

YOGA PARTICIPANT'S USES OF YOGA AND ITS ASSOCIATIONS TO BODY IMAGE,
SELF-ESTEEM, AND QUALITY OF LIFE

BY

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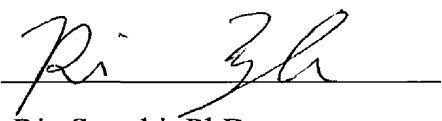

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ANOVA- Analysis of variance (univariate)

ANCOVA- Analysis of covariance

BI- Body Image

CDC- Centers for Disease Control and Prevention

F- F-ratio

IRB- Institutional Review Board

N- Number of participants

p- Statistical significance

PI- Primary Investigator

QOL- Quality of Life

r- Pearson correlation

SD- Standard deviation

SE- Self-esteem

UM-Flint- University of Michigan-Flint campus

WHO- World Health Organization

Abstract

Spiritual and physical activities, including yoga, increase body image, self-esteem, and quality of life. Traditionally, yoga is both a spiritual and a physical activity. The purpose of this study was to determine if there is an association between yoga and body image, self-esteem, and quality of life in individuals who engage in yoga. 180 participants took a cross-sectional online survey, which was conducted through UM-Flint's email and the social media website, Facebook. Furthermore, demographic and any effects were examined. The results demonstrated an association between yoga and body image, self-esteem, and quality of life levels for participants. A majority of the participant's had high body image, self-esteem, and quality of life levels. There were no statistically significant differences between the use of yoga (Physical or Physical and Spiritual) group's body image, self-esteem, or quality of life levels. Future implications for the use of these findings are discussed.

Introduction

Self-esteem, which is defined as an individual's overall evaluation of oneself or how one feels about one's self, is unidirectionally related to body image, referring to an individual's attitudes towards their body especially its appearance (Lobera & Rios, 2011; Cash, 2002; Cash & Pruzinsky, 2002). There are several possible reasons for this connection. The first being that body image is a construct comprised of one's attitudes specifically associated with self-esteem and social functioning among other things (Lobera & Rios, 2011). Secondly, both body image and self-esteem are subjective evaluations that one does about oneself. The evaluation of self-esteem is comprised of different components; a part of this being body/appearance evaluation (Katz, Rodin, & Devins, 1995; Malcarne, Hansdottir, Greenbergs, Clements, Weisman, 1999). Lastly, self-esteem has been found to be associated with body dissatisfaction and as a predictor for degree of body dissatisfaction (Ohring, Graber, & Brooks-Gunn, 2002; Wertheim, Paxton, & Blaney, 2004; Matz, Foster, Faith, & Wadden, 2002). Therefore, low self-esteem leads to high body dissatisfaction and thus a resulting unhealthy body image.

Overall quality of life is made up of many components including physical, psychological, and social wellbeing/health (O'Connell, Lofty, Fleck, Mengech, Eisemann, Elbi, Swartzmann, 1999). The World Health Organization structures quality of life by six domains; physical health, psychological, level of independence, social relationships, environment, and spiritual/religion/personal beliefs (O'Connell, Lofty, Fleck, Mengech, Eisemann, Elbi, Swartzmann, 1999; Kim, Park H., Lee, Park M., 2004). Body image and self-esteem are both associated with the components of overall quality of life such as physical well-being, psychological well-being, and social well-being (Noordenbos, de la Rie, Donker, van Furth, 2007). Thus, an individual who has high self-esteem and a healthy body image will make friends

easier, be more in control of their behaviors, have healthy eating habits, and enjoy life more, therefore having a better quality of life. (Lyness, 2009; Matz, Foster, Faith, & Wadden, 2002). The connection between body image and quality of life has been studied widely and an association has been found constantly between body image and quality of life. For example, a body image quality of life inventory was developed to directly assess and quantify body image's impact on an individual's quality of life (Cash & Fleming, 2002; Cash, Jakatdar, Williams, 2004). Research using this inventory has shown that a better body image quality of life is also related to higher self-esteem (Cash, Jakatdar, Williams, 2004). Also, previous research found that body image dissatisfaction is associated with poorer quality of life and can impair psychological well-being (Vallance, Latner, Gleaves, 2011; Cash & Hrabosky, 2004). Likewise, another previous study found that one's perceived body image is has the strongest impact and is the most powerful predictor of health related quality of life (Haraldstad, Christophersen, Eide, Nativg, Helseth, 2011).

Physical activity has physical, psychological, and social benefits. There is no doubt a large amount of research providing evidence that physical activity has physical and psychological health benefits (Blair, 1994; Chen & Millar, 1999). Physical activity can enhance psychological health by reducing symptoms of stress and depression, improving mood, and making an individual feel strong and competent (Gurian, 2006; Diehl, 2008). Physical activity has positive effects on psychological and social well-being, in younger people specifically physical activity has been associated with positive outcomes such as social integration, personality maturation, and positive self-views (Biddle & Mutrie, 2001; Biddle, Gorely, & Stensel, 2004). Meeting physical activity or exercise goals or challenges, even if they are small can increase an individual's self-confidence. Engaging in physical activity or getting more

physically fit can also make one feel better about their appearance (Diehl, 2008). Physical activity can provide the chance to meet or socialize with others which can help an individual's mood. Especially, participation in regular physical activity can increase women's self-esteem and body image. In a review of 25 randomized controlled trial studies it was found that exercise interventions improved self-esteem in children and young people which compared well with the results found in other meta-analysis performed in the past (Ekeland, E., Heian, F., & Hagen, K.B., 2005; Gruber, 1986). Results from another study suggest that individuals who are physically active are less likely to experience low levels of self-esteem all together (Tremblay, Inman, Willms, 2000). Likewise, a study found that participating in physical activity increases self-esteem among other aspects of life and overall improves quality of life (Deshpande, Nagendra, Nagarathna, 2009).

Additionally, participating in a spiritual activity is also a way to increase body image and self-esteem. Spiritual activities can be studying or pursuing religion, tai chi, yoga, or belief of a higher being and typically involve practicing activities for example reading, prayer, meditation, and inner or self-reflection. Spiritual activities that can be done alone or shared help individuals to focus on the forces greater than themselves (Lyness, 2009). One previous study showed that the spiritual activity of practicing a religion was significantly related to more body satisfaction as well as a healthier body image, and that this relationship was mediated by self-esteem (Kim KH, 2006). Research has also shown that the greater involvement in one's religion is associated with higher self-esteem (Relland & Lauterbach, 2008). Furthermore, previous research found that women with strong spiritual/religious beliefs were significantly more likely to pray, meditate, or read religious/spiritual texts to cope with body image distress and these women found it to be a highly effective way to feel better about their body image (Jacobs-Pilipski, Winzelberg, Wilfley,

Bryson, Taylor, 2005). As previously mentioned, based on the World Health Organization's definition of Quality of Life, other dimensions include psychological and social well-being. Studies have shown greater religious involvement, participation, and higher levels of spiritual perceptions are associated with improved mental health and psychological well-being (Fontana 2003; Hackney and Sanders 2003; Koenig & Larson, 2001; Larson and Larson 2003; Seybold and Hill 2001; Thoresen 1999; Greenfield, Vaillant, and Marks, 2006). Other previous research has found that practicing the spiritual activity of meditation improves quality of life as well as health and well-being (Stelter, 2009). Another study showed that meditation improved mental health (Yunesian, Aslani, Vash, Yazdi, 2008).

Existing programs that work to increase body image, self-esteem, and quality of life are found all across the country. One of the most well-known programs to increase self-esteem is the uniquely ME! self-esteem program created in 2002 by the Girl Scouts of America and Dove (Unilever Company). This program was designed to foster self-esteem in young women because it wanted to address the nationwide problem of low self-esteem in that age group. The program includes activities that teach girls how to uncover their strengths and best attributes. One main way they help girls achieve this goal is by teaching them to be good to their bodies with exercising, and improving their general wellness by trying new things, and having a positive mental attitude and developing healthy coping skills for stress and problems. Research done by the Girl Scout Research Institute found the more physically active girls are the higher their self-esteem and the more satisfied they are with their bodies (body image). It was found that 83% of active girls say that physical activity makes them feel good about themselves (Schoneberg, Salmond, Fleshman, 2006). Thus, participation in a physical activity is imperative to increasing a young woman's self-esteem. A national program used to help college aged women, specifically

women in the Tri Delta national sorority, create and maintain positive and healthy body images, Reflections, has scientific research support to show it successfully achieves its goal. Reflections is a dissonance-based program that uses group discussions and group exercises including a physical activity. Often the Tri Delta women hold group yoga sessions as part of the program. Results show that this model for building a healthier body image works, 53% of women had improved body images still, eight months post program (Stice & Presnell, 2007). A program aimed at increasing the quality of life of young women believes that to achieve this goal they must have significant increases in multiple domains of quality of life. The Girl Talk Foundation has built programs for improving the quality of life of young women in the Charlotte, South Carolina area. Every year the non-profit organization puts the “Loving my Body” fitness camp where girls learn how to live a healthier lifestyle and feel good about themselves. They learn and participate in physical activities like yoga to reach this goal. In turn, the program creators say that girls learn to make healthier choices, have increased self-esteem, and learn yoga and the spoken word (Girl Talk Foundation, 2011). Overall, each one of these programs uses specific socially physical and spiritual activities to reach its goal of increasing body image, self-esteem, and quality of life.

Yoga is both a physical and a spiritual activity and in recent years has been used as a treatment for many physical and mental ailments. Yoga was specifically used in two of the three previously mentioned existing programs to increase body image in the Reflections Program and quality of life in the Girl Talk Foundation program, and would fit nicely into the model and activity types for the uniquely ME! program to increase self-esteem as the previous research has shown. The reason yoga can be used in such programs and gives the resulting improvements in body image, self-esteem, and quality of life is probably because of what the fundamental practice

of yoga means and entails. The practice of yoga is designed to achieve inner peace and wellbeing that links to a person's overall physical and mental health (Boudette, 2006). It is most traditionally thought of as a union occurring between mind, body, and spirit. Yoga creates balance in the body through performing different poses and postures that each have their own physical benefits. The session of yoga usually includes breathing and meditation practices and maybe an inspirational reading in addition to the poses (American Yoga Association, 2006; Goode, 2001). Yoga offers an opportunity for a connection between the physical body and inner experience. Yoga can be helpful in the recovery from an eating disorder. Yoga contributes to the recovery process of eating disorders because it allows the participants to experience their body in a way they never have before, in a positive way. For instance, many patients become much more aware of the body for how it feels rather than how it looks. Likewise, the practice of yoga can help treat eating disorders because it causes changes in one's sense of self and body image by increasing one's self confidence (Boudette, 2006). Research has found that practicing yoga increases self-esteem, and improves and promotes positive health at the physical, mental, social, emotional, and spiritual domains of quality of life, as well as significantly improving physical measures for instance strength, flexibility, balance, as well as cognitive ability and mental health ((Deshpande, Nagendra, Nagarathna, 2009; Oken, Zajdel, Kishiyama, Flegal, Dehen, Haas, Kraemer, Lawrence, Leyva, 2006).

It is apparent that yoga is a both physical and spiritual activity that can increase body image, self-esteem, and quality of life. Research should determine if actual yoga participants show this trend. To discover existing trends several questions need to be investigated. Whether there are difference between those who practice yoga as a spiritual activity and those who practice yoga as a physical activity will be determined. It is expected that there will be some

differences in body images, self-esteem, and quality of life. It is important to see if the uses of yoga have associated effects on body image, self-esteem, and quality of life. The current study seeks to determine if actual yoga participants have healthy body images, high self-esteem and high quality of life levels.

Purpose

To determine if there is an association between yoga and body image, self-esteem, and quality of life in individuals who engage in yoga.

Research Questions:

1. What is the prevalence of yoga participants engaging in yoga as a physical activity and those that engage in yoga as a spiritual activity?
2. Yoga participants prevalence of
 - a. Body image
 - b. Self-esteem
 - c. Quality of life
3. Is there a relationship between self-esteem, body image, and quality of life in those who practice yoga?
4. Are there difference between the degree of self-esteem, body image, and quality of life between those who practice yoga as a physical activity and those who practice yoga as a spiritual activity?

Methodology and Design

Participants

The participants of the study were individuals who engage in yoga. Participants were 18 years and older. The population includes both males and females. In order to participate in the study the subject must have given consent (See Appendix B). The participant marked “yes” they had read and understood the informed consent and thus agreed to participate, otherwise they were automatically sent to the end of the survey. Eligibility questions were answered in order to continuing on with the survey (See Appendix C) The first eligibility question asked whether the subject was at least 18 years of age. If they were not 18 or older than they were immediately be sent to the end of the survey. The next eligibility question asked the participant if they currently engage in yoga or if they have in the past. The participant needed to respond yes to this question or they were immediately sent to the end of the survey. Once the eligibility questions have been met satisfactorily the subject was able to continue answering the rest of the survey questions.

Study Site

This research will be conducted through the UM-Flint’s email system as well as the international public website Facebook (See Appendix G).

Design

A cross-sectional design will be used to determine the use of yoga and its association to body image, self-esteem, and quality of life.

Recruitment

After the study's methodology, design, survey, flyers and invitation letters were approved by the UM-Flint's IRB (See Appendix A), the survey was administered to the prospective participants. An invitation email with an accompanying reference and informational flyer attached was sent out on September 7th, 2011, the day the survey opened online (See Appendix D & F). The email included the purpose of the research study, explained about the informed consent, the eligibility for the study, and also included the PI's email address so that if the subjects have any questions they can easily make contact with the researchers. All emails were sent out to the entire UM-Flint student body. A final invitation email was sent out a week after the first email on September 14th, 2011, to serve as a reminder for those who may have wanted to participate in the survey (See Appendix E). The links in each of the emails allowed the students to access the survey at that time and begin completing the survey. The survey was posted for access by the students for a month after the first invitation email was sent out and then was closed on October, 7th, 2011.

Recruitment of participants was also done through the use of the social networking website of Facebook.com. There are many public groups regarding yoga as well as public Facebook pages for Yoga studios and groups all over the country. Posted was a short statement and the link to the survey on the yoga related groups/companies/studios public Facebook page's "wall" in order to recruit participants who were interested in yoga, assumed by their membership or "liking" of the yoga related Facebook page (See Appendix G). The statement read, "The Time is NOW to Help Researchers By Answering a Quick Survey About YOGA!" and included the link to the survey. Posts on each page were done on September 7th, 2011, the same day the survey was opened and the first invitation email to the UM-Flint's student body was sent. A

week later, on September 14th, 2011, a reminder was posted about participating in the study on each of the Facebook pages, “There is Still Time to Help Researchers by Participating in a Quick Survey About Yoga!” with the survey link. One week later on September 21st, 2011, a last post was made to the Facebook pages as a reminder stating, “Last Chance to Help Researchers By Taking A Quick Survey About YOGA! Survey Closes October 7th, 20110” and the survey link. The date of the survey opening and closing was determined according to when IRB approval was given.

Confidentiality

Although there were not many identifying factors being collected as data, it is still necessary and important to maintain the confidentiality of the participants. Each participant’s responses were given a participant number in order to cross reference their responses to the questions during data analysis. To ensure confidentiality and security, the collected data was kept by Qualtrics. The “View Personal Data” permissions had been turned off for the survey and therefore, nobody could potentially access any of the participant’s information or their IP address. Confidentiality was further maintained after the survey was completed by being saved onto a hard drive only accessed by the PI of the study.

Statistical Analysis

Participants were asked questions about the way they use yoga, their body image, self-esteem, and quality of life. There were also several questions pertaining to demographic characteristics of the participants. A variety of statistical tests such as frequency, mean, percentages, correlation, ANOVA, and ANCOVA were done. Frequency, percentage, and mean were calculated in order to determine the demographic information, the uses of yoga, and the

prevalence of healthy or unhealthy body images, high or low self-esteem, and a poor or high quality of life. ANOVA was used to show relationships or associations between dependent variables (body image, self-esteem, and quality of life) and independent categorical variables, in this case, whether the participant used yoga as a physical activity or as both a physical and a spiritual activity. ANCOVA was done to determine relationships between dependent variables (body image, self-esteem, and quality of life) and their use of yoga, while controlling for the covariates (age, gender, race).

Measures

The survey was designed to have sections of questions tailored to assess the participant's use of yoga, their body image, self-esteem, and quality of life. Additional questions in the survey look further into possible associations and asked about demographic information such as age, gender, and race (See Appendix C).

Use of Yoga

“Use of Yoga” was assessed by one item. Question 7, “In general, in what way do you use yoga?”. Participants are to select one response from the following choices, “As a spiritual activity”, “As a physical activity”, “As both a spiritual and physical activity”, or “In another way”. Relatedly, question 8 asks participants, “In general, how do you do yoga?” with response choices of, “Alone”, “In a class/group setting”, “Both alone and in a class/group setting”, and “In another way”.

Body Image

“Body Image” was assessed by a set of questions that all used the same response scale. These questions came from a valid and reliable BI assessment tool created by the CDC. Question 10 told the participant to pick the one response on the scale that best describes themselves for the following statements, “In general, how do you feel about your appearance?”, “In general, how do you feel about your body size?” and “In general, how do you feel about your body image?”. The response scale’s offered choices were “Poor”, “Fair”, “Good”, “Very Good”, and “Excellent” (CDC, 2005). The participants were to give one response for each of the three statements. Participant’s responses helped develop an assessment of their actual body image (whether it is healthy or unhealthy) and also what their perceived body image is.

Self-Esteem

“Self-esteem” was assessed by a set of questions that allowed the researcher to develop an understanding of the participant’s level of self-esteem. This set of questions and its response scale choices came from a valid and often used self-esteem scale, the Rosenberg Self-Esteem Scale created by the late Morris Rosenberg. Question 11 instructed the participant to respond to which degree they either agree or disagree with the following statements, “I feel that I am a person of worth, at least on an equal plane with others”, “I take a positive attitude towards myself”, “I feel that I have a number of good qualities”. The participant was to select one response for each of the three statements. The response choices included, “Strongly Agree”, “Agree”, “Disagree” and “Strongly Disagree” (Rosenberg, 1989).

Quality of Life

“Quality of Life” was measured in a couple of different ways. Just as body image and self-esteem were measured with a set of statements and a response scale, quality of life too had a set of statements relating to the participants perceived quality of life. Question 12 told the participants to pick the one response for each of the five statements that best describes them. The response scale for this set of statements gave response choices of, “Poor”, “Fair”, “Good”, “Very Good”, and “Excellent”. The five statements the participant chose a response for are, “In general, would you say your health is”, “In general, would you say your coping skills and management of daily problems are”, “In general, would you say your spiritual life is”, “In general, would you say your social life is”, and “In general, your satisfaction with your overall life is”(CDC, 2000). The five previous statements gave the researchers and understanding of the participant’s perceived quality of life. Each of the five statements represents a domain of the WHO’s definition of quality of life to give an overall understanding of the participants quality of life and the questions were adapted from the CDC’s QOL measure.

Demographics

“Demographic variables” were also be measured. Question 5 asked about the participant’s age, where they gave a single response from the choices listed, “18-23”, “24 to 29”, “30 to 35”, “36 to 41”, “42 to 47”, “48 to 53”, “54 to 59”, “60 to 65”, “66 to 71”, “72 to 77”, “78 and older”. These responses were categorized into broader groups, “Young” (18-35 years old), “Middle-age” (36-59 years old), and “Old” (60-78+ years old) for data analysis. Question 6 asked about the participant’s gender, with response choices of either Male or Female. Question 7 asked the participant to choose the response choice that best describes their racial/ethnic

background. The response choices for the question regarding racial/ethnic background were based off the race and ethnicity questions and categories from the United States Government's 2000 and 2010 Censuses. Response choices were, "White", "Black or African American", "American Indian or Alaska Native", "Asian", "Native Hawaiian or other Pacific Islander", "Hispanic, Latino, or Spanish Origin", and "Some Other Race or Multiple Races" (United States Census Bureau, 2000 and 2010). If the participant responded, "Some Other Race or Multiple Races", they were asked to specify and a space was provided to do so. There was no other demographic information, and thus, identifiers collected about the participants of the study.

Results

The survey was closed on October 7th, 2011, a month after it was opened for completion. Once the survey was closed, results were exported to SPSS to be cleaned, calculated, and analyzed. Total responses to the yoga survey were 200. However, the response must meet the eligibility requirements in order to be used in analysis. The eligibility requirements were that the subject be at least 18 years of age, and have engaged in yoga. Out of the 200 responses, 180 met all of the eligibility requirements. Reasons for not meeting the requirements, were subjects not 18 years or older (N=1) and not having engaged in yoga (N=19), and not answering question 3 about engaging in yoga (N=1). Overall, the total number of valid responses used in analysis was 180.

Study Population

The survey data provided demographic information regarding the study participants. Participant demographics are displayed in Table 1. A majority of the participants fell into the “Young” age group (88.5%; N=160). A majority of the participants (87.2%; N=157) were female and the most common racial/ethnic background was White (86.7%; N=156).

Table 1

Descriptive Statistics of Yoga Survey Participants

	N	%
Total	180	
Demographics		
Age Group		
Young	160	88.5
Middle age	19	10.6
Old	2	1.2
Gender (2= female)	157	87.2
Race/Ethnicity		
(1= white)	156	86.7

Research Question Results

1. What is the prevalence of yoga participants engaging in yoga as a physical activity and those that engage in yoga as a spiritual activity?

Data obtained to answer these questions are displayed in Table 2. Participants most commonly responded that they used yoga as both a spiritual and a physical activity (N=86).

Table 2

Yoga Survey Participant's Uses of Yoga

	N	%
In what way do you use yoga?	180	
As both a spiritual and a physical activity	86	47.8
As a physical activity	84	46.7
In another way	8	4.4
As a spiritual activity	2	1.1

Eight participants responded that they used yoga in a way other than spiritually or physically. Examples of the response "In another way" were "physical and mental activity" (N=1); "Full body stretching, maintain and improving health while relaxing and feeling good" (N=1); "Double dating experiences" (N=1); "Participating with my 6th, 7th, 8th grade students in the summer" (N=1); "Physical, spiritual, mental stabilization, and especially relaxation" (N=1); "physical/stress relief" (N=1); "relax" (N=1); and "Stretching" (N=1). Although many of these responses are either quite similar to the response choices of "spiritual", "physical" or "both spiritual and physical", they were not counted as any response choice but "in another way" in analysis.

2. In the study participants (N=180) what is the overall prevalence of
 - a. Self-esteem
 - b. Body image
 - c. Quality of life

Prevalence of BI, SE, and QOL were determined by running the descriptives for each of the set of questions pertaining to the variable. Table 3 displays the data regarding the descriptive for each variable.

Table 3

Descriptives for Body Image, Self-esteem, and Quality Of Life

	N	Mean	SD
Body Image			
Appearance	175	3.25	.894
Size	176	3.02	1.095
Image	175	3.10	1.004
Self-Esteem			
Worth	177	1.50	.595
Attitude	177	1.63	.610
Qualities	177	1.48	.585
Quality of Life			
Health	176	3.62	.840
Psychological	175	3.47	.850
Spiritual	174	3.20	.948
Social	176	3.35	.980
Life Satisfaction	176	3.67	.916

The sums of the participant's responses to the statements in each set of questions pertaining to the variable were calculated. After the sum for each participant's responses were calculated a frequency and descriptive were run for each variable. Table 4 displays the descriptive statistics for the summative responses.

Table 4

Descriptives of Summative Responses

	N	Min	Max	Mean	SD	Median
Body Image	175	3	15	9.37	2.819	9
Self-Esteem	177	3	12	4.60	1.575	6.5
Quality of Life	174	8	25	17.34	3.36	16.5

It is important to keep in mind that higher summative scores for BI and QOL are better and lower summative scores for SE are better. The results show that for body image a majority of summative scores for participants fell at or above the median (N=119) showing body images for this group of yoga participants are higher or generally more towards a healthy level. The same is true for SE. A majority of participants summative SE scores fell below the median score (N=169), as a lower score for SE means a generally higher level of self-esteem. QOL followed the same trend, whereas a majority of the sample fell above the median (N=114), showing higher summative scores and thus, a generally higher level of QOL.

3. What is the association between self-esteem, body image, and quality of life in those who practice yoga?

Pearson correlation tests were run to determine whether there are relationships between BI, SE, and QOL. There was a statistically significant correlation between BI and SE, ($r = -.278$, $N=175$, $p = 0.00$). There was a statistically significant correlation between BI and QOL, ($r = .483$, $N=175$, $p=.000$). There was also a statistically significant correlation between SE and QOL, ($r = -.419$, $N=174$, $p=.000$). These results show that there is a significant relationship between the three variables, whereas, having a better (healthier) BI is related to having higher SE, and a higher QOL.

4. What is the difference between the degree of self-esteem, body image, and quality of life between those who practice yoga as a physical activity and those who practice yoga as a spiritual activity?

An ANOVA was used to determine if there were any statistically significant differences between those who practice yoga as a physical activity and those who practice as a spiritual activity. Since such a low number of subjects responded that they use yoga as a spiritual activity ($N=2$), there is not enough to include this group in analysis. Therefore, researchers used those who used yoga as a physical activity as one group and those who used yoga as both a physical and spiritual activity as the other group for analysis. For all three variables, there were no statistically significant differences found between groups [BI: $F(1, 166) = 1.918$, $p = .168$; SE: $F(1, 167) = .027$, $p = .869$; QOL: $F(1, 163) = .232$, $p = .631$].

After doing multiple ANCOVA, controlling for covariates (age, gender, race), there were still no statistically significant differences between those who did yoga as a physical activity and

those who did yoga as both a physical and a spiritual activity for BI, SE, and QOL, $F(4, 162) = 1.542, p = .193$ and $F(4, 163) = .342, p = .849$ and $F(4, 162) = .877, p = .479$, respectively.

Discussion

Research has shown that yoga has many health benefits, both physically and mentally, such as increased muscle strength, decreased body fat, and increased self-esteem and quality of life (Courneya, Segai, Mackey, Gelmon, Reid, Friedenreich, Ladha, Proulx, Vallance, Lane, McKenzie, 2007; Moadel, Shah, Wylie-Rosett, Harris, Patel, Hall, Sparano, 2007). The purpose of this study was to determine if there is an association between yoga and body image, self-esteem, and quality of life in individuals who engage in yoga. Additionally, since yoga is traditionally seen as a spiritual and a physical activity this study was seeking to determine if the use of yoga had an association with or an effect on body image, self-esteem, and quality of life.

Expected findings

Similar to previous research, yoga participants have healthy body images, high self-esteem, and high quality of life (Daubenmier, 2005; Courneya, Segai, Mackey, Gelmon, Reid, Friedenreich, Ladha, Proulx, Vallance, Lane, McKenzie, 2007; Moadel, Shah, Wylie-Rosett, Harris, Patel, Hall, Sparano, 2007). A majority of the participants scores for BI, SE, and QOL, were higher (or lower for SE) than the median score as the means of each variable showed. This shows that the participants had high levels of BI, SE, and QOL (defined as higher- for BI and QOL, or lower- for SE, numbers on the measures and in regards to the means). The hypothesis regarding there being an association between body image, self-esteem, and quality of life in yoga participants was supported with the results of the Pearson correlation tests. This relation was supported in previous research (Olivardia, Pope, Borowiecki, Cohane, 2004; Abell, Richards, Maryse, 1996, Beets & Mitchell, 2010).

Unexpected findings

In answering research questions 1 and 4, the results were unexpected. In this study, there were a very low number of participants doing yoga as a spiritual activity. Almost all of the participants did yoga as a physical or as both a physical and a spiritual activity. Previous research has determined that individuals who engage in yoga have either psychospiritual (spiritual) reasons for practicing yoga or physical reasons for practicing yoga (Dittman & Freedman, 2009). In their sample, more individuals did yoga for spiritual reasons than for physical reasons. Likewise, those who were more spiritual had higher scores in the body image and satisfaction measures and those who practiced for physical reasons was less satisfied with their body (Dittman & Freedman, 2009). Therefore, further investigation is needed to determine whether it is the spiritual or physical aspect of yoga, or some other factors, that produce the higher BI, SE, and QOL levels.

Perhaps, an individual's use of yoga does not influence the levels of BI, SE, and QOL but rather by practicing yoga the benefits are in turn the heightened levels. On the other hand, an interesting aspect about the groups in the present study is that they both used yoga in a physical way (groups: physical or both physical and spiritual). Since physical activity is known to improve an individual's BI, SE, and QOL, it is possible that the physical use and aspects of yoga are in fact what are yielding the higher levels (Courneya, Segai, Mackey, Gelmon, Reid, Friedenreich, Ladha, Proulx, Vallance, Lane, McKenzie, 2007; Moadel, Shah, Wylie-Rosett, Harris, Patel, Hall, Sparano, 2007).

Strengths

This study demonstrated a new and novel idea in yoga research. No other study has compared the specific variables BI, SE, and QOL of yoga participants and their uses of yoga. It was the first of its kind to be conducted through UM-Flint's email and Facebook. Additionally, this study included a multidimensional evaluation of each variable that gave a valid appraisal of each participant's BI, SE, and QOL because it was based off of preexisting inventories such as the Rosenberg SE Scale, and the CDC's measures for BI and QOL.

Limitations

Despite the useful results of this study, understanding the limitations will ensure full comprehension of the findings. The sample demonstrates potentially weaknesses in both its size and demographics. A larger sample should be used to make the results more generalizable to the population. Likewise, 87.2% of the sample was female and 88.5% of the sample was in the young age group and 86.7% was white. This poses a weakness because the results are generalizable and relevant only to young white females.

Unfortunately this study only collected quantitative data. Perhaps it is important to collect qualitative data in regards to individual's uses of yoga and what they find the benefits of yoga to be. Asking open-ended questions about why one does yoga and the reasons why they think it is beneficial could lend support to the hypotheses and guide future research on the topic.

Another limitation of the study is that geographical data was not collected from the subjects. Having used Facebook, in particular, to collect data, the study participants could have been located internationally. The individual's geographic location could not only influence their levels of BI, SE, and QOL, but also in the way they use yoga, how they practice it, or the kind of

yoga that they do. Geographically differences could have affected the results and future research should take this into consideration.

Implications for the Future

The findings from this study could influence future yoga participation in the population. In particular, the findings from this study could influence the participation in yoga for those who have or are at risk for low BI, SE, and QOL. For example, eating disorder patients are a research-proved group to have low levels of BI, SE, and QOL and therefore yoga treatment programs should be targeted at and tailored for this population. This study's findings can also be used to improve preexisting yoga programs. It may be important for these programs to focus more on the physical aspects of yoga in order to improve BI, SE, and QOL and less on the spiritual aspects.

Research on yoga is still a new field. Future research can use this study's findings as a basis for future studies. Future research should examine whether there is a relationship between how often one practices yoga and their BI, SE, and QOL.

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Appendices

Appendix A: IRB Approval

To: Kristin Vedder

From: Marianne McGrath

Cc: Kristin Vedder

Rie Suzuki

Subject: Notice of Exemption for [HUM00051018]

SUBMISSION INFORMATION:

Title: Yoga Participant's Uses of Yoga and its Associations to Body Image, Self-esteem, and Quality of Life

Full Study Title (if applicable):

Study eResearch ID: HUM00051018

Date of this Notification from IRB: 8/29/2011

Date of IRB Exempt Determination: 8/29/2011

UM Federalwide Assurance: FWA00004969 expiring on 11/17/2011

OHRP IRB Registration Number(s): IRB00000248

IRB EXEMPTION STATUS:

The IRB Flint has reviewed the study referenced above and determined that, as currently described, it is exempt from ongoing IRB review, per the following federal exemption category:

EXEMPTION #2 of the 45 CFR 46.101.(b):

Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless: (i) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and (ii) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.

Note that the study is considered exempt as long as any changes to the use of human subjects (including their data) remain within the scope of the exemption category above. Any proposed changes that may

exceed the scope of this category, or the approval conditions of any other non-IRB reviewing committees, must be submitted as an amendment through eResearch.

Although an exemption determination eliminates the need for ongoing IRB review and approval, you still have an obligation to understand and abide by generally accepted principles of responsible and ethical conduct of research. Examples of these principles can be found in the Belmont Report as well as in guidance from professional societies and scientific organizations.

SUBMITTING AMENDMENTS VIA eRESEARCH:

You can access the online forms for amendments in the eResearch workspace for this exempt study, referenced above.

ACCESSING EXEMPT STUDIES IN eRESEARCH:

Click the "Exempt and Not Regulated" tab in your eResearch home workspace to access this exempt study.

Marianne McGrath

Chair, IRB Flint

Appendix B: Study Consent

Consent to Participate in a Research Study-Online Survey

Welcome to the YOGA SURVEY (HUM00051018)

Kristin Vedder, researcher and Health Education Graduate student of the University of Michigan-Flint , Department of Public Health & Health Sciences invite you to be a part of a research study that looks at how individuals who engage in yoga use of yoga and its associated effects on health and well-being. The purpose of the study is to determine the associations between yoga and body image, self-esteem, and quality of life. We are asking you to participate if you engage or have ever engaged in yoga.

If you agree to be part of the research study, you will be asked to complete an online survey about yoga and that will include some questions regarding yourself. We expect this survey to take 5 to 10 minutes to complete. Some of the survey questions ask about your health, feelings and other aspects of your life and may be distressing to you as you think about your experiences. It is important for you to know that your responses will remain confidential, your identity will not be collected, and you are not being judged regarding your responses. Please respond honestly to the best of your ability for each survey question.

While you may not receive any direct benefit for participating, we hope that this study will contribute to the development of programs that include yoga and programs to increase body image, self-esteem, and quality of life, as well as improvement of treatment programs for associated health issues. This study is the basis for further future research.

Researchers will not be able to link your survey responses to you. The survey software has been set so that no identifying information is captured. We may publish the results of this study, but will not include any information that would identify you.

Participating in this study is completely voluntary. Even if you decide to participate now, you may change your mind and stop at any time. You may choose to not answer an individual question or you may skip any section of the survey. Simply click “>>” at the bottom of the survey page to move to the next question. You will not be penalized if you choose not to participate.

If you have questions about this research study, you can contact the Principle Investigator, Kristin Vedder, at kevedder@umflint.edu or (810) 845-6610. If you are unable to contact Kristin Vedder you may also contact Rie Suzuki, Ph.D., University of Michigan Flint, Department of Public Health & Health Sciences, 2102 William S. White Building, Flint, MI 48502-1950, (810) 762-3172, or rsuzuki@umflint.edu.

If you have questions about your rights as a research participant, please contact the UM Flint Institutional Review Board, 303 E Kearsley, 530 French Hall, Flint, MI 48502-1950, (810) 762-3384, irb-flint@umflint.edu.

By choosing “Yes”, as your answer to the first question on the survey, you agree that you have read and understood this informed consent and that you are consenting to participate in this research survey.

If you do not wish to participate, select “No” as your answer to the first question on the survey and you will be exited from the survey.

IRB: <IRB>

IRB Number: HUM00051018

Document Approved on: <approval date>

Appendix C: Survey

YOGA SURVEY

Q1



Consent to Participate in a Research Study-Online Survey

Welcome to the YOGA SURVEY (HUM00051018)

Kristin Vedder, researcher and Health Education Graduate student of the University of Michigan-Flint, Department of Public Health & Health Sciences invite you to be a part of a research study that looks at how individuals who engage in yoga use of yoga and its associated effects on health and well-being. The purpose of the study is to determine the associations between yoga and body image, self-esteem, and quality of life. We are asking you to participate if you engage or have ever engaged in yoga.

If you agree to be part of the research study, you will be asked to complete an online survey about yoga and that will include some questions regarding yourself. We expect this survey to take 5 to 10 minutes to complete. Some of the survey questions ask about your health, feelings and other aspects of your life and may be distressing to you as you think about your experiences. It is important for you to know that your responses will remain confidential, your identity will not be collected, and you are not being judged regarding your responses. Please respond honestly to the best of your ability for each survey question.

While you may not receive any direct benefit for participating, we hope that this study will contribute to the development of programs that include yoga and programs to increase body image, self-esteem, and quality of life, as well as improvement of treatment programs for associated health issues. This study is the basis for further future research.

Researchers will not be able to link your survey responses to you. The survey software has been set so that no identifying information is captured. We may publish the results of this study, but will not include any information that would identify you.

Participating in this study is completely voluntary. Even if you decide to participate now, you may change your mind and stop at any time. You may choose to not answer an individual question or you may skip any section of the survey. Simply click ">>" at the bottom of the survey page to move to the next question. You will not be penalized if you choose not to participate.

If you have questions about this research study, you can contact the Principle Investigator, Kristin Vedder, at kevedder@umflint.edu or (810) 845-6610. If you are unable to contact Kristin Vedder you may also contact Rie Suzuki, Ph.D., University of Michigan Flint, Department of Public Health & Health Sciences, 2102 William S. White Building, Flint, MI 48502-1950, (810) 762-3172, or rsuzuki@umflint.edu.

If you have questions about your rights as a research participant, please contact the UM Flint Institutional Review Board, 303 E Kearsley, 530 French Hall, Flint, MI 48502-1950, (810) 762-3384, irb-flint@umflint.edu.

By choosing "Yes", as your answer to the first question on the survey, you agree that you have read and understood this informed consent and that you are consenting to participate in this research survey.

If you do not wish to participate, select "No" as your answer to the first question on the survey and you will be exited from the survey.

Have you read and understood the informed consent and thus give your consent to participate in this study?

- Yes, I agree to participate.
- No, I do not wish to participate.

Q2



Are you 18 years old or older?

- Yes
- No

Q3

Do you currently do yoga or have you done yoga in the past?

- Yes
- No

Q4

What is your age?

- 18 to 23 years old
- 24 to 29 years old
- 30 to 35 years old
- 36 to 41 years old
- 42 to 47 years old
- 48 to 53 years old
- 54 to 59 years old
- 60 to 65 years old
- 66 to 71 years old
- 72 to 77 years old
- 78 years and older

Q5

What is your gender?

- Male
- Female

Q6 How would you describe your racial/ethnic background?

- White
- Black or African American
- American Indian or Alaska Native
- Asian
- Native Hawaiian or other Pacific Islander
- Hispanic, Latino, or Spanish origin
- Some Other Race or Multiple Races (please specify) _____

Q7

In general, in what way do you use yoga?

- As a spiritual activity
- As a physical activity
- As both a spiritual and a physical activity
- In another way (please specify) _____

Q8

In general, how do you do yoga?

- Alone
- In a class/group setting
- Both alone and in a class/group setting
- In another way (please specify) _____

Remember to mark a response for each of the statements in the questions below:

Q9

How often do you engage in each of the following five activities:

	Never	Once or Twice a Week	Every Other Week	Every Three Weeks	Once a Month	Once every Two or Three Months
Group Support Program	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Yoga	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Meditation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Balanced Fitness Program	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Spirituality or Prayer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q10

Pick the one response that best describes yourself for each of the three statements

	Poor	Fair	Good	Very Good	Excellent
In general, how do you feel about your appearance?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In general, how do you feel about your body size?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In general, how do you feel about your body image?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q11

Respond to which degree you agree or disagree with each of the following three statements:

Strongly Agree Agree Disagree Strongly Disagree

	Strongly Agree	Agree	Disagree	Strongly Disagree
I feel that I'm a person of worth, at least on an equal plane with others.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I take a positive attitude towards myself.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel that I have a number of good qualities.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q12 [┌]

Pick the one response that best describes yourself for each of the five statements:

	Poor	Fair	Good	Very Good	Excellent
In general, would you say your health is	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In general, would you say that your coping skills and management of daily problems are	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In general, would you say your spiritual life is	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In general, would you say your social life is	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In general, your satisfaction with your overall life is	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Appendix D: Student Survey Email

To: All UM-Flint Students

Subject: Today is the Day to Help Researchers by Filling Out a Quick Survey About Yoga!

Do you do yoga?

Starting **TODAY** you have the opportunity to participate in a quick online research study survey
FOLLOW THIS LINK TO TAKE THE SURVEY:

http://umflint.qualtrics.com/SE/?SID=SV_3mcJwEPNQL1cju4

Hello All, my name is Kristin Vedder and I am a graduate student in the Health Education program here at the University of Michigan-Flint. I am inviting you to be a part of a research study on yoga. The purpose of the study is to see how college students use yoga and its associations with health and well-being. You are being asked to participate if you currently do yoga or have in the past.

Who: Anyone over the age of 18 and who has engaged in yoga

What: A quick online survey about yoga

Where: Click the link above or copy and paste the following link into your web browser:

http://umflint.qualtrics.com/SE/?SID=SV_3mcJwEPNQL1cju4

When: Right NOW!! Click on the link to begin completing the survey

Why: To help researchers understand the health effects associated with participating in yoga

The survey is now open for completion! Read the consent before you begin the survey. Give yourself 10 minutes to complete the survey. The survey will ask you questions about your participation in yoga and some general questions about yourself. You will not be asked to identify yourself on the survey. Your participation in this research study is completely voluntary. If you choose not to participate in this research study you will not have any negative academic or social consequences. There is a reference flyer attached to this email.

If you have any questions or concerns feel free to contact me at kevedder@umflint.edu Thank you for your help with this research study!

Kristin Vedder

Appendix E: Final Student Email

To: All UM Flint Students

Subject: There's Still a Chance to Help Researchers by Filling Out a Quick Survey About Yoga!

Do you do yoga?

You still have a week left for the opportunity to participate in a quick online research study survey. The survey closes **October 7th, 2011**

FOLLOW THIS LINK TO TAKE THE SURVEY:

http://umflint.qualtrics.com/SE/?SID=SV_3mcJwEPNQL1cju4

Hello All, my name is Kristin Vedder and I am a graduate student in the Health Education program here at the University of Michigan-Flint. I am inviting you to be a part of a research study on yoga. The purpose of the study is to see how college students use yoga and its associations with health and well-being. You are being asked to participate if you currently do yoga or have in the past.

Who: Anyone over the age of 18 and who has engaged in yoga

What: A quick online survey about yoga

Where: Click the link above or copy and paste the following link into your web browser:

http://umflint.qualtrics.com/SE/?SID=SV_3mcJwEPNQL1cju4

When: Right NOW!! Click on the link to begin completing the survey

Why: To help researchers understand the health effects associated with participating in yoga

The survey is now open for completion! Read the consent before you begin the survey. Give yourself 10 minutes to complete the survey. The survey will ask you questions about your participation in yoga and some general questions about yourself. You will not be asked to identify yourself on the survey. Your participation in this research study is completely voluntary. If you choose not to participate in this research study you will not have any negative academic or social consequences. There is a reference flyer attached to this email.

If you have any questions or concerns feel free to contact me at kevedder@umflint.edu Thank you for your help with this research study!

Kristin Vedder

Appendix F: Student Email Flyer

Do you do
YOGA?



**PARTICIPATE
IN AN ONLINE
RESEARCH
STUDY
Going on NOW!**

The University of Michigan-Flint • Public Health & Health Sciences • IRB# HUM00051018

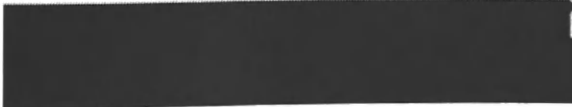
**To start the
survey...**

Click on the link
included in your email!

Join Us! Participate in this
research study to
help us learn about
the uses of yoga and
its association to
health and well-
being.

For More
Information
Please Contact:

Kristin Vedder, Principle
Investigator
kevedder@umflint.edu



Appendix F: Facebook posts

www.facebook.com

The Time is NOW to Help Researchers By Answering a Quick Survey About YOGA!

Click on the link to take the survey:

http://umflint.qualtrics.com/SE/?SID=SV_3mcfwEPNQL1cju4

Posted to public pages:

Yoga (community) <http://www.facebook.com/#!/CostaRicaYoga>

Yoga (Sport/ Community Page) <http://www.facebook.com/pages/Yoga/103746256330957>

Yoga (Sports/Recreation/Activities) <http://www.facebook.com/doyoga>

Yoga (Sport) <http://www.facebook.com/pages/Yoga/111987425484572>

Yoga International (Magazine) <http://www.facebook.com/yimag>

Yoga Journal (Magazine) <http://www.facebook.com/yogajournal>

Yogaglo (Health/Wellness) <http://www.facebook.com/#!/yogaglo>

Bikram Yoga (Page) <http://www.facebook.com/bikramyoga>