

Research Article

Exploring Strategies to Enhance Self-Efficacy about Starting a Yoga Practice

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Yoga demonstrates promising effects in the treatment of a range of mental and physical health symptoms and is cost-effective. However, its rise in popularity has attracted a specific demographic: practitioners tend to be female, white, and well-educated. The study explored the impact of commercial versus educational representations of yoga in the context of a lecture on building a yoga practice.

The study used a randomized experimental design and measures of self-compassion, self-efficacy, and social physique anxiety to assess changes from baseline to post-stimulus and then post-lecture. Participants were 18 years or older, students of Pacific University, and English speakers. Participants were randomly assigned to control (exposure to a handout of the eight limbs of yoga) or experimental conditions (exposure to a copy of *Yoga Journal*). Exposure to conditions was followed by a brief presentation on beginning a yoga practice.

ANCOVAs were calculated (using gender as a covariate) to analyze findings (n=52). Significant improvements emerged related to self-efficacy. For men, increase in self-efficacy was greater with exposure to an educational handout. Additionally, ANOVAs were calculated to examine the overall impact of the lecture on self-efficacy and self-compassion (n=81). Significant changes emerged over time for self-efficacy but not self-compassion.

Findings demonstrate that brief interventions can improve self-efficacy about starting a yoga practice. Degree of improvement was dependent on the materials individuals were exposed to. Effectiveness of materials differed for men versus women. Men were found to be more negatively affected by stereotypic images of yoga.

Keywords: Yoga; Media; Self-efficacy; Gender

Introduction

In a recent National Institutes of Health survey, yoga was found to be one of the ten most commonly used complementary and alternative practices [1]. There is ample research to support the use of yoga for a range of mental and physical health problems [2], it is cost-effective, and is growing in accessibility. However, while yoga usage has increased within the United States, it has done so mostly within a very narrow demographic. Specifically, yoga users tend to be female, white, and well-educated [3-5]. Some of the most common barriers to yoga practice are fear of injury, lack of flexibility, time commitment, cost, and difficulty connecting to a teacher [4-6]. These barriers have been found to have a particularly adverse effect on male practitioners and individuals contemplating beginning a personal yoga practice [7].

Recent research has attempted to identify how different motivators may influence how practitioners approach yoga and what they receive from their practice. In a study on body-awareness and spiritual beliefs in yoga practitioners, results indicated that female participants who pursued their practice for psycho spiritual reasons, as opposed to physical reasons, were more likely to rate their practice as self-guided and spend more time practicing both at home and with

others [8]. Intentions for practice may thus influence the benefits received from this practice.

As weight loss and physical fitness continue to be ranked among the most common motivators for practice [7], researchers are becoming increasingly interested in the potential harm that differing perceptions of practice may have upon practitioners. Although past research suggests that yoga benefits practitioners with body image and disordered eating issues [9-11] research investigating the impact of yoga and Pilates on body image found different outcomes between genders [12]. Specifically, yoga/Pilates did not have a significant impact upon disordered and unhealthy eating behaviors in women, but they did negatively affect men. Research has also shown higher rates of self-reported problems with eating disorders amongst female yoga practitioners [8]. These discrepancies are cause for concern for health professionals interested in referring patients to this practice. They also prompt questions about how potential yoga practitioners are affected by information and media images they encounter about yoga.

Due to the success of initial findings in the ability of yoga to increase wellbeing and reduce stress, yoga researchers have suggested that it may be beneficial for college and university students to use

this ancient practice to help them cope with the demands of their educational settings [13-15]. College and university students are more likely than other similarly-aged populations to experience depression, attempt suicide, establish poor sleeping habits, consume harmful or illegal substances, smoke tobacco, and gain weight [16]. Additionally, they report more stress, a primary inhibitor of academic performance [16-18] and a leading cause of dropout rates [19]. Given the documented success of yoga in ameliorating these symptoms common to college students [2,14,20], yoga may be an effective coping skill for this population [14,21]. For example, recent yoga surveys have found that yoga practitioners have higher rates of self-efficacy, lower rates of perceived stress, and are more inclined to maintain their health and wellbeing compared to the general population [3,20,22,23].

Despite this research and the growing accessibility of yoga classes within university settings, the practice continues to attract very narrow demographics within student populations, leaving out many students who could benefit greatly from the practice [7]. The most recent Yoga in America survey [24] revealed that 104.4 million Americans were interested in beginning a yoga practice but unsure of how to. Of this 104.4 million, 40% were under the age of 34 years. Furthermore, this survey reported that 44% of yoga practitioners begin practicing between the ages of 25-44 years. This healthful practice may most effectively be initiated and sustained if it is begun at a young age. Thus, it may be helpful to disseminate information about yoga on college and university campuses to broaden students' perspectives about yoga and remove real and perceived barriers to practice.

Although yoga's increasing presence in the media has coincided with increased use [20], it is unclear if media representations of the practice contribute to the narrow demographics of yoga practitioners. Current media portrayal of yoga is one-sided (favoring images of slender, non-diverse female practitioners) and often tied to materialism [25]. Within the yoga market, a 27 billion dollar industry in the United States alone, yoga practitioners spend the most money on instruction; however, revenue for clothing and equipment is growing twice as fast [24].

Research into materialism's impact on self-concept has pointed to a number of negative consequences for individuals. For example, high materialism has been shown to decrease self-esteem, self-efficacy, and self-concept while increasing self-monitoring behaviors [26]. Research into social physique anxiety found that increases in this state anxiety correlated with decreases in self-efficacy about starting a physical exercise practice in a sample of undergraduate women [27]. As materialistic aspects of yoga and yoga products are becoming increasingly prevalent in the media, it is likely that media representations of yoga have an effect on who contemplates or engages in a yoga practice. Research has demonstrated that five minutes of exposure to images of "thin" women can have a negative impact on female viewers [28]. Additionally, undergraduate populations have been found to be more susceptible to the influence of media images on their self-concept compared to other adult populations [26].

However, the impact of materialistic images of yoga upon practitioners and those contemplating practice remains unclear. No research to date has explored the impact of commercial representations

of the practice compared to educational representations of the practice. It is possible that the growing presence of yoga within the media has influenced its popularity and, in some cases, motivated many individuals, who would otherwise not practice, to explore yoga's benefits. As yoga research aims to broaden the availability of this practice to a wider audience, it is imperative to examine how media representations of yoga practice may influence potential practitioners' perceptions of what yoga is and who can practice.

To find effective ways of introducing students to a beneficial yoga practice, the current study sought to answer two important questions using a student sample drawn from a small private Northwestern University: 1) Can a brief 30-minute presentation about yoga as a comprehensive self-care practice affect students' self-reported self-efficacy about engaging in a personal yoga practice; and does gender play a role? 2) Do portrayals of yoga in popular media compared to classic yoga texts affect students' self-reported self-efficacy about yoga practice, body image, and self-compassion differently; and does gender play a role?

Method

Participants

Participants for this study had to be 18 years or older, current students of Pacific University (undergraduate or graduate campuses) and fluent English speakers. A G*Power ANCOVA calculation yielded a total sample size of 46 (23 for each group) for the minimum of a small but significant effect using Cohen's $d=0.4$. Recruitment ended once this minimum was met. Recruitment and administration of the study was held on the undergraduate and graduate campuses to optimize recruitment. All of the participants met the inclusion criteria for the study. A total of 81 participants took part in the study, however, gender and group assignment were not analyzed for 29 of the participants due to an administration error. Therefore, a total sample of 81 remained for analyses on the impact of the presentation and a total sample size of 52 remained for all other analyses. In this sample of 52, 34 participants self-identified as female, 13 identified as male, and five chose not to identify their gender (65% female, 25% male, 9.6% did not identify). Groups ranged in size from one to 29 participants. Due to the small sample size, ethnicity, race, and age were not collected to maintain participants' anonymity. However, the university's graduate and undergraduate ethnic, gender, and age distributions are as follows: The undergraduate campus identifies as 1% American Indian or Alaskan Native, 15% Asian/Native Hawaiian/Pacific Islander, 1% Black or African American, 9% Hispanic/Latino, 57% White, 9% multiracial, and the average age is 20 years. The College of Health Professions is 72% female and 28% male, 64% White, 9% unknown, 1% multiracial, 1% non-resident of the United States, 5% Hispanic, 1% Pacific Islander, and 18% Asian, with an average age of 28 years.

Instruments

Participants were asked to complete three rounds of measures (Table 1) to assess self-efficacy, self-compassion, and social physique anxiety. All measures were implemented to assess different areas of concern for practitioners interested in establishing their own yoga practice.

Self-efficacy and motivation for change questionnaire:

Table 1: Administration of measures.

	Arrival	15 min. pause before lecture	Pre-lecture	Post-lecture
Control	1 st administration of measures (self-efficacy, SCS-SF and SPAS) (n=32)	eights limbs handouts are passed around	2 nd administration of measures (self-efficacy, SCS-SF and SPAS) (n=32)	3 rd administration (self-efficacy and SCS-SF) (n=32)
Intervention	1 st administration of measures (self-efficacy, SCS-SF and SPAS) (n=20)	<i>Yoga Journals</i> are passed around	2 nd administration of measures (self-efficacy, SCS-SF and SPAS) (n=20)	3 rd administration (self-efficacy and SCS-SF) (n=19, 1 participant was excluded)

This 6-item questionnaire asked participants about their stress-management practices. It was developed based on a motivation-to-change model and asks participants to rate their self-efficacy in starting and maintaining a yoga practice. Two items in the measure were of particular interest to assess how participants perceived their yoga practice. The first item was “How important is it for you to engage in a regular yoga practice?” Participants could respond on a scale from 1 (*Extremely unimportant*) to 10 (*Extremely important*). The second item was “How confident are you in your ability to engage in a regular yoga practice?” Similarly, participants could respond on a scale from 1 (*Extremely not confident*) to 10 (*Extremely confident*). This measure has previously been used in yoga intervention studies and demonstrated changes in confidence about practice over time [29]. Similar 6-item situational confidence scales have been used to measure self-efficacy in starting and maintaining an exercise regimen and demonstrated an internal consistency of $\alpha = 0.88$ and a CFI of 0.97 [30].

Social physique anxiety: This 12-item self-report questionnaire assesses body image in personal and social situations [31]. The scale has internal consistency reliability of .90 and the test-retest reliability is .82 [32]. For purposes of this study, one item was eliminated due to its negative wording. Previous research on this measure has endorsed the removal of negatively phrased items and demonstrated that reliability remained intact [33]. Respondents rate each of the 11 items on a 1 (*not at all characteristic of me*) to 5 (*extremely characteristic of me*) scale to assess how they perceive their body fat, muscular tone, and general body proportions in relation to others. A total score is obtained by summing all responses.

Self-compassion scale, short form: This 12-item questionnaire asks participants to rate how they treat themselves during challenging circumstances. Questions are rated on a 1 (*almost never*) to 5 (*almost always*) scale. Six subscales are calculated to measure levels of self-kindness, self-judgment, common humanity, isolation, mindfulness, and over-identification with challenges. A total score is derived from the mean of the six subscales. The SCS-SF has adequate internal consistency (Cronbach’s alpha 0.86) and a strong correlation ($r > 0.97$) with the long form SCS, which has 26-items [34].

Procedure

After approval was obtained from the Institutional Review Board of the university, recruitment began in April 2015 and ended in June 2016. Flyers were distributed in classrooms and *via* e-mail on the undergraduate and graduate campuses. The study was advertised as a research project on barriers and motivators to developing a self-practice of yoga. The study also announced the inclusion of a 30-minute presentation that would outline how to develop a self-practice of yoga. Treatment and control group presentations were held on separate days. Participants self-selected to a presentation

date; dates were then randomly assigned either to the experimental or control condition based on a random drawing prior just before the administration of the presentation by the primary investigator. The treatment group was exposed to the April/May 2015 edition of *Yoga Journal* [35], a popular yoga publication with 12 million subscribers (see www.yogajournal.com for samples). The control group was exposed to hard-copy descriptions of the eight limbs of yoga obtained from a teacher’s manual to provide information about yogic philosophy (see <http://georgewatts.org/2013/10/18/free-yoga-class-handouts-8-limbs-of-yoga/> [36] for a sample). *Yoga Journal* was chosen to represent popular media presentations of the practice as opposed to the teacher’s manual handout of the eight limbs that was chosen for its emphasis on educational content. These two conditions were meant to simulate potential materials that health professionals and yoga professionals may refer clients to.

All procedures for both groups were identical with the single exception of the above-named stimulus material. For both groups, upon arrival, participants were given an informed consent form and the opportunity to ask questions about study participation. If they provided consent, they were asked to complete the first round of measures. An announcement prior to the first administration of the measures was made to discourage the use of electronics and interaction with peers during the course of the study. Once the forms were completed and the announcement was made, participants were asked to read the stimulus that was given to them as introductory material in preparation for the lecture. For the treatment group, *Yoga Journals* were handed out to each participant; control group participants were given the handout about the eight limbs of yoga. A researcher asked participants to review the handouts in preparation for the lecture and questions were addressed as necessary. After 15 minutes, the handouts were collected again and the second round of measures was administered. Upon completion of the second round of measures, participants were given a presentation about how to build a personal yoga practice. The 30-minute informative presentation outlined how to develop a self-practice of yoga that integrates the eight limbs of yogic principles. Afterwards, participants completed the final round of measures.

Data analysis

Initial analyses revealed that all variables approximated a normal distribution. Only three data points were determined to be missing at random. Values were imputed using average scores from that measure for that individual participant. One participant did not complete all three data collection points and was subsequently deleted from the data set, leaving a final sample size of 80. As explained above, information on participants’ gender was only available for 52 participants. As a result, analyses for the overall impact of the presentation were calculated twice – once with all 80 participants and

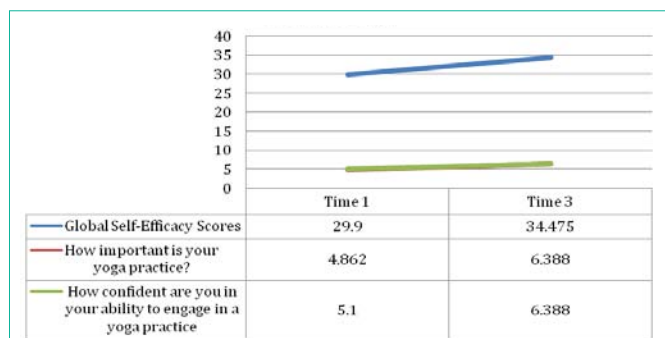


Table 2: Self-Efficacy analyses related to the presentation.

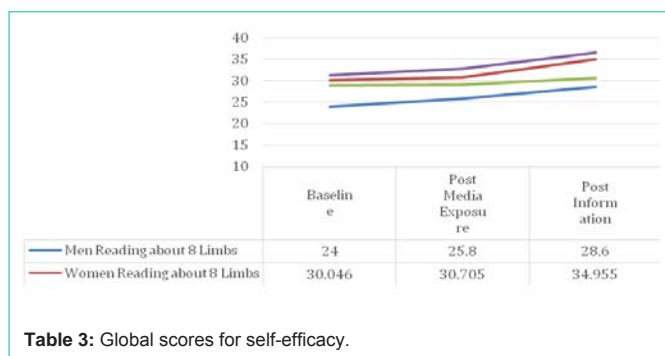


Table 3: Global scores for self-efficacy.

again with 52 participants with the inclusion of gender as a variable of interest. For the analyses with 80 participants, separate one-way repeated measures ANOVAs, with Time as the repeated measure, were calculated for overall self-efficacy scores, the two individual self-efficacy items (importance and confidence), and self-compassion scores. These analyses examined the impact of the presentation from Time 1 to Time 3. For the analyses with 52 participants, separate two-way repeated measures ANOVAs, with Group as independent variable, Time as repeated measure, and Gender as a covariate, were calculated for overall self-efficacy scores, the two individual self-efficacy items (importance and confidence), social physique anxiety, and self-compassion scores. For all analyses, effect sizes were calculated using *r*.

Results

Analyses related to the impact of the presentation

The repeated measures ANOVA for global self-efficacy scores yielded a significant main effect for Time, $F(1, 79)=65.83, p<.000, r=.67$, indicating that the brief presentation on how to start a yoga practice improved overall self-reported self-efficacy scores. The repeated measures ANOVA calculated for the self-efficacy item of “How important is it for you to engage in a regular yoga practice?” revealed a significant main effect for Time, $F(1, 79)= 62.83, p<.000, r=.67$, as did the repeated measures ANOVA for the self-efficacy item of “How confident are you in your ability to engage in a regular yoga practice?”, $F(1, 79)=41.04, p<.000, r=.58$. Results for both items demonstrate the efficacy of this brief presentation in improving self-reported confidence and belief in the importance of practicing yoga. The repeated measures ANOVA calculated for global self-compassion revealed no significant effect for Time, $F(1, 79)=1.63, p<.21, r=.14$, indicating that the presentation did not prompt significant changes

in self-reported self-compassion scores. Table 2 provides means for all analyses.

Analyses related to self-efficacy

The two-way mixed ANCOVA, using Gender as a covariate and total self-efficacy score as dependent variable, revealed a significant main effect of Time. Since Mauchley’s test indicated violation of the sphericity assumption for the main effect of Time, degrees of freedom were corrected using the Huynh-Feldt estimates of sphericity, $F(1.65,96)=18.70, p<.000, r=.40$. In addition to the significant main effect of Time, the ANCOVA yielded significant interaction effects for Time x Gender, $F(1.65, 96)=5.13, p<.012, r=.23$. Table 3 provides a visual demonstration of the differences between genders across time as well as the overall higher endorsement of self-efficacy by women compared to men at each point of measurement. All groups significantly improved with media exposure (i.e., at Time 2) and then again with the informational presentation (i.e., at Time 3). However, the Time x Gender interaction reveals that men and women’s changes over time varied regardless of the condition they were placed in. Specifically, men showed greater improvement in self-efficacy than women if they were enrolled in the control condition receiving the summary of the eight limbs of yoga, and smaller improvement in self-efficacy when viewing *Yoga Journal*. The Time x Group interaction was not significant, $F(1.65, 96)=.59, p<.53, r=.08$.

The two-way repeated measures ANCOVA, using gender as a covariate, was calculated using the ratings of the self-efficacy item “How important is it for you to engage in a regular yoga practice?” A significant main effect emerged for Time, $F(1,48)=7.30, p<.001, r=.36$. Table 4 provides the means and a visual representation of this effect. Table 4 also reveals that across time, participants increased their endorsement of the importance of engaging in a regular yoga practice. The interaction effects for Time x Gender, $F(1, 48)=1.90, p<.16, r=.20$, and Time x Group $F(1, 48)=.53, p<.59, r=.11$, were not significant. Although not reaching statistical significance, differences in genders across time are noteworthy. Specifically, although women’s endorsement of the importance of their yoga practice increased slightly after media exposure, regardless of condition, they increased to the greatest degree after they were exposed to the informational presentation. For men, the contrast between conditions is much more apparent. Men exposed to the eight limbs of yoga handout increased their endorsement of yoga’s importance more dramatically across time, whereas men exposed to *Yoga Journal* increased slightly after media exposure, but dropped back toward their baseline scores (Time 1) after the informational presentation (Time 3).

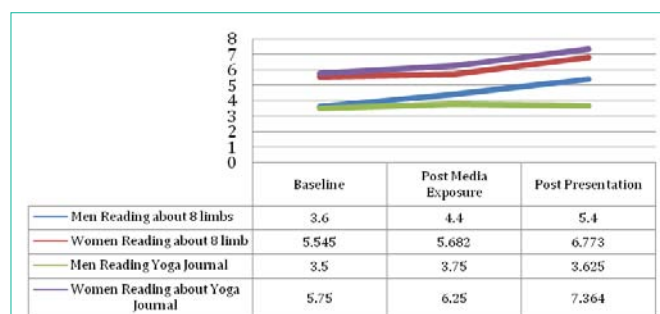


Table 4: Responses to the item “How important is it for you to engage in a regular yoga practice?”.

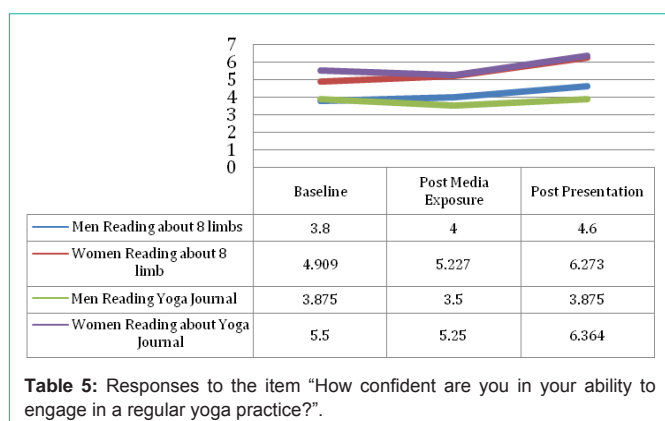


Table 5: Responses to the item “How confident are you in your ability to engage in a regular yoga practice?”.

The two-way repeated measures ANCOVA, using gender as a covariate and responses to the self-efficacy item “How confident are you in your ability to engage in a regular yoga practice?” revealed a significant main effect of Time, $F(2,96)=7.23$, $p<.001$, $r=.26$. As shown in Table 5, across all groups, mean scores increased from Time 1 to Time 3. The interaction effects of Time x Gender, $F(2, 96)=2.54$, $p<.08$, $r=.16$, as well as for Time x Group, $F(2,96)=1.57$, $p<.21$, $r=.13$, were not significant. Although the interactions were not significant, the mean scores demonstrate differential patterns of change for males and females. Although endorsement of confidence in beginning a regular yoga practice increased for men and women after they were exposed to the eight limbs of yoga (between Time 1 and Time 2), men and women exposed to *Yoga Journal* actually decreased their endorsement of confidence (between Time 1 and Time 2). Furthermore, although women ultimately increased their scores after the informative presentation, men reverted to their baseline scores (Time 1 and Time 3).

These findings suggest that men exposed to *Yoga Journal* may maintain their attitudes about the importance of, and confidence in, beginning their own yoga practice even after receiving information on how to do so. In contrast, men exposed to the eight limbs of yoga continued to endorse greater importance and confidence toward beginning their own yoga practice both after receiving the handout, and then again after learning how to begin their own practice. For women, importance of beginning their own yoga practice increased regardless of exposure type (*Yoga Journal* or the eight limbs handout). Self-reported confidence in beginning their own practice increased consistently for women when they were exposed to the eight limbs handout (Time 2) and then again after the informative presentation (Time 3). However, self-reported confidence dropped after exposure to *Yoga Journal* (Time 2) and then increased after the informational presentation (Time 3).

Analyses related to body image and self-compassion

The two-way repeated measures ANCOVA, using Gender as a covariate, was calculated using the sum of all ratings related to self-compassion (SCS-SF). Although scores approach statistical significance, the main effect was not significant, $F(2,96)=2.939$, $p<.058$, $r=.17$. Additionally, no significant interaction effects for Time x Gender, $F(2,96)=1.512$, $p<.226$, $r=.12$, or Time x Group, $F(2,96)=1.005$, $p<.226$, $r=.10$, were revealed. These findings indicated that global scores for this measure did not result in significant differences in self-compassion.

The two-way repeated measures ANCOVA, using Gender as a covariate, calculated for the total Social Physique Anxiety (SPAS) score revealed no significant main effect of Time, $F(1,48)=.35$, $p<.56$, $r=.09$. Additionally, interaction effects for Time x Gender did not reach statistical significance, $F(1,48)=.092$, $p<.76$, $r=.04$, as well as for Time x Group, $F(1, 48)=.44$, $p<.51$, $r=.10$. These findings indicated that global scores for this measure did not result in significant differences in social physique anxiety.

Discussion

This study sought to answer two important questions concerning potential barriers to practice. First, we examined if a brief educational presentation about yoga as a comprehensive self-care practice can impact self-reported self-efficacy to practice yoga. Second, we compared how representations of yoga in the popular media (*Yoga Journal*) as opposed to educational texts (a handout of the eight limbs) affected student’s self-reported self-efficacy to practice, body image, and self-compassion. For both questions, we explored the role of gender.

Our findings demonstrate that brief interventions can improve self-efficacy in relation to starting a yoga practice. Furthermore, the degree of improvement was dependent on the type of materials individuals were exposed to. With regard to the role of gender, our results suggest that for men, increase in self-efficacy was greater with exposure to a handout about the eight limbs (as opposed to being exposed to *Yoga Journal*). Additionally, men appear to have overall lower self-efficacy scores (both as baseline and post-intervention) indicating that this group may be a greater challenge for health professionals and yoga professionals in terms of referral to a yoga practice.

The increases in self-efficacy scores across time have significant implications for how health professionals and yoga professionals may approach making referrals for yoga as a complementary treatment. Despite increases in popularity in gyms and yoga studios [7], and growing research to support the utilization of yoga for a number of health ailments [2], yoga practitioners remain 80-82% female [3-5,7,24].

The findings gained from this study elucidate possible reasons for why the two genders access yoga to differing degrees. Previous research has demonstrated that non-practicing men tend to endorse yoga as a practice that is better suited for women because females tend to be more physically flexible [6]. In a study by Brems, et al. [7], 40% of men stated that this was a barrier that kept them from practicing. Current findings echo these potential biases. Women endorsed greater self-efficacy scores by the final administration of the measures regardless of exposure condition. In contrast, men exposed to *Yoga Journal* appeared to stay stagnant in their scores, whereas men exposed to the eight limbs handout had self-efficacy increases comparable to the women’s. These preliminary findings suggest that as women learn more about the practice of yoga, they endorse greater competency and value in beginning a practice. For men, this was only true in the control condition. When men learned about the eight limbs of yoga through an educational handout with minimal imagery, they too felt more empowerment in their ability to begin a practice and endorsed more importance in practicing. However, men exposed

to *Yoga Journal* did not endorse greater self-efficacy, even after they received an informative presentation about how to begin a practice.

The inconclusive findings concerning body image (social physique anxiety) are similar to those in the existing literature [20]. More research may be necessary to understand the interplay between gender differences, body image, and type of yoga practice. Similarly, current findings on self-compassion did not show significant differences over time. It is possible that this precursor to mindfulness [37] may necessitate personal practice before changes may be detected. Future research using mediation analyses may also be better suited to detect differences on these variables.

Conclusion

Yoga research has laid the groundwork for health professionals to refer this practice. Now it is up to researchers, clinicians, and yoga professionals alike to learn more effective ways of introducing the practice to individuals who may be contemplating it or who may benefit from it. Health professionals in particular are in the unique position of referring yoga for a number of different ailments [2]. However, as the practice becomes more popular, a general referral may undermine new practitioners' original motivations for practicing. When considering referrals for specific ailments and the integration of yoga classes into educational settings, it is important to provide education on the many diverse aspects of this practice to empower, rather than intimidate, individuals interested in beginning their own yoga practice. Our findings indicate that brief educational interventions on yoga as a comprehensive self-care practice are an effective method of improving individuals' self-efficacy to practice. As we look toward the future of this ancient practice within Western culture, we must integrate effective methods of discussing the many benefits and aspects of yoga with individuals from all backgrounds.

Limitations and Future Prospects

This study used a convenience sample within a private university setting; therefore, results gained from this sample have limited generalizability. Additionally, the sample size was small and the groups were uneven. Future studies with larger sample sizes may further explore differences in a broader spectrum of genders, race, age, socio-economic backgrounds, physical abilities, and differing education levels.

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