allowing shoulders to lead
- Right hand to left knee; left hand at lower back or extend arm over back of chair
- Shoulders remain level, chin level
- With each inhalation lift up through chest; each exhalation twist further for 3 rounds breath

As the shoulders turn the head follows, the eyes/gaze lead the twist

#### **Breath Awareness/Meditation Practice:**

- Repeat instructions from previous day – first week – 1 Minute of silence

### **Day 5**

#### **Proper Seated Position with Seated Breath Exercise**

#### **Proper Standing Position**

#### **Standing Forward Bend Warm-up**

#### **Introduction to Sun Salutation A**

#### **Hands over Head Side Stretch**

#### **Proper Seated Posture**

#### **Seated Spine Twist**

#### **Breath Awareness/Meditation Practice**

#### **1. Proper Seated Position with Seated Breath Exercise**

- Same every day to start the practice – use 4, 5 & 6 counts of the breath

#### **2. Proper Standing Position**

#### **3. Standing Forward Bend Posture**

- Call and response, 3 instructions (instructions vary)—focus on alignment elements
- As a warm-up hold for 1 minute or more based on observations and ability

Gaze is at navel or between feet

- Exit: Place hands on knees, avoid rolling the spine to come up; reaffirm the length of the front torso; press your tailbone down and into the pelvis and come up on an inhalation with a long front torso

#### ***Introduction to Sun Salutation A***

#### **Sun Salutation A**

Basic warm-up linking breathing to movement

*Instructor Demonstration*

#### **4. Sun Salutation A - Group Instruction**

- Call and response, 3 instructions each (instructions vary)
  - i. **Proper Standing Posture**

- ii. **Mountain Posture** (inhale)
- iii. **Forward Bend** (exhale)
- iv. **Halfway Lift**(inhale)
  - Chest forward, tailbone back, flat back 90°
  - Bend Knees as necessary to maintain a flat spine
- v. **Forward Bend** (exhale)
- vi. **Inhale back to Standing**

**5. Repeat Sun A**

**6. Repeat Sun A**

**7. Hands Over Head Side Stretch Posture**

- Call and response, 3 instructions each (instructions vary)
- Repeat

**8. Proper Seated Position**

- Call and response, 3 instructions each (instructions vary)

**9. Seated Spine Twist**

- Call and response, 3 instructions each (instructions vary)

**10. Breath Awareness/Meditation Practice**

*Instruction:*

- Proper Seated Posture, review as necessary
- If comfortable, close the eyes
- Begin by clearing your mind of any thoughts of prior events, conversations or future concerns about the day—the focus is on the present moment you are experiencing.
- Do this by closing your eyes, taking several rounds of deep breath before returning to your normal breathing patterns
- Simply follow the air flow through the tip of your nose tracing each inhalation and exhalation, while noting the short pause at the top and bottom of each breath
- Notice the quality of each breath with each inhalation and exhalation
- Do not try and control the breath, but simply trace the air flow as it comes in and out of the nostrils, through the tip of the nose
- Let the natural breathing pattern exist
- As thoughts rise, acknowledge them as such, and then return to the air flow through the tip of the nose
- Continue to focus on the trace of air flow at the tip of the nose for the next few minutes
- You can take a couple of deep breaths through the nose to focus your mind and always begin again at any point
- When time has passed you will be instructed to open your eyes

**Proper Seated Position with Seated Breath Exercise****Proper Standing Position****Standing Forward Bend Warm-up****Sun Salutation A****Wall Plank Posture****Seated Half Pigeon****Seated Spine Twist****Breath Awareness/Meditation Practice****1. Proper Seated Position with Seated Breath Exercise****2. Proper Standing Position****3. Standing Forward Bend Posture**

- Call and response, 3 instructions (instructions vary)
- Hold for 1 minute or more based on observations and ability

Gaze is at navel or between feet

**4. Sun Salutation A**

- Call and response, 3 instructions each (instructions vary)
  - i. **Proper Standing Position**
  - ii. **Mountain Posture** (inhale)
  - iii. **Forward Bend** (exhale)
  - iv. **Halfway Lift**(inhale)
  - v. **Forward Bend** (exhale)
  - vi. **Inhale back to Standing**

**5. Repeat Sun A****6. Repeat Sun A****7. Wall Plank (Introduction to Downward Dog)**

Wall Planks primarily develop your hands and shoulder muscles, while stretching the back side of your body from neck to heels

*Instruction:*

- Stand in front of a wall at arm's length (back of chair optional but does not develop hand position)
- Reach forward from shoulders, and place palms on the wall, fingers wide, middle fingers pointing straight at the ceiling, working towards equal distance between fingers.
- Draw your navel back as you lengthen and extend the tailbone back
- walk the legs back, folding at the waist, hands walk down the wall as necessary to come to an L-shape
- For pain or rounding in the lower back, bend knees and maintain the proper spinal alignment
- Push up on toes to stretch feet and hold for 3 counts, then press back on heels down for calves stretch and hold for 3 counts

- Then find a neutral foot position and hold for several more rounds of breath
- Come out of the pose and take a short still break and then repeat a second time
- Note that you can rest in a forward fold in between each Wall Plank
- Hold for 30—60 counts

### 8. Seated Spine Twist

- Call and response, 3 instructions each (instructions vary)

### 9. Breath Awareness/Meditation Practice – 2 to 3 Minutes of Silence

## Day 7

### Proper Seated Position with Seated Breath Exercise

### Seated Cat & Cow Posture

### Sun Salutation A

### Wall Plank Posture

### Standing Forward Bend

### Seated Spine Twist

### Seated Breath Awareness/Meditation Practice

#### 1. Proper Seated Position with Seated Breath Exercise

#### 2. Seated Cat & Cow Posture

Reduces back, neck and shoulder tension and facilitates deeper breathing

*Instruction:*

- Begin in Proper Seated Posture - sitting slightly forward from the back of the chair; place hands on knees palm down
- **Cat Posture:** Sitting up tall, as you exhale, round your back, pulling your abdominals into your spine, tucking your tailbone under and drawing chin to chest
- **Cow Posture:** As you inhale, allow your belly to move forward, arch your back, send your chest forward (and if you do not have a neck injury) look up to the ceiling
- Relax your shoulders and jaw
- Repeat Cat on inhalation and Cow on exhalation for several rounds flowing with breath

#### 3. Sun Salutation A

- Call and response, 3 instructions each (instructions vary)
  - i. **Proper Standing Posture**
  - ii. **Mountain Posture** (inhale)
  - iii. **Forward Bend** (exhale)
  - iv. **Halfway Lift**(inhale)
  - v. **Forward Bend** (exhale)
  - vi. **Inhale back to Standing**

**4. Repeat Sun A****5. Repeat Sun A****6. Wall Plank (Introduction to Downward Dog)***Instruction:*

- Stand in front of a wall at arm's length (back of chair optional but does not develop hand position)
- Reach forward from shoulders, and place palms on the wall, fingers wide, middle fingers pointing straight at the ceiling, working towards equal distance between fingers.
- Draw your navel back as you lengthen and extend the tailbone back
- walk the legs back, folding at the waist, hands walk down the wall as necessary to come to an L-shape
- For pain or rounding in the lower back, bend knees and maintain the proper spinal alignment
- Push up on toes to stretch feet and hold for 3 counts, then press back on heels down for calves stretch and hold for 3 counts
- Then find a neutral foot position and hold for several more rounds of breath
- Come out of the pose and take a short still break and then repeat a second time
- Note that you can rest in a forward fold in between each Wall Plank

**7. Standing Forward Bend Posture**

- Call and response, 3 instructions (instructions vary)
  - Hold for 1 minute or more based on observations and ability
- Gaze is at navel or between feet

**8. Seated Spine Twist****9. Breath Awareness/Meditation Practice – 2 to 3 Minutes of Silence****Day 8****Proper Seated Position with Seated Breath Exercise****Proper Standing Position****Standing Forward Bend****Sun Salutation A****Hands Over Head Side Stretch Posture****Wall Plank Posture****Standing Back Bend****Seated Spine Twist****Breath Awareness/Meditation Practice****1. Proper Seated Position with Seated Breath Exercise**

- 2. Proper Standing Position**
- 3. Standing Forward Bend Posture**
  - Call and response, 3 instructions (instructions vary)
  - Hold for 1 minute or more based on observations and abilityGaze is at navel or between feet
- 4. Sun Salutation A**
  - Call and response, 3 instructions each (instructions vary)
    - i. **Proper Standing Posture**
    - ii. **Mountain Posture** (inhale)
    - iii. **Forward Bend** (exhale)
    - iv. **Halfway Lift**(inhale)
    - v. **Forward Bend** (exhale)
    - vi. **Inhale back to Standing**
- 5. Repeat Sun A**
- 6. Repeat Sun A**
- 7. Hands Over Head Side Stretch Posture**
  - Call and response, 3 instructions each (instructions vary)
- 8. Wall Plank Posture**

*Instruction:*

  - Call and response, 3 instructions each (instructions vary)
- 9. Standing Back Bend**

*Instruction:*

  - Ground through feet for foundation, engage legs, lift through the waist
  - Place hands on lower back fingers pointed down, stay lifted through the chest, press hips forward and arch torso backwards
  - Release on an inhalation, arms to your side, Proper Standing Position
- 10. Seated Spine Twist**
  - Call and response, 3 instructions each (instructions vary)
- 11. Breath Awareness/Meditation Practice – 2 to 3 Minutes of Silence**

## Day 9

**Proper Seated Position with Seated Breath Exercise**

**Proper Standing Position**

**Standing Forward Bend**

**Sun Salutation A**

**Hands Over Head Side Stretch Posture**

**Standing Back Bend**  
**Seated Spine Twist**  
**Breath Awareness/Meditation Practice**

The basic routine concerning the movement portion of the program is defined and instructed over the first 8 days of participation. Day 9 and daily thereafter is a repeat of the movement portion leading up to the daily closing mindfulness practice.

- 1. Proper Seated Position with Seated Breath Exercise**
- 2. Proper Standing Position**
- 3. Standing Forward Bend Posture**
  - Call and response, 3 instructions (instructions vary)
  - Hold for 1 minute or more based on observations and ability

Gaze is at navel or between feet
- 4. Sun Salutation A**
  - Call and response, 3 instructions each (instructions vary)
    - i. **Proper Standing Posture**
    - ii. **Mountain Posture** (inhale)
    - iii. **Forward Bend** (exhale)
    - iv. **Halfway Lift**(inhale)
    - v. **Forward Bend** (exhale)
    - vi. **Inhale back to Standing**
- 5. Repeat Sun A**
- 6. Repeat Sun A**
- 7. Hands Over Head Side Stretch Posture**
  - Call and response, 3 instructions each (instructions vary)
- 8. Standing Back Bend**

*Instruction:*

  - Ground through feet for foundation, engage legs, lift through the waist
  - Place hands on lower back fingers pointed down, stay lifted through the chest, press hips forward and arch torso backwards
  - Release on an inhalation, arms to your side, Proper Standing Position
- 9. Seated Spine Twist**
  - Call and response, 3 instructions each (instructions vary)
- 10. Breath Awareness/Meditation Practice – 2-3 Minutes of silence**

**Day 10**

**Proper Seated Position with Seated Breath Exercise**

**Proper Standing Position**  
**Standing Forward Bend**  
**Sun Salutation A**  
**Hands Over Head Side Stretch Posture**  
**Wall Plank Posture**  
**Standing Back Bend**  
**Seated Spine Twist**  
**Breath Awareness/Meditation Practice**

1. **Proper Seated Position with Seated Breath Exercise**
2. **Proper Standing Position**
3. **Standing Forward Bend Posture**
  - Call and response, 3 instructions (instructions vary)
  - Hold for 1 minute or more based on observations and ability

Gaze is at navel or between feet
4. **Sun Salutation A**
  - Call and response, 3 instructions each (instructions vary)
    - i. **Proper Standing Posture**
    - ii. **Mountain Posture** (inhale)
    - iii. **Forward Bend** (exhale)
    - iv. **Halfway Lift**(inhale)
    - v. **Forward Bend** (exhale)
    - vi. **Inhale back to Standing**
5. **Repeat Sun A**
6. **Repeat Sun A**
7. **Hands Over Head Side Stretch Posture**
  - Call and response, 3 instructions each (instructions vary)
8. **Wall Plank Posture**
  - Call and response, 3 instructions each (instructions vary)
9. **Standing Back Bend**

*Instruction:*

  - Ground through feet for foundation, engage legs, lift through the waist
  - Place hands on lower back fingers pointed down, stay lifted through the chest, press hips forward and arch torso backwards
  - Release on an inhalation, arms to your side, Proper Standing Position
10. **Seated Spine Twist**
  - Call and response, 3 instructions each (instructions vary)

**11. Breath Awareness/Meditation Practice – 2 to 3 Minutes of Silence****Day 11 – Weeks 3 and 4****Proper Seated Position with Seated Breath Exercise****Proper Standing Position****Standing Forward Bend****Sun Salutation A****Hands Over Head Side Stretch Posture****Standing Back Bend****Seated Spine Twist****Breath Awareness/Meditation Practice**

- 1. Proper Seated Position with Seated Breath Exercise**
- 2. Proper Standing Position**
- 3. Standing Forward Bend Posture**
  - Call and response, 3 instructions (instructions vary)
  - Hold for 1 minute or more based on observations and abilityGaze is at navel or between feet
- 4. Sun Salutation A**
  - Call and response, 3 instructions each (instructions vary)
    - i. **Proper Standing Posture**
    - ii. **Mountain Posture** (inhale)
    - iii. **Forward Bend** (exhale)
    - iv. **Halfway Lift**(inhale)
    - v. **Forward Bend** (exhale)
    - vi. **Inhale back to Standing**
- 5. Repeat Sun A**
- 6. Repeat Sun A**
- 7. Hands Over Head Side Stretch Posture**
  - Call and response, 3 instructions each (instructions vary)
- 8. Standing Back Bend**
  - Call and response, 3 instructions each (instructions vary)
- 9. Seated Spine Twist**
  - Call and response, 3 instructions each (instructions vary)
- 10. Breath Awareness/Meditation Practice – 3 to 5 Minutes of silence – moving to 5 to 7 in the final week**

For the Rest of the 4 weeks the sessions are repeated to help the participants gain confidence and become more familiar with the routine. Ultimately, they will have the tools they need to create and maintain their own daily practice.

## APPENDIX L

## Handouts

**Stress Reduction Program  
Participant Handouts**

**Benefits**

- Understanding of stretching movements specific to body parts and their relationship to other body parts (kinetic chain) and how to prevent injury
- Understanding of how the mind and thought process work and how to manage stress and improve focus
- Understanding of the connection between the physical body and the mind
- Understanding meditation/mindfulness and how to use it to manage stress
- Increased flexibility, balance and core strength

**Program Design**

Week 1 of program begins with basic seated and standing positions/postures and the importance of core stability. Breathing and meditation exercises are used to introduce the connection between breath, mind and movement. The initial seated and standing postures are exercises that can be performed in any type of clothing and shoes. In your work setting with limited time it is not practical to change clothing. Therefore the selection of postures throughout the program takes work clothing into consideration. This in no way diminishes the practice. Movement between postures (flow) is added on Day 5 introducing breathing and movement.

**1<sup>st</sup> Week Routines**

**Routine #1**

**Proper Seated Position**  
**Proper Standing Position**  
**Introduction to Core Stability**  
**Abdominal Draw Exercise**  
**Seated Breath Exercise**

**Proper Seated Position - Active***Instruction:*

- Prepare to sit in chair, tail bone to back base of chair—utilizing back support
- Feet flat, legs at 90°
- Shoulder blades draw together on back, chest lifts and opens
- Place hands palm down on thighs for additional shoulder and chest support
- Chin level, eyes are focused forward with soft gaze
- Focus now on steady controlled in and out breaths for an even 3 to 6 counts of each inhalation and exhalation
- Inhale 1—2—etc.; exhale 1—2—etc.; repeat

### *Introduction to Core Stability*

#### **Abdominal Drawing In Maneuver**

In core training the drawing in maneuver is the most important core exercise you can perform to increase the stability of your lower back.

The core is where the center of gravity is located and where all physical movement begins. This exercise recruits the *core-stabilization system*: transverse abdominis, internal obliques, pelvic floor musculature, diaphragm, transversospinalis, and multifidas and the *core-movement system*: rectus abdominal, erector spinae, external obliques, latissimus dorsi, adductors, hamstrings and iliopsoas to ensure optimal coordination of the lumbo-pelvic complex and work synergistically as the *stabilization system*. Physical Therapists use the drawing in maneuver to re-train the deep muscles of the core and improve spine stabilization.

#### **Instruction:**

- Place hand just below navel to locate position of concern
- Feel the abdominal drawing in action with hand
- Draw in and hold for count of 6 to 20 seconds to properly stimulate the motor units, release, rest and repeat increasing length of hold up to 20 seconds or more
- Hold can continue for any length of time with steady inhalations and exhalations
- Notice how your breathing may have shortened during this exercise; continue with steady, even breaths in and out as you perform this exercise
- Try to maintain your steady breathing pattern as you repeat exercise
- Should you become short of breath, release, pause and wait for normal breathing to return and begin again

As established above, this exercise strengthens the abdominal wall muscles and more specifically those muscles that support the spine and lower back. Regular daily practice and movement of this basic exercise can be done while seated or standing and can be performed at any time throughout the day with a commitment to the exercise.

#### **Proper Standing Position - Active**

##### *Instruction:*

- f. Standing with feet flat gently rock backward and forward and side to side to find equal weight distribution settling on a neutral position
- g. Stand rooted through feet - ground down through the triad of the feet
- h. With calves and quadriceps engaged, note that kneecaps may have naturally lifted—inner ankles back and outer ankles down
- i. Lift the front of the pelvis so the tail-bone descends. With pelvic bowl neutral, draw abdominals in (Abdominal Draw Maneuver)
- j. Open palms of hands towards front to roll shoulders back and open chest
- k. Chin level, eyes are focused forward with soft gaze

1. Release tension in jaw/mouth by gently pressing tip of tongue to back of top front teeth

### **Seated Breath Exercise**

Creates awareness of normal vs. controlled breathing patterns

*Instruction:*

- Breathing normally, through the nose, follow the air coming in through the tip of the nose
- Count off starting at 4 counts inhalation and 4 counts exhalation for several rounds; then 5 counts several rounds; then six counts several rounds; then a 1 count hold at the start and finish of each 6 count round for several rounds

Eyes are focused forward with soft gaze

## **Routine #2**

**Proper Seated Posture adding Breath Exercise**

**Proper Standing Position**

**Mountain Posture**

**Hands Over Head Side Stretch Posture**

**Standing Forward Bend**

**Seated Spine Twist**

### **Proper Seated Position adding Breath Exercise**

Creates a seated foundation to build other postures from

*Begin with Proper Seated Position and add:*

- Breathing normal through the nose follow the flow of air as it comes in through the tip of the nose
- Now begin to take note of the length of each inhalation and exhalation acknowledging the present breathing pattern which may be shallow, steady, or deep
- Begin to regulate each inhalation and exhalation by counting
- Count off starting at 4 counts per inhalation and 4 counts per exhalation for several rounds; then 5 counts several rounds; then 6 counts several rounds
- During the balance of today's practice, come back to these steady breaths whenever possible

### **Proper Standing Position**

Develops new patterns of posture and personal stature

*Instruction:*

- Feet together with balanced weight distribution—ground through the four corners of the feet
- Stand rooted through feet with calves and quadriceps engaged—inner ankles back, and outer ankles down

- Lift the front of the pelvis so the tail-bone descends. With pelvic bowl neutral, draw abdominals in (Abdominal Draw Maneuver)
  - Open palms of hands towards front to roll shoulders back and open chest
  - Chin level
- Eyes are focused forward with soft gaze
- Hold for 30—60 counts

Proper Seated Position and the Proper Standing Position are practiced throughout the program with the Abdominal Draw Maneuver being a key component in all the other positions/postures when standing or sitting.

### **Mountain Posture**

Reverses and relieves the gravitational stress on the body

*Instruction:*

- Expands from Proper Standing Posture
- Remain rooted through feet
- Arms extended up overhead
- Shoulders relaxed
- Pelvis tilts forward, pelvis is neutral to the spine
- Palms face each other with arms extended straight overhead
- Shoulders drop and relax with while reaching with fingertips over head
- Lift out of the waist to avoid crunching lower back

Gaze is towards hands

- Hold for 15—30 counts

### **Hands Over Head Side Stretch Posture**

Stretches the side bodies including triceps/biceps, chest, abdominals

*Instruction:*

- Transitioning from Mountain Posture
- Feet together
- Hands clasped together, index finger extended
- Arms straight as possible and moving towards back toward the ears
- Extend to the right and hold for 10 to 20 counts

Come back to center

- Extend to the left and hold for 10 to 20 counts
- Release to center

Gaze is forward head between your arms

### **Standing Forward Bend Posture**

Calming and soothing posture that moves you from distraction and external focus to internal focus

*Instruction:*

- Feet hip distance apart, balanced weight distribution in feet
- Hands at hip crease for support, knees bent, fold forward bringing abdomen to thighs
- Elbows may rest on legs above knees

- Head hanging relaxed, while lengthening from back side body including calves, hamstrings, gluteus muscles
- Any strain in the lower back can be relieved with bent knees and backing out the posture as needed
- Weight is forward in feet to relieve any stress in lower back and hips are over heels bringing the stretch into the hamstrings
- To advance posture cross arms and hold opposite biceps with hands
- Steady long inhalations and exhalations
- Hold for 30—60 counts  
Gaze is at navel or between feet
- Exit: Place hands on knees, avoid rolling the spine to come up. Reaffirm the length of the front torso; press your tailbone down and into the pelvis and come up on an inhalation with a long front torso.

### **Seated Spine Twist**

Twists spine from top to bottom, improving spine flexibility, while increasing circulation to the spine, and strengthening the neck and shoulders

*Instruction:*

- m. Take Proper Seated Position
- n. Feet flat, legs at 90°
- o. Hips and sit bones remain level in chair
- p. Cross right leg over left
- q. Slowly twist to right from waist allowing shoulders to lead
- r. Left hand to right knee; right hand at lower back or extend arm over back of chair
- s. Shoulders remain level, chin level
- t. With each inhalation lift up through chest; each exhalation twist further for 3 rounds breath

Repeat other side

- u. Cross left leg over right
- v. Slowly twist to left from waist allowing shoulders to lead
- w. Right hand to left knee; left hand at lower back or extend arm over back of chair
- x. Shoulders remain level, chin level
- y. With each inhalation lift up through chest; each exhalation twist further for 3 rounds breath

As the shoulders turn the head follows, the eyes/gaze lead the twist

### **Routine #3**

**Proper Seated Position**

**Seated Breath Exercise**

**Proper Standing Posture**

**Mountain Posture**

**Hands Over Head Side Stretch Posture Variation**

**Single Leg Balance**

**Eagle Arms Instruction**

## Seated Spine Twist

### Proper Seated Position

#### Seated Breath Exercise

Creates awareness of normal vs. controlled breathing patterns

*Instruction:*

- Breathing normally, through the nose, follow the air coming in through the tip of the nose
- Count off starting at 4 counts inhalation and 4 counts exhalation for several rounds; then 5 counts several rounds; then six counts several rounds; then a 1 count hold at the start and finish of each 6 count round for several rounds

Eyes are focused forward with soft gaze

### Proper Standing Position

*Instruction:*

- z. Feet together with balanced weight distribution—ground through the four corners of the feet
- aa. Stand rooted through feet with calves and quadriceps engaged—inner ankles back, and outer ankles down
- bb. Lift the front of the pelvis so the tail-bone descends. With pelvic bowl neutral, draw abdominals in (Abdominal Draw Maneuver)
- cc. Open palms of hands towards front to roll shoulders back and open chest
- dd. Chin level

Eyes are focused forward with soft gaze

### Mountain Posture

*Instruction:*

- ee. From Proper Standing Position
- ff. Remain rooted through feet
- gg. Arms extended up overhead
- hh. Shoulders relaxed
- ii. Pelvis tilts forward, pelvis is neutral to the spine
- jj. Palms face each other with arms extended straight overhead
- kk. Shoulders drop and relax with while reaching with fingertips overhead
- ll. Lift out of the waist to avoid crunching lower back  
Gaze is towards hands

### Hands Over Head Side Stretch Posture Variation

Stretches the side bodies including triceps/biceps, chest, abdominals

*Instruction:*

- Feet hips width apart or greater
- Capture left wrist with right hand
- Extend to the right and hold for 10 to 20 counts

Come back to center

- Capture right wrist with left hand

- Extend to the left and hold for 10 to 20 counts
- Release to center

Gaze is forward

- Repeat

### **Single Leg Balance**

Strengthens the standing leg and hip flexor muscles that connect from the spine and pelvis onto the top of the thighbone while promoting balance

*Instruction:*

mm. Ground down through the left foot

nn. Engage the left leg as in Proper Standing Posture, ground through the four corners of the feet, inner ankle back, outer ankle down

oo. Engage muscles to the bone notice the knee cap may have lifted

Choose a focal point and fix soft gaze for balance

pp. Raise the right leg to bend at 90°

Gaze is forward; if you fall out begin again

qq. Hold leg in position for 15 to 30 counts and release

Repeat opposite side

rr. Engage the right leg

ss. Raise the right leg to bend at 90°

tt. Hold leg in position for 15 to 30 counts and release

### **Eagle Arms Instruction**

Shoulder and upper back stretch with inward focus

*Instruction:*

- Extend arms over head

- With a reverse sweeping motion draw the right arm under the left

- Clasp hands or place palms on shoulders

- Hold for 15 to 30 counts and release to arms over head

Repeat opposite side

- With a reverse sweeping motion draw the left arm under the right

- Clasp hands or place palms on shoulders

- Hold for 15 to 30 counts and release to arms over head

Gaze is forward

### **Seated Spine Twist**

*Instruction:*

- Take Proper Seated Position

- Feet flat, legs at 90°

- Hips and sit bones remain level in chair

- Cross right leg over left

- Slowly twist to right from waist allowing shoulders to lead

- Left hand to right knee; right hand at lower back or extend arm over back of chair

- Shoulders remain level, chin level

- With each inhalation lift up through chest; each exhalation twist further for 3 rounds breath

Repeat other side

- Cross left leg over right
- Slowly twist to left from waist allowing shoulders to lead
- Right hand to left knee; left hand at lower back or extend arm over back of chair
- Shoulders remain level, chin level
- With each inhalation lift up through chest; each exhalation twist further for 3 rounds breath

As the shoulders turn the head follows, the eyes/gaze lead the twist

#### **Routine #4**

**Proper Seated Position with Seated Breath Exercise**

**Proper Standing Position**

**Standing Forward Bend Warm-up**

**Introduction to Sun Salutation A**

**Hands over Head Side Stretch**

**Proper Seated Posture**

**Seated Spine Twist**

**Seated Breath Awareness/Meditation Practice**

**Proper Seated Position with Seated Breath Exercise**

**Proper Standing Position**

**Standing Forward Bend Posture**

- As a warm-up hold for 1 minute or more based on how you feel in the posture

Gaze is at navel or between feet

- Exit: Place hands on knees, avoid rolling the spine to come up; reaffirm the length of the front torso; press your tailbone down and into the pelvis and come up on an inhalation with a long front torso

#### **Sun Salutation A**

Basic warm-up linking breathing to movement

**Sun Salutation A**

- i. **Proper Standing Posture**
- ii. **Mountain Posture** (inhale)
- iii. **Forward Bend** (exhale)
- iv. **Halfway Lift**(inhale)
  - Chest forward, tailbone back, flat back 90°
  - Bend Knees as necessary to maintain a flat spine
- v. **Forward Bend** (exhale)
- vi. **Inhale back to Standing**

**Repeat Sun A**

**Repeat Sun A****Hands Over Head Side Stretch Posture**

Repeat on each side

**Proper Seated Position****Seated Spine Twist****Seated Breath Awareness/Meditation Practice***Instruction:*

- Proper Seated Posture
- If comfortable, close the eyes

Note that when the eyes are closed, the focus goes inward, as opposed to any distractions as a result of the eyes leading the mind. By intently focusing the mind on one thing, in this case the air coming in at the tip of the nose, there is no space for thinking or intrusions.

- Begin by clearing your mind of any thoughts of prior events, conversations or future concerns about the day—the focus is on the present moment you are experiencing.
- Do this by closing your eyes, taking several rounds of deep breath before returning to your normal breathing patterns
- Simply follow the air flow through the tip of your nose tracing each inhalation and exhalation, while noting the short pause at the top and bottom of each breath
- Notice the quality of each breath with each inhalation and exhalation
- Do not try and control the breath, but simply trace the air flow as it comes in and out of the nostrils, through the tip of the nose
- Let the natural breathing pattern exist
- As thoughts rise, acknowledge them as such, and then return to the air flow through the tip of the nose
- Continue to focus on the trace of air flow at the tip of the nose for the next few minutes
- You can take a couple of deep breaths through the nose to focus your mind and always begin again at any point
- When time has passed open your eyes

**Routine #5**

**Proper Seated Position with Seated Breath Exercise**

**Proper Standing Position**

**Standing Forward Bend Warm-up**

**Sun Salutation A**

**Wall Plank Posture**

**Seated Half Pigeon**

**Seated Spine Twist**

**Seated Breath Awareness/Meditation Practice**

**Proper Seated Position with Seated Breath Exercise****Proper Standing Position****Standing Forward Bend Posture**

- Hold for 1 minute or more

Gaze is at navel or between feet

**Sun Salutation A**

- i. **Proper Standing Position**
- ii. **Mountain Posture** (inhale)
- iii. **Forward Bend** (exhale)
- iv. **Halfway Lift**(inhale)
- v. **Forward Bend** (exhale)
- vi. **Inhale back to Standing**

**Repeat Sun A****Repeat Sun A****Wall Plank (Introduction to Downward Dog)**

Wall Planks primarily develop your hands and shoulder muscles, while stretching the back side of your body from neck to heels

*Instruction:*

- Stand in front of a wall at arm's length (back of chair optional but does not develop hand position)
- Reach forward from shoulders, and place palms on the wall, fingers wide, middle fingers pointing straight at the ceiling, working towards equal distance between fingers.
- Draw your navel back as you lengthen and extend the tailbone back
- walk the legs back, folding at the waist, hands walk down the wall as necessary to come to an L-shape
- For pain or rounding in the lower back, bend knees and maintain the proper spinal alignment
- Push up on toes to stretch feet and hold for 3 counts, then press back on heels down for calves stretch and hold for 3 counts
- Then find a neutral foot position and hold for several more rounds of breath
- Come out of the pose and take a short still break and then repeat a second time
- Note that you can rest in a forward fold in between each Wall Plank
- Hold for 30—60 counts

**Seated Spine Twist****Seated Breath Awareness/Meditation Practice**

## 2<sup>nd</sup> Weeks Routines

### Routine #1

#### Proper Seated Position with Seated Breath Exercise

#### Seated Cat & Cow Posture

#### Sun Salutation A

#### Wall Plank Posture

#### Standing Forward Bend

#### Seated Spine Twist

#### Seated Breath Awareness/Meditation Practice

#### Proper Seated Position with Seated Breath Exercise

#### Seated Cat & Cow Posture

Reduces back, neck and shoulder tension and facilitates deeper breathing

*Instruction:*

- Begin in Proper Seated Posture - sitting slightly forward from the back of the chair; place hands on knees palm down
- **Cat Posture:** Sitting up tall, as you exhale, round your back, pulling your abdominals into your spine, tucking your tailbone under and drawing chin to chest
- **Cow Posture:** As you inhale, allow your belly to move forward, arch your back, send your chest forward (and if you do not have a neck injury) look up to the ceiling
- Relax your shoulders and jaw
- Repeat Cat on inhalation and Cow on exhalation for several rounds flowing with breath

#### Sun Salutation A

- i. **Proper Standing Posture**
- ii. **Mountain Posture** (inhale)
- iii. **Forward Bend** (exhale)
- iv. **Halfway Lift**(inhale)
- v. **Forward Bend** (exhale)
- vi. **Inhale back to Standing**

#### Repeat Sun A

#### Repeat Sun A

#### Wall Plank (Introduction to Downward Dog)

*Instruction:*

- Stand in front of a wall at arm's length (back of chair optional but does not develop hand position)

- Reach forward from shoulders, and place palms on the wall, fingers wide, middle fingers pointing straight at the ceiling, working towards equal distance between fingers.
- Draw your navel back as you lengthen and extend the tailbone back
- walk the legs back, folding at the waist, hands walk down the wall as necessary to come to an L-shape
- For pain or rounding in the lower back, bend knees and maintain the proper spinal alignment
- Push up on toes to stretch feet and hold for 3 counts, then press back on heels down for calves stretch and hold for 3 counts
- Then find a neutral foot position and hold for several more rounds of breath
- Come out of the pose and take a short still break and then repeat a second time
- Note that you can rest in a forward fold in between each Wall Plank

### **Standing Forward Bend Posture**

- Hold for 1 minute or more
- Gaze is at navel or between feet

### **Seated Spine Twist**

### **Seated Breath Awareness/Meditation Practice**

## **Routine #2**

### **Proper Seated Position with Seated Breath Exercise**

### **Proper Standing Position**

### **Standing Forward Bend**

### **Sun Salutation A**

### **Hands Over Head Side Stretch Posture**

### **Wall Plank Posture**

### **Standing Back Bend**

### **Seated Spine Twist**

### **Seated Breath Awareness/Meditation Practice**

### **Proper Seated Position with Seated Breath Exercise**

### **Proper Standing Position**

### **Standing Forward Bend Posture**

- Hold for 1 minute or more
- Gaze is at navel or between feet

### **Sun Salutation A**

- i. **Proper Standing Posture**
- ii. **Mountain Posture (inhale)**

- iii. **Forward Bend** (exhale)
- iv. **Halfway Lift**(inhale)
- v. **Forward Bend** (exhale)
- vi. **Inhale back to Standing**

**Repeat Sun A**

**Repeat Sun A**

**Hands Over Head Side Stretch Posture**

**Wall Plank Posture**

**Standing Back Bend**

*Instruction:*

- Ground through feet for foundation, engage legs, lift through the waist
- Place hands on lower back fingers pointed down, stay lifted through the chest, press hips forward and arch torso backwards
- Release on an inhalation, arms to your side, Proper Standing Position

**Seated Spine Twist**

**Seated Breath Awareness/Meditation Practice**

### **Routine #3**

**Proper Seated Position with Seated Breath Exercise**

**Proper Standing Position**

**Standing Forward Bend**

**Sun Salutation A**

**Hands Over Head Side Stretch Posture**

**Standing Back Bend**

**Seated Spine Twist**

**Seated Breath Awareness/Meditation Practice**

The basic routine concerning the movement portion of the program is covered in the first 8 days of this program. Day 9 and daily thereafter is a repeat of the movement portion leading up to the daily closing breath practice.

**Proper Seated Position with Seated Breath Exercise**

**Proper Standing Position**

**Standing Forward Bend Posture**

- Hold for 1 minute or more
- Gaze is at navel or between feet

**Sun Salutation A**

- i. **Proper Standing Posture**
- ii. **Mountain Posture** (inhale)
- iii. **Forward Bend** (exhale)
- iv. **Halfway Lift**(inhale)
- v. **Forward Bend** (exhale)
- vi. **Inhale back to Standing**

**Repeat Sun A****Repeat Sun A****Hands Over Head Side Stretch Posture****Standing Back Bend***Instruction:*

- Ground through feet for foundation, engage legs, lift through the waist
- Place hands on lower back fingers pointed down, stay lifted through the chest, press hips forward and arch torso backwards
- Release on an inhalation, arms to your side, Proper Standing Position

**Seated Spine Twist****Seated Breath Awareness/Meditation Practice****Routine #4****Proper Seated Position with Seated Breath Exercise****Proper Standing Position****Standing Forward Bend****Sun Salutation A****Hands Over Head Side Stretch Posture****Wall Plank Posture****Standing Back Bend****Seated Spine Twist****Seated Breath Awareness/Meditation Practice****Proper Seated Position with Seated Breath Exercise****Proper Standing Position****Standing Forward Bend Posture**

- Hold for 1 minute or more

Gaze is at navel or between feet

**Sun Salutation A**

- i. **Proper Standing Posture**

- ii. **Mountain Posture** (inhale)
- iii. **Forward Bend** (exhale)
- iv. **Halfway Lift**(inhale)
- v. **Forward Bend** (exhale)
- vi. **Inhale back to Standing**

**Repeat Sun A**

**Repeat Sun A**

**Hands Over Head Side Stretch Posture**

**Wall Plank Posture**

**Standing Back Bend**

*Instruction:*

- Ground through feet for foundation, engage legs, lift through the waist
- Place hands on lower back fingers pointed down, stay lifted through the chest, press hips forward and arch torso backwards
- Release on an inhalation, arms to your side, Proper Standing Position

**Seated Spine Twist**

**Seated Breath Awareness/Meditation Practice**

## **Routine #5**

**Proper Seated Position with Seated Breath Exercise**

**Proper Standing Position**

**Standing Forward Bend**

**Sun Salutation A**

**Hands Over Head Side Stretch Posture**

**Standing Back Bend**

**Seated Spine Twist**

**Seated Breath Awareness/Meditation Practice**

**Proper Seated Position with Seated Breath Exercise**

**Proper Standing Position**

**Standing Forward Bend Posture**

- Hold for 1 minute or more
- Gaze is at navel or between feet

**Sun Salutation A**

- i. **Proper Standing Posture**
- ii. **Mountain Posture** (inhale)

- iii. **Forward Bend** (exhale)
- iv. **Halfway Lift**(inhale)
- v. **Forward Bend** (exhale)
- vi. **Inhale back to Standing**

**Repeat Sun A**

**Repeat Sun A**

**Hands Over Head Side Stretch Posture**

**Standing Back Bend**

**Seated Spine Twist**

**Seated Breath Awareness/Meditation Practice**