

Using Bikram Yoga for Stress Management in the Daily Lives of College Students

Sarah Gordon

Abstract

College students experience higher-than-normal levels of stress. Chronic exposure to stress may lead to physical and mental illness. Introducing a regular practice of Bikram yoga, a form of yoga performed in a hot room developed by Bikram Choudhury in the 1970s, could be an effective stress-management technique for college students. Traditional yoga is an established alternative therapy for promoting health through meditation, reduction of the stress hormone Cortisol, and release of beneficial mood-stabilizing neurotransmitters. Preliminary studies show that Bikram yoga can be profoundly beneficial in the same areas as traditional yoga. However, little is known about the effect of stress reduction when implemented into the routine of the college student. This study aims to identify the physiological and psychological benefits experienced by college students during an eight-week Bikram yoga intervention, in which they will attend a 90 minute Bikram session twice a week. The control group will continue their normal exercise routines twice a week. All subjects will be evaluated prior to the intervention, weekly, and upon completion for their stress-related indicators using the Perceived Stress Questionnaire (PSQ), a College Student Stress Scale (CSSS), a Stress-related Physical Health Symptoms Checklist, and a Behavioral Risk Factor Surveillance System. Both groups will have their weight, resting heart rate and blood pressure, blood oxygen saturation (SpO²), and Cortisol measured within 10 minutes of each Bikram yoga session or the control exercise activity. Through comparison of the test and control group, the findings should indicate a significant reduction in the college student's perceived stress and overall health indicators, as well as any stress-related symptoms. The implications of positive results would be encouraging for student recreation centers to implement a Bikram class on campus, and could apply to other populations who could benefit from a stress-reducing exercise program.

Introduction

Stress is a very significant problem in regards to the health of our current society. College students experience very high levels of stress and often lack the time or resources to manage their stress effectively (Misra & McKean, 2000). Many alternative therapies have been studied for stress relief. Yoga has been around for centuries and is often acknowledged for its stress relieving properties (Sharma, 2014). Bikram Yoga was developed by Bikram Choudhury in the 1970s as being the perfect combination of Hatha Yoga postures (Choudhury, 2007). It is practiced in a heated room, which enhances the effects of the yoga. This study will examine the literature presented in other research regarding the negative impact of

stress on college students, how Yoga practice is effective against stress, the documented health effects of Bikram Yoga, and how this information could be applied towards a stress management technique used by college students.

Background and Significance

Stress is defined in medical terms as a physical or psychological stimulus that can produce mental tension or physiological reactions that may lead to illness ("Stress", 2007). Recent reports from US college students indicate an increase in stress (Misra & McKean, 2000). A Canadian study (Adlaf et al., 2001) showed the average college student possessed higher reported stress symptoms than the average person in the

general population. Pedersen (2012) determined that academic stress is related to the hours spent studying, anxiety relating to grades and testing, and inadequate attention to areas of personal concern (i.e. time management, finances, relationships, and health).

The persistent exposure of the student to stress is expected to some extent, yet it becomes a problem when it leads to unhealthy consequences (Rizzolo, Zipp, Stiskal, & Simpkins, 2009). Short term stress response is functional and can enhance reactivity and performance (Donovan, Doody, & Lyons, 2013). However, long term exposure to stress hormones such as cortisol places a strain on the sympathetic system. Systemic fatigue to this exposure contributes to over half of all disease processes.

Physical manifestations of stress come in various forms of illness such as headaches, sleep disruption, decreased immunity and susceptibility to infection, gastrointestinal disorders, cardiovascular strain, diabetes, cancer, and pain (Donovan et al., 2013; Sharma, 2014; Ross, Bevans, Friedmann, Williams, & Thomas, 2014). Stress also manifests in the form of mental illness causing anxiety, depression, or suicidal ideation (Donovan et al., 2013; Misra & McKean, 2000). Pedersen (2012) also indicates that stress “spill-over” can impact other areas of the college student’s life such as intra-personal relations, family obligations, work or school performance, alcohol abuse, and poor perception of health. The foundations of stress management integrated into a student’s overall wellness can continue throughout their life and career (Rizzolo et al., 2009).

Physical activity has a direct effect on stress indicators such as pulse and heart rate (Bruning & Frew, 1987). When used as an intervention for stress in the workplace, Bruning and Frew (1987) found that 30 minutes of aerobic activity 3 days a week had

a significant impact on physiologic determinants of stress. They also found that when this was combined with relaxation and meditation methods used for 15-40 minutes a day, there was an even more significant impact on pulse rates. While their study was used to determine the effectiveness of these measures in the workplace, this could be translated into a stress management intervention for college students.

The intervention I am suggesting for this study would utilize Bikram Yoga for stress experienced by college students. Yoga has already been studied in the general population and shown to alleviate depression and anxiety (Simard, 2009). While other studies have examined the effects on stress with the practice of other forms of yoga, little is known about how effective Bikram Yoga would be specifically in regards to college students. Many recent studies involving Bikram Yoga have highlighted some promising health benefits this research will investigate for their application to this problem. The aim of this study is to identify the implications of using Bikram Yoga to help manage stress in the lives of college students.

Literature Review

An electronic search was performed of the following databases: CINAHL, MEDLINE, PUBMED, and EBSCO. Key words that were used include: Bikram yoga, Yoga, Stress, Health effects of stress, College students and stress. This search resulted in over 50 articles, of which 18 were selected based on content that applied to the research at hand. This information was analyzed and synthesized into a comprehensive review of stress management using Bikram yoga.

Yoga. The first mention of Yoga was from 3000 BC in Sanskrit, meaning to yoke or join together (Field, 2011). Yoga combines stretching, strengthening, compression of internal organs, deep breathing, and meditation. Research findings indicate Yoga

reduces the body's response to stress with an improvement in perception of stress, self-confidence, and an overall sense of well-being (Rizzolo et al., 2009).

Ross et al. (2013) demonstrated that Yoga improved interpersonal relationships. This is accomplished in several ways. First, the practitioner of yoga experiences self-transformation and with this comes patience and understanding. Second, they develop a strong community within their fellow practitioners. Next, they develop coping mechanisms for difficult times. Finally, the Yoga takes them on a spiritual journey which develops a sense of oneness with others.

Field (2011) reviewed the physiological and psychological effects of Yoga practice. They found it significantly impacted the patient's health by reducing pain caused by arthritis, migraines, and lower back issues. This is mainly due to the stretching and compression, but it is also thought to change the body's perception of pain, known as the Gate theory. The Gate theory is used to explain other therapies, such as massage or acupuncture, which delays the signal of pain reaching the brain. Patients experiencing chronic pain tend to have some form of depression as well. The Field (2011) study also identified the role Yoga plays in other diseases such as coronary artery disease, hypertension, autoimmune disorders, asthma, diabetes, multiple sclerosis, and cancer. Improved balance, flexibility, strength, and weight loss are positive physical effects of Yoga. Freedom from illness and pain contribute to the individual's sense of well-being which in turn reduces stress. The psychological effects of practicing Yoga include reduced stress, anxiety, depression, and less sleep problems. In the study by Mehta and Sharma (2010), they found various types of Yoga interventions to be effective at treating depression and anxiety.

Bikram Yoga. Bikram yoga, a form of Hatha yoga, was developed by Bikram Choudhury

in the 1970s (Abel, Lloyd, Williams, & Miller, 2012). It is a combination of 26 postures, performed over 90 minutes in a room heated to 105° and with 40% humidity. Guru Bikram Choudhury testifies to its health benefits, as well as numerous practitioners (Choudhury, 2007). Bikram (2007) said he felt it was his "Karmic duty" to bring this type of yoga to America and relieve the "Americans' biggest problem" of unhappiness.

Recently published scientific studies revolving around the specific practice of Bikram yoga have shown a number of physiologic and psychological benefits. In the study conducted by Brian Tracy of Colorado State University, he found a regular 90 minute Bikram session had a similar effect as moderate exercise such as brisk walking (Dodge, 2014). In a previous study conducted by Tracy in 2008, he found that just one session improved balance and strength for people who had never tried Bikram before (Dodge, 2014). Abel et al. (2012) found that long-term Bikram yoga practitioners (> 1 yr) had lower resting heart rates and blood pressure regardless of the frequency per week they attended.

After an eight-week, 20 session Bikram program researchers observed measurable changes in mindfulness, perceived stress, and physical fitness (Hewett, Ransdell, Gao, Petlichkoff, & Lucas, 2011). They concluded that this evidence suggested that Bikram yoga could have a profound effect on stress and chronic stress-related illnesses. Kudesia and Bianchi (2012) demonstrated Bikram practitioners experienced less sleep interruption. Currently, Massachusetts General Hospital (2014) is conducting a study attempting to prove previous hypotheses that Bikram Yoga has profound effects on depression. Principal investigator Maren Nyer, PhD, believes the "regular practice of hot yoga may regulate certain physiologic functions that could contribute to the reversal

of a depressed state. They will assign subjects to an eight-week program and measure the participants' reported depression, in addition to the physiologic markers of depression. Researcher David Mouscholon, MD, PhD hopes that "hot yoga proves to be effective...and safe treatment option for people who have not benefited from regular antidepressants" (Massachusetts General Hospital, 2014).

Methods

All of this promising research regarding Bikram yoga's health effects point in the direction of using the practice for stress management in college students. I am proposing a study that examines in further detail if a regular program of Bikram yoga could show significant impact on self-reported stress and physical manifestations such as pulse, heart rate, blood pressure, inflammation, and/or release of stress hormones such as cortisol.

The sample for this study will be obtained by single-blinding a group of student volunteers into a test group and control group. All volunteers must be currently exercising two to three times a week and free of risk factors such as cardiovascular problems. The test group will be assigned to an eight-week pilot program consisting of 2 classes per week, whereas the control group will conduct their regular exercise routine twice a week. A baseline stress score will be established for each subject using the Perceived Stress Questionnaire (PSQ), a College Student Stress Scale (CSSS), a Stress-related Physical Health Symptoms Checklist, and a Behavioral Risk Factor Surveillance System (Feldt, 2008; Largo-Wight, Peterson, & Chen, 2005; Pedersen, 2012). The Behavioral Risk Factor assesses mental and emotional wellness associated with risky behaviors. Baseline physiologic measures will include initial weight, resting heart rate (HR) and blood

pressure (BP), blood oxygen levels (SpO₂), and stress hormone levels (cortisol).

The intervention for the test group will consist of attending a 90-minute Bikram session twice a week, while the control group will continue their normal daily activities. Classes will be attended at least one day apart to prevent fatigue. The subjects will be asked to refrain from caffeine and alcohol before yoga sessions and drink adequate fluids the day of activity. Test group will have their weight, resting heart rate and blood pressure, SpO₂, and Cortisol measured within 10 minutes of their session. Control group will have their physiological measurements taken twice a week upon completing their exercise regimen. Once a week and again at the end of the intervention, the test and control subjects will be asked to complete another PSQ, CSSS, physical symptom checklist, and Behavioral Risk factor scale.

Anticipated Results

Descriptive statistics of the study will be analyzed for patterns relating to a change in reported and measured symptoms of stress. The following results could be possible:

- a) no change in the test group's stress following the intervention
- b) test group will experience significant decrease in stress
- c) test group will experience significant increase in stress
- d) control group will experience a significant (+/-) change in stress

Conclusion

It is the hope of the researcher that the intervention of Bikram yoga for stress levels measured in college students will be reduced. The compelling nature of the previous literature identified in the review section implicates that stress reduction should occur. The main strength of this study is the generalizability of this intervention to other

vulnerable groups. Since Bikram yoga is standardized and the conditions vary little from one studio to another, the health effects recognized within this study could apply to other individuals. Limitations of this study include the narrow focus of the population

studied and potential for dropout rates in sample. Therefore, further research studies may also extend into application of this intervention in the professional setting for healthcare workers, who also experience high levels of job-related stress.

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