

The effects of yoga on incarcerated individuals' self-perception of life orientation (optimism/pessimism), perceived stress, and self-efficacy.

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Abstract

Context/Background: Interventions that include cognitive behavioral therapies, relaxation training, and social skills training have become accepted within prisons and jails. However, there is a need for further study to provide evidence that yoga is also an effective psychosocial rehabilitation intervention.

Aims: The study purpose was to analyze whether yoga had any effects on incarcerated individuals' perceived stress levels, and self-efficacy in handling stressful and emotionally charged events.

Methods and Material: A non-experimental pre-post design was applied, using six questionnaires to assess participant changes, after a three-month period of twice-weekly yoga.

Results: Results suggested that yoga was an effective intervention strategy to increase optimism and perceived self-efficacy, and to decrease perceived stress and pessimism within the jail environment.

Conclusions: Incarcerated individuals appear to benefit in meaningful ways from yoga intervention, as part of a therapeutic community. While recognizing that we were unable to control all potential variables that may have affected outcomes, one of the important attributes of this work is a demonstration of what is feasible within real-life jail settings to document the effectiveness of yoga participation, as well suggestions for future studies.

Key words: Yoga, Stress, Inmates

Introduction

In the last decade of the 20th century, and the early years of the 21st century, psychological interventions that include cognitive behavioral therapies, relaxation training, and social skills training have become widely accepted as an attempt to reduce recidivism and reconviction in public offenders^{1,2}. Characteristics that place an incarcerated person to be at "high-risk" for recidivism include depression, anxiety and high

levels of frustration³. In prisons, these psychosocial difficulties have been linked with violent and negative behaviors in offenders¹. Moreover, while persons in correctional institutions report having problems with stress and anger management, they also appear with limited skills in handling conflict, and limited emotional control during stressful events⁴. The ability of inmates to cope with "prison life" continues to be an area of concern for criminal justice practitioners and researchers alike. The

harsh reality of imprisonment combined with psychosocial difficulties often has a confounding impact on inmates⁵. Lack of privacy, safety, structure, support, emotional feedback, social stimulation, activity, and freedom are all thought to negatively affect inmate behavior and adjustment to prison life^{6,7}, compounding feelings of anger, stress, and anxiety⁴. Incarcerated individuals are often discriminated against and stigmatized by society as dangerous, unpredictable, and deserving of punishment. As a result, little may be offered in jail or prison to help them cope with negative psychosocial emotions associated with incarceration. This approach does not address preparing individuals for coping in society once released, which amounted to 708,677 people within the US in 2010⁸. Many inmates leave with the expectation of becoming productive, reinstated individuals in their communities, when in reality, most need assistance in the form of counseling, coping skill development and anger management before they have a chance to transition back into society with success⁹.

Health Benefits of Yoga

A primary purpose of modern day yoga is meditation and physical health. Yoga is an ancient system of breathing practices, physical postures, and meditation intended to integrate the practitioner's body, mind, and spirit. Yoga has been recommended as an adjunct to psychotherapy and standard medical treatments for a number of reasons^{10,11, 12}. The integration of the mental, physical, and spiritual dimensions of human life is helpful for people struggling with distorted cognitions or pain syndromes. The stretching, bending, and balancing involved in the *asanas* (physical postures that are part of a yoga practice) help to align the head and spinal column; stimulate the circulatory system, endocrine glands, and other organs; and keep muscles and joints strong and flexible. Other systems that are affected include: pulse rate,

blood pressure, respiratory rate, endurance, energy level, strength, and flexibility¹³.

Further, yoga may be able to impact an individual's ability to regulate emotions such as anger and frustration as well as their sense of self-agency, stress levels, and overall life orientation. Yoga has been used in recent years in prisons as a rehabilitation technique for mental and physical health as well as for behavior modification³. In some small case studies, yoga interventions, including breathing techniques, in prisons have improved both physical and mental health for offenders^{14, 15, 16, 17}. Similarly, studies conducted in correctional facilities in Australia reported improvements in stress management skills after participation in yoga--specifically abdominal breathing that the inmates utilized during stressful events (e.g., court appearances)³. However, there is a need for further study to provide evidence that yoga is an effective psychosocial rehabilitation intervention.

Purpose of Study

The purpose of this study was to analyze the contributions of yoga within the therapeutic community and its potential effects on incarcerated individuals' perceived stress levels, and self-efficacy in handling stressful and emotionally charged events. In this study, possible relations among anger management, life orientation (optimism/pessimism), perceived stress, perceived self-efficacy, and satisfaction with yoga classes were analyzed statistically using pre-test and post-test scores. We hypothesized that yoga would be received positively by inmates, and contribute to less perceived stress, increased self-efficacy, improved anger management, and increased optimistic perspectives.

Methods

Study Design This study used a non-experimental pre-post design to assess changes in stress perception, perceived self-efficacy, life orientation and anger management skills in jail inmates as part of twice-weekly yoga participation. Participants were assessed using six questionnaires at the start of the study and again after a three-month period. Participants consented to participate and the study was reviewed by the XXX Institutional Review Board for the use of human participants in research.

Participants: The participants of the study were inmates at the Strafford County Department of Corrections (SCDOC) located in Dover, XX. The SCDOC is a near 400-bed facility that houses incarcerated individuals most commonly for drug and alcohol related convictions. The inclusion criteria for participation were: 1) residency at the SCDOC, 2) already eligible for yoga classes, and 3) part of the “therapeutic community.” The therapeutic community is a substance abuse treatment program within the jail where members receive drug and alcohol counseling, cognitive behavior therapy, and peer support activities to promote recovery. Participation in the in-house therapeutic communities may be court ordered as a precursor for community release. As a result, program participation was mandatory for those already in the therapeutic community. Yoga is currently part of the therapeutic community’s required activities, and has been well received by administrators; so much so, that yoga is now a required component for participation in the program. All participants were recruited for the study on a volunteer basis and consented prior to participation. Participants were given a broad overview of the purpose of the study but were not told specifically what we were looking for until after the study was completed. If inmates selected to not participate, they still participated

in yoga, but did not fill out the study forms. They were not compensated for their participation. Lastly, to protect anonymity and confidentiality each consented participant was given a code number within the jail and kept by the community warden. All study data analyzed by the researchers was coded with no identifying information.

Recruitment efforts resulted in a total sample of 32 inmates. The inmates were males ($n=22$) and females ($n=10$) ranging in age from 18-44 years old. Their convictions included: alcohol and drug related charges, vehicular homicide, and robbery.

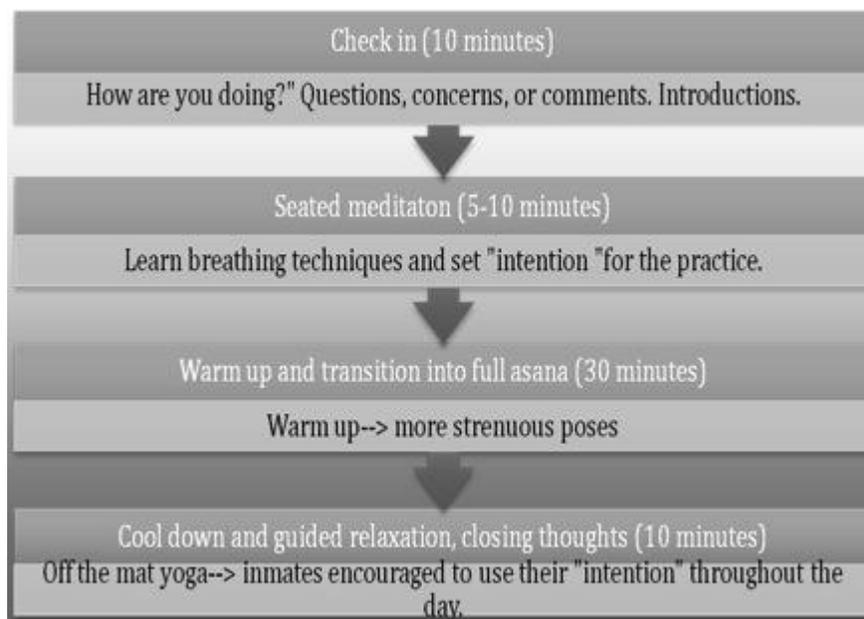
Yoga Intervention

Yoga classes were held for sixty minutes twice per week for three months. Measures were collected prior to yoga and at the completion of three months. A typical yoga session is described in Figure 1. The type of yoga used in this study is called “enriched yoga,” which focuses on training in “Yoga off-the-mat.” This type of yoga is guided by “intentions.” An intention, or guiding purpose could be anything from: moving with focus; being compassionate during a group session; moving and breathing continuously; embracing an optimistic perspective to remaining engaged and fully aware of one’s own body; being aware of and respectful to others; managing one’s perspective; embracing future goals for discharge. The inmates warm up and transition into more strenuous poses as they move into the full *asanas* (poses), using their particular intention to guide them. After winding down with guided relaxation and closing meditation, each participant was guided through continued practice “off the mat.” If the intention was to be present and to listen carefully to their bodies, or to plan future goals, participants were taught to practice this intention when they were not actually on their yoga mats. Thus, the inmates were instructed to practice their intentions not

only when meditating and moving their bodies, but also when in conversation, when responding to someone's request, when in work groups, or when dealing with a difficult moment. The instructor offered some suggestions of possible scenarios when they could practice that day's intention in hopes that they will try it "off the mat." The atmosphere was intended to be congenial, friendly, respectful, and open. At the close of each class, inmates were left with a printed quote related to a suggested intention of that day's class.

The yoga instructor who volunteered her time for this study is certified by Kripalu Institute in Lenox, MA, and has 30 years of teaching experience. She has taught in various communities (high schools, elderly communities, university, corporate groups, health clubs) since 2001 and has maintained her education by training regularly with many of the nation's leading yoga teachers (e.g. Ana Forrest, Shiva Rea, Tias Little, and Michael Carroll). She has volunteered her services at the SCDOC, the site of this study, since 2005.

Figure 1: Description of a Typical Yoga Session



Measurements

Measures used in this study include perceived health, perceived stress, perceived self-efficacy, anger perception, and life orientation, as well as satisfaction with yoga classes. Of these six measures, the authors of this study developed three; the remaining were previously published scales. Measures for the study included: 1) a health data form; 2) an anger management self-reflection questionnaire; and 3) a yoga satisfaction questionnaire, all developed for the

study; plus, 4) the Life Orientation Test-Revised¹⁸; 5) the Perceived Stress Scale¹⁹; and 6) the Perceived Self-Efficacy Scale^{20,21, 22}. All questionnaires took approximately 5 minutes each to complete.

Perceived Stress Scale (PSS)

The Perceived Stress Scale (PSS)¹⁹ was used to assess perceived stress levels at the time the questionnaire was answered. The PSS contains ten questions that capture an individual's perception of his/her daily stress level and has

been used extensively in stress research in a wide variety of settings and across age groups. Typical ranges for individuals are reported as 12.1 for males; 13.7 for females, ages 30-44 years; and for ages 18-29 years, as 14.2 for males; and 13.0 for females 23.

Perceived Self-Efficacy Scale

Perceived Self-Efficacy Scale^{20,21, 22} was used to assess perceived self-efficacy at the time of the questionnaire. This tool is a one-page scale that asks questions about an individual's general perception of his/her own capabilities to handle life issues.

Life Orientation Test- R (LOT-R)

The Life Orientation Test- R (LOT-R)¹⁸ assesses a general tendency toward optimism/pessimism perspectives. The LOT-R has been used extensively in studies across cultures and age ranges^{24, 25, 26, 27} that support the tool's psychometrics in reliably and validly capturing an individual's tendencies toward one perspective over the other.

Other Questionnaires

The three questionnaires developed by the authors were the Health Data, Anger Management Self-Reflection Questionnaire and the Yoga Questionnaire. These scales were designed to be simple in order to accommodate for varying education levels, time management, and ease of administration. Each scale was based on a five-point *Likert* scale with answers ranging from strongly agree- disagree and never- very often.

Data Analyses

All data were analyzed using IBM Statistics 20, Release Version 20.0.0²⁸. Analyses were completed using nonparametric Wilcoxon Signed Rank tests because of the ranked-type data collected as well as the small sample. The

Wilcoxon statistic for ranked data (e.g. *Likert* scale) is similar to a parametric paired (dependent) *t*-test. Wilcoxon Signed Rank pre-post analyses were run for the following variables: perception of stress, perception of self-efficacy, optimism/pessimism, perceived overall health, and yoga satisfaction. Responses from the Anger Management Questionnaire were not analyzed; after inspection of response ranges, we recognized that no one responded that they had anger feelings or expressions. The lack of any range of response was attributed to the possibility that the inmates were not in a position to reveal or express anger; otherwise, they would be discharged from the therapeutic community. Further, there was little variation among inmates in life activities such as eating breakfast, exercise, or number of illnesses, due to the structured nature of the jail environment.

Results

Statistically significant differences were found among nearly all variables used for comparison in individuals' prior and after 12 weeks of yoga participation. The results suggested that there was an increase in optimism, $Z = -3.85$, $p < 0.001$, and an aligned decrease in pessimism, $Z = -3.31$, $p < 0.001$, post yoga intervention. Participants also reported a significant increase in perceived self-efficacy, $Z = -3.32$, $p < 0.001$, and a decrease in perceived stress, $Z = -3.06$, $p < 0.002$, in the post intervention period. Moreover, yoga satisfaction also significantly increased post-intervention, $Z = -4.94$, $p < 0.001$. The majority of participants (90%) noted in comments that yoga was the most important intervention that uniquely addressed their stress, mood and perceptions of themselves.

Table 1 illustrates the percent change in perception of self-efficacy, perceived stress, optimism, pessimism, and yoga satisfaction over time. All of the participants reported an increase

in yoga satisfaction while the majority experienced increased optimism and self-

efficacy. This was aligned with perceptions of decreased pessimism and lower perceived stress.

Table 1: Change in life orientation /attitude, self-perceptions, and yoga over time

Variable	% Increase	% Decrease	% Same
Perceived Stress	23%	61%	16%
Self-efficacy	81%	16%	3%
Optimism	74%	16%	10%
Pessimism	19%	71%	10%
Yoga satisfaction	100%	--	--

Conclusions

This study sought to analyze how yoga intervention affected life orientation/attitude (optimism/pessimism), and perceptions of self-control (self- efficacy and stress) in inmates at the Strafford County Department of Corrections. The findings suggested that yoga was an effective intervention strategy to increase optimism and perceived self-efficacy, as well as to decrease stress perception and pessimism within the jail environment. This is consistent with administration's inclusion of yoga as a required activity within the therapeutic community because of long-standing beliefs based on anecdotal observations of its effectiveness. Furthermore, this study showed that yoga not only appeared to contribute to improved perceptions of self-control and attitudes, but also that the inmates enjoyed it and were highly satisfied with the enriched yoga classes. All thirty-two participants in this study reported a significant increase in yoga satisfaction post-intervention.

Limitations

There are several limitations that limit the generalizability of this research. First, the study conducted in vivo within a working jail, limited the design characteristics. For example, it was not impossible to randomly assign inmates to groups, nor were we able to follow-up participants after paroled to assess whether their positive perceptions carried through their release and into the community. Further, the therapeutic community was never evaluated prior to mandatory yoga inclusion making it difficult to disentangle the relative contributions of yoga to the outcomes measured. However, anecdotally, administration within the jail made yoga mandatory because they observed improvements in inmates' overall mood, stress levels, and coping skills. Thus, yoga is considered an important part of an effective package within the therapeutic community. We attempted to select out the unique contributions as much as possible by asking the inmates whether they enjoyed yoga and whether they perceived it was an effective intervention for perceived stress and self-efficacy. Participants were able to opt-out of data collection for this study, which provided

some protection against self-selection bias. Further, jail administrators did not know who participated in data collection, limiting any participation for the sake of being “good” inmates. Further, all measures of data were self-reported and, therefore, not objective.

While we attempted to measure anger in this study, there was not enough variability to note any trends. The limitations for which inmates might not have been able to express feelings of anger without negative consequences to their sentences may have influenced the lack of variation in the data. This appeared to be in alignment with a previous study that also noted inmates’ concerns over expressing angry emotions ⁴.

Implications for Future Research

This study provides an example of how yoga effectiveness may be measured in jails and prisons, while also highlighting some of the challenges in conducting such studies in vivo. Future studies would benefit from random assignment to yoga participation in order to disentangle relative contributions of change in perceptions due to yoga alone. Further, it would be interesting to explore how long the

perceptions of increased optimism, self-efficacy, and self-control persisted after enriched yoga intervention. In this study, we were not able to administer follow up assessments due to confidentiality and privacy policies at the Strafford County Department of Corrections, nor were we able to randomly assign participants to non-yoga groups. Of note, yoga is required of all inmates within the therapeutic community because it is perceived as being an essential component of the program. Future studies should explore possible methods to address these issues with jail and prison administrators.

Acknowledgements

The authors thank the staff and inmates at the Strafford County Department of Corrections, New Hampshire for their collaboration and time participating in this study. We extend a special thank you to Amy Cunningham for assistance with manuscript preparation. We also thank Danielle Oliveri, MS, OTR/L, for her help with this research when she was at XXX.

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