Abstract

Forsch Komplementmed 2015;22:333–335
Published online: October 16, 2015


Aims: G protein-coupled receptor kinase 2 (GRK2), a cytosolic enzyme desensitizing G protein-couple receptors (e.g., β-adrenergic receptors (β-ARs)), is involved in regulation of hypertension, congestive heart failure, and inflammatory response. Since cellular GRK2 levels change quickly in response to exogenous/endogenous stimuli, this study examined whether GRK2 levels in human peripheral blood mononuclear cells (PBMCs) would increase during acute aerobic exercise and be associated with plasma IL-6 and cardiorespiratory fitness levels.

Main Methods: Eighteen subjects (8 men and 10 women), ages 18 to 30 years, were recruited to perform a 30-minute bout of acute aerobic exercise at 75% VO2max.

Key Findings: Our results demonstrated that women exhibited significantly greater exercise-induced GRK2 expression in PBMCs compared to men. IL-6 modulation is independent of GRK2 expression. Furthermore, the percent change in GRK2 expression was negatively correlated with cardiorespiratory fitness levels (relative VO2max), but not plasma IL-6.

Significance: Acute aerobic exercise induces a greater GRK2 expression in women than men, while increased cardiorespiratory fitness is associated with exercise-induced GRK2 expression in PBMCs. Gender could be a contributor to regulate this GRK2 responsiveness to acute aerobic exercise.


Objective: The aim of this study was to evaluate the vascular benefits of an aerobic exercise program, particularly over the endothelial function and the central arterial hemodynamics in healthy young individuals.

Design and Method: A randomized controlled study was conducted involving 60 healthy and young sedentary subjects, randomized into two groups: control group (CG, n = 30) and intervention group (IG, n = 30). The IG completed a plan of aerobic exercise, which consisted of a daily 45 minute brisk walk (weekly − 5 days) for a month. All the individuals were submitted to two clinical evaluations, basal and after one month, in which their weight, height, body mass index (BMI), systolic blood pressure (SBP), diastolic blood pressure (DBP), heart rate (HR), flow-mediated dilation (FMD), Augmentation Index (AIX), aortic pulse wave velocity (PWV) and pulse wave analysis over the carotid artery (PWA) were assessed.

Results: CG and IG were homogeneous from the point of view of fundamental demographic characteristics. After intervention, no significant changes in BMI and brachial SBP in CG were found, however these variables have been improved in the IG. Central systolic blood pressure significantly decreased in the GI (108.13 +/- 6.87 to 104.07 +/- 5.30mmHg, p = 0.043). No significant variations of central PP were found in both groups (p = 0.196 for CG and p = 0.459 for IG), although the IG exhibited a trend towards a PP reduction after the intervention. The AIX improved significantly after the exercise period in IG (p = 0.040), but not in the CG. Aortic PWV did not change significantly over time in both groups. As for the FDM, a significant increase was depicted in the IG after the intervention (7.40 +/- 3.91% at baseline and 8.42 +/- 5.65% after intervention, p = 0.536).

Conclusions: The practice of regular moderate-intensity aerobic exercise, for one month, improves vascular function in young healthy individuals.

Objectives: The aim of this study was to assess the effect of the daily practice of a yoga therapy program learnt during a single session of an integrated yoga intervention that was developed by us as a stress management tool for school employees.

Subjects: Ninety school employees.

Design: Case-control study. Three months after the intervention, the subjects were assigned to a daily practice group (case: n = 43) and a nonconsecutive daily practice group (control: n = 47) according to their daily practice level of the yoga therapy program.

Interventions: The subjects participated in a stress management education program based on an integrated yoga therapy session. The program included psychological education and counseling about stress management and yoga theories, as well as the practices of asanas, pranayama, relaxation, and cognitive structure based on Indian philosophy.

Outcome Measures: Assessments were performed before and after the program using the Subjective Units of Distress for mind and body and the Two-Dimensional Mood Scale. The General Health Questionnaire 28 (GHQ28) was used to assess the mental health state before the intervention and at 3 months after the program.

Results: The subjects showed significant increases in their levels of calmness, comfort, and cheerfulness (p < 0.001) and significant decreases in cognitive mind and body stress (p < 0.001) after participating in the integrated yoga program. A comparison of the total scores on the GHQ28 using a two-way analysis of variance showed significant differences between the two groups in terms of both interaction (p = 0.047) and the main effect (p = 0.026).

Conclusions: The present results suggested that a single session of an integrated yoga program was effective for reducing stress and that the mental health of school employees was promoted by the daily practice of the yoga therapy program.


Background: Mental health professionals experiencing work-related stress may experience burn out, leading to a negative impact on their organization and patients.

Aim: The aim of this study was to examine the effects of yoga classes on work-related stress, stress adaptation, and autonomic nerve activity among mental health professionals.

Methods: A randomized controlled trial was used, which compared the outcomes between the experimental (e.g., yoga program) and the control groups (e.g., no yoga exercise) for 12 weeks. Work-related stress and stress adaptation were assessed before and after the program. Heart rate variability (HRV) was measured at baseline, midpoint through the weekly yoga classes (6 weeks), and postintervention (after 12 weeks) of yoga classes.

Results: The results showed that the mental health professionals in the yoga group experienced a significant reduction in work-related stress (t = –6.225, p < 0.001), and a significant enhancement of stress adaptation (t = 2.128, p = 0.042). Participants in the control group revealed no significant changes. Comparing the mean differences in pre- and posttest scores between yoga and control groups, we found the yoga group significantly decreased work-related stress (t = –3.216, p = 0.002), but there was no significant change in stress adaptation (p = 0.084). While controlling for the pretest scores of work-related stress, participants in yoga, but not the control group, revealed a significant increase in autonomic nerve activity at midpoint (6 weeks) test (t = –2.799, p = 0.007), and at posttest (12 weeks; t = –2.099, p = 0.040).

Linking Evidence to Action: Because mental health professionals experienced a reduction in work-related stress and an increase in autonomic nerve activity in a weekly yoga program for 12 weeks, clinicians, administrators, and educators should offer yoga classes as a strategy to help health professionals reduce their work-related stress and balance autonomic nerve activities.


Background: Mind-body therapies are beneficial for several diseases (e.g. chronic pain, arterial hypertension, mood disorders). Eurythmy therapy (EYT) is a mind-body therapy from Anthroposophic Medicine. In each EYT exercise a short sequence of body movements and simultaneous guided imagery is repeated several times. In this study, the simultaneous effects of two different EYT exercises on cardiac autonomic regulation as assessed by spectral analysis of heart rate variability (HRV) were investigated.

Methods: Twenty healthy subjects (age: 29.1 ± 9.3 years, 13 female) performed two different EYT exercises (EYT-A and EYT-B) for 8 min. Each EYT exercise was compared against two matched control exercises: control exercise 1 (CE1-A and CE1-B) consisted of a repetition of the body movements of the EYT exercise but without guided imagery, control exercise 2 consisted of walking on the spot (CE2-A and CE2-B). Spectral power of HRV during each exercise was quantified on the basis of Holter ECG recordings.

Results: During EYT-A the frequency of the peak oscillation in the very low frequency (VLF) band matched the repetition rate of the sequence of body movements (0.02 Hz). Low frequency (LF) oscillations were augmented when compared to the control exercises (EYT-A: 7.31 ± 0.84, CE1-A: 6.98 ± 0.90, CE2-A: 6.52 ± 0.87 ln ms2, p < 0.05). They showed a peak frequency at 0.08 Hz indicating that the body postures had an impact in HRV. Performing EYT-B increased VLF oscillations when compared to the control exercises (EYT-B: 9.32 ± 0.82, CE1-B: 6.31 ± 0.75, CE2-B: 6.04 ± 0.80 ln ms2, p < 0.05). The frequency of the peak oscillation again matched the repetition rate of the sequence of body movements (0.028 Hz).

Conclusions: The repetition of the sequence of body movements of both EYT exercises clearly affected cardiac autonomic regulation in a rhythmic manner according to the stimulus of the specific body movements of each EYT exercise. These results offer a physiological basis to develop a rationale for specific clinical indications of these EYT exercises such as stress reduction or prevention of hypertension.


Background: Stress and health-related quality of life are important constructs used in treatment evaluation today. This study is based on a randomised controlled trial examining the stress-reducing effect of eurythmy therapy in comparison with step aerobics in 106 healthy but stressed subjects. The aim of the analysis was to characterise changes in the subjective perceptions of the participants.
Methods: Interviews were conducted with 76 healthy adults, 36 (f = 31 / m = 5) from the eurythmy group and 40 (f = 28 / m = 12) from the step aerobics group both analysed by content analysis and phenomenologically.

Results: The following categories were identified for the eurythmy therapy group: enabling a productive therapeutic response, emergence of a new perceptual space, reevaluation of the accustomed perception, and emergence of new options for action. Step aerobics places increased physical and intellectual demands. These are perceived differently as pleasant and relaxing, insufficiently challenging and/or boring, and too challenging and thus experienced as stress-enhancing.

Conclusion: The qualitative results provided revealing insights into the profound effects of and subjective assignments of meaning to external and internal stress factors. Processes of mental reinterpretation leading to stress reduction can be stimulated by physical procedures such as eurythmy therapy.


Background: Cancer is not merely an event with a certain end, but it is a permanent and vague situation that is determined by delayed effects due to the disease, its treatment and its related psychological issues. The aim of this study was to examine the effectiveness of the mindfulness-based stress reduction program and conscious yoga on the mental fatigue severity and life quality of women with breast cancer.

Methods: This was a quasi-experimental study with a pre-test, post-test and control group. In this study, 24 patients with the diagnosis of breast cancer were selected among the patients who referred to the Division of Oncology and Radiotherapy of Imam Hossein hospital in Tehran using available sampling method, and were randomly assigned into the experimental and control groups. All the participants completed the Fatigue Severity Scale, Global Life Quality of Cancer Patient and Specific Life Quality of Cancer Patient questionnaires. Data were analyzed by multivariate repeated measurement variance analysis model.

Results: Findings revealed that the mindfulness-based stress reduction treatment significantly improved the overall quality of life, role, cognitive, emotion, social functions and pain and fatigue symptoms in global life quality in the experimental group. It also significantly improved the body image, future functions and therapy side effects in specific life quality of the experimental group compared to the control group. In addition, fatigue severity caused by cancer was reduced significantly.

Conclusion: The results showed that the mindfulness-based stress reduction treatment can be effective in improving global and specific life quality and fatigue severity in women with breast cancer.


Anxiety has become a global public health problem. Tai chi offers one possible way of reducing anxiety. The purpose of this study was to examine studies from 1989 to March 2014 to assess whether tai chi can be an efficacious approach for managing anxiety. A systematic search of Medline, CINAHL, and Alt HealthWatch databases was conducted for quantitative articles involving applications of tai chi for anxiety. A total of 17 articles met the inclusion criteria. Of these, 8 were from the United States, 2 from Australia, 2 from Japan, 2 from Taiwan, and 1 each from Canada, Spain, and China. Statistically significant results of anxiety reduction were reported in 12 of the studies reviewed. Despite the limitations of not all studies using randomized controlled designs, having smaller sample sizes, having different outcomes, having nonstandardized tai chi interventions, and having varying lengths, tai chi appears to be a promising modality for anxiety management.