



Effects of yoga practice on stress-related symptoms in the aftermath of an earthquake: A community-based controlled trial

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Available online 2 February 2014

KEYWORDS

Anxiety;
Depression;
Earthquake;
Sleep;
Social relations;
Stress;
Yoga

Summary

Objectives: To evaluate the effect of an integrated hatha yoga practice on perceived stress and stress-related symptoms in the aftermath of an earthquake.

Design and setting: Inhabitants, aged 20–67 years, from highly exposed earthquake areas of two villages in South Iceland were offered to participate in a yoga program subsequent to an earthquake. Sixty-six individuals were self-selected into the study and divided by residential convenience into an experimental group ($n = 31$) and a waiting list control group ($n = 35$).

Intervention: The yoga program was conducted twice a week for six weeks, in normal situations among the inhabitants in the community.

Main outcome measures: Several validated questionnaires assessing stress and stress-related symptoms, posttraumatic symptoms, depression, anxiety and health related quality of life were administered at pre- and post-intervention.

Results: Multivariate analysis of variance (MANOVA) revealed differences between the experimental group and waiting list control group on sleep quality ($p = .03$) and social relations ($p = .04$). These differences did not prevail at Bonferroni correction for multiple testing (at alpha level of .005). Participants in both groups showed significant improvements in stress and some stress-related symptoms such as sleep, concentration, well-being, quality of life, depression and anxiety from pre- to post-intervention.

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Conclusions: The data from this small study show no statistically significant improvement of an integrated hatha yoga program above and beyond waiting list control, following exposure to an earthquake. However, the observed trend toward improved sleep quality and social relations deserve further exploration in larger effectiveness studies on the impact of Hatha yoga on recovery after natural disaster.

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Introduction

Humans, like animals, react in predictable ways to acute and chronic stressful situations that trigger an inborn physiologic stress response. Prolonged stress can have damaging influence on health and well-being.¹ It has specifically been linked to the onset of anxiety and depression² which may lead to the experience of fatigue, disturbed sleep, lowering energy and poor concentration. Stress and stress-related symptoms are a major challenge that places both the physical and psychological health of an individual at risk.^{3,4}

The opposition to the stress response is the relaxation response, a coordinated physiological response and physical state of deep rest that can counteract harmful effects of an inappropriate stress response on the body.⁵ The meaning individuals read into events taking place around them is important, as are their techniques to cope with stressful situations.⁶ Previously published research indicates that yoga is one such coping technique that can have both physical and psychological effects to elicit the relaxation response.^{7,8}

Yoga has been used worldwide for ages, originally developed as an Indian spiritual practice, leading to the experience of ‘‘union’’ (the Sanskrit translation of ‘‘yoga’’). It has been defined as a prescription for self-help stress management for optimal health with few known side effect and little cost for the community.⁹ Currently millions of individuals around the world practice yoga for health benefit with the popularity continually growing.^{10–12} Hatha yoga is the best-known yoga tradition in the West and commonly practiced in the United States and Europe.¹³ Hatha yoga practice traditionally emphasizes balance of three main components, i.e., physical activity, breathing exercises and mindfulness meditation¹⁴ all of which may induce a relaxation response.⁵

Yoga practice has been associated with significant psycho- and biological benefits including better sleep quality.^{15–17} An integrated yoga program, which includes yoga exercises, breathing, relaxation and mindfulness, has been shown to trigger plausible biological, psychological and behavioral mechanisms that impact anxiety and depression.^{18,19} An integrated yoga program may have positive effect on role and, social function and overall quality of life.²⁰ It may provide additional benefits for health over yoga practiced solely as an exercise regimen.²¹ Yogic breathing has been reported to significantly improve sleep efficiency among individuals with chronic insomnia.²² Yoga postures and their connections with mindfulness have further been linked to improved sleep in cancer patients.²³ A critical review from 2010 suggests that yoga may be an attractive alternative to augment the effect of depression treatment strategies.²⁴ A pioneer study conducted in 2004 in the United States, shows that yoga may change core physiology related to posttraumatic stress syndrome (PTSD). Yoga can be a

way to reprogram automatic physical responses activated by traumatic experience and counteract the harmful effects of inappropriate stress response on the body.²⁵ Recent controlled studies from India suggest that yoga practice may be useful in the management of stress following a natural disaster.²⁶ Furthermore, interventions involving yoga-based breath have been shown to relieve psychological distress following mass disasters.²⁷

On May 29, 2008, a strong earthquake (6.1 on Richter) struck the southern part of Iceland followed by a high frequency of aftershocks. Although considerable damage was done to buildings and household articles, residents suffered only minor injuries.²⁸ According to a recent study,²⁹ many inhabitants (70%) experienced fear, helplessness and/or horror during the earthquake and thus meeting diagnostic criteria for a traumatic event.³⁰ Smaller earthquakes occurred in the months following the initial earthquake and were concurrently expected. At this time the Icelandic nation was also dealing with an economical crisis, influencing many inhabitants of the community either by financial loss or unemployment. It was hypothesized that the yoga intervention would decrease stress and stress-related symptoms among the inhabitants living in the earthquake area.

Methods

Study design

The study is a non-randomized community intervention with pre- and post-intervention measurements. An intervention group was provided with a six weeks integrated hatha yoga program. The group met twice a week for sixty minutes. A control group was on a waiting list and was assigned to start yoga sessions immediately after the yoga group had finished their program. Several questionnaires were administered in both groups pre- and post-intervention.

Participant eligibility and recruitment

People were eligible to participate in the study if they had been living in the earthquake area during the large earthquake, were in the age range 20–67-years and reported experience of distress or stress symptoms at the time of recruitment. The study was advertised in the primary health care centers, the local papers and in public places, on a website, and via online ads sent to local institutions.

Participants with any current physical injuries at neck, head, back or joints that made them unable to participate in yoga exercises (assessed by first author, who is a registered nurse, or by their primary physician) were excluded. Also, pregnant women were excluded. Finally, participants were

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