A randomized control trial of the effect of yoga on verbal aggressiveness in normal healthy volunteers

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Abstract

Objective: To study the effect of yoga on verbal aggressiveness in normal healthy adults. Methods: Of the 1228 persons who attended introductory lectures, 226 subjects of both sexes who satisfied the inclusion and exclusion criteria and who consented to participate in the study were randomly allocated into two groups. These 226 subjects were between the ages of 17 and 62 years and 173/226 completed the eight weeks of intervention. The Yoga (Y) group practised an integrated yoga module that included asanas, pranayama, meditation, notorial correction, and devotional sessions. The control group practised mild to moderate physical exercises (PE). Both groups had supervised practices (by trained experts) for one hour daily, six days a week for eight weeks. Verbal Aggressiveness was assessed before and after eight weeks using the self-administered Verbal Aggressive Scale. Results: The baseline score of the two groups did not differ significantly (P = 0.68). There was a significant decrease in verbal aggressiveness in the yoga group (P = 0.01 paired samples t-test) with a nonsignificant increase in the PE group. ANCOVA using pre-values as covariates showed a significant difference between the groups (P = 0.013). RMANOVA for interaction between the sexes or age groups in change scores were not significant. Conclusions: This study has demonstrated that an eight week intervention of an integrated yoga module decreased verbal aggressiveness in the yoga group (in males and those below 25 years of age), with a nonsignificant increase in the PE group.

Introduction

Violence remains one of the greatest public health threats to youth. Intentional injuries due to violence comprise the second leading cause of death of US adolescents, [2] as well as a substantial proportion of morbidity [3],[4] such as elevated depressive symptoms and posttraumatic stress disorder. [5] Irritability and emotional outbursts are other manifestations of violence that could be measured. The verbal aggressiveness scale is a measure of violence that has been used in earlier studies. [6] Verbal aggressiveness is defined as an attack on an individual's self-concept instead of, or in addition to the person's position on a topic of communication, to inflict psychological pain. [7] A message must attack the self-concept of the receiver if it is to be considered as verbally aggressive message. [8] It was found that people who are high in the verbal aggression trait, differ significantly from those low in verbal aggression trait in terms of their use of these messages. [8]

Yoga which encompasses several techniques including physical postures, breathing techniques (Pranayama) and meditation has become very popular for its applications in health starting from better physical fitness [9] to a better quality of life in cancer patients. [10] Yoga has been used effectively for stress reduction that has resulted in biochemical [11] and physiological [12] changes. Several studies have highlighted the psychological benefits of integrated yoga practices such as anxiety, neurosis, [13],[14] and depressive illness. [15],[16] The clinical potential of yoga as a self-control technique for improving and stabilizing affective states was studied by Harvey. In a three armed study, Harvey compared yogic breathing exercises with two control groups (a course on the philosophy of meditation and a course in psychology) and demonstrated that yogic breathing exercises showed an improvement in mood and vigor as well as decreased tension, fatigue, and depression relative to subjects in control groups. [17] The mood benefits of Hatha yoga and swimming compared in college students showed that yoga was as effective as swimming in decreasing anxiety, confusion, tension and depression, and that the acute decreases after yoga were significantly greater than after swimming for men who were personally selected to participate. [18] Similar results have also been noted in psychiatric patients with a reduction in negative emotions factor in Profile of Mood States, including tension-anxiety, depression-dejection, anger-hostility, fatigue-inertia, and confusion-bewilderment after yoga. [19] The verbal aggressiveness scale was also used to assess the response of basketball players to the verbal aggressiveness of the coaches which showed that male players were more affected than the female players. [20]

Methods

Two hundred and twenty-six subjects who consented to participate in the study, were randomly allocated into two groups of equal size. The final data was available on 173 subjects. Inclusion criteria were (a) healthy individuals of both sexes and between the ages of 18 and 71 years, and (b) ability to read and write English because the participant had to fill up the
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questionnaire available in the English language. Exclusion criteria were (a) individuals with diseases such as diabetes, cancer, hypertension, anxiety, depression etc., (b) substance abuse, and (c) active nicotine abuse.

Source of subjects: Normal adult volunteers who consented to participate in the study were recruited from different locations in Bangalore.

Ethical clearance: Signed informed consent was obtained from all the subjects and also from the institutional heads where the classes were conducted. The institutional ethical committee of the parent institution had cleared the project proposal.

Design

This was a prospective randomized control design to compare the efficacy of yoga (Y) with physical exercise (PE) as a control intervention in normal healthy volunteers. Motivational lectures were arranged in public centers such as colleges, health clubs, Rotary clubs, Lions' clubs and apartment complexes. The classes were planned in five different centers in the city of Bangalore.

After reading the instructions in the informed consent form about the design of the study, these subjects agreed to be in the allotted group. The experimental group was given Y practices and the control group was given PE for one hour daily on an empty stomach (6 to 7 a.m.). The classes were conducted six days a week for eight weeks and attendance was maintained by the teachers. Trained experts in either Y or PE conducted parallel sessions for the two groups in different rooms of the same building. It was ensured that there was no interaction between the subjects. The tests were administered on the first and last day of the study before starting the classes, by arranging the subjects to sit in a quiet hall, free from distractions and influences from each other, with supervisors moving around to clarify any doubts.

Randomization

The subjects selected for the study were randomly allotted into two groups by using five different random number tables (different tables for each center) generated from the random number generator program. [21]

Masking

The answered questionnaires were coded and kept away for future scoring. A psychologist who was not involved in the subject allocation or supervision of the classes, scored the questionnaires which were decoded only after the scoring of all answer sheets was completed.

Assessments

The Verbal Aggressiveness Scale (VAS) [Table 1] is an interpersonal model and measure. The VAS developed by Infante and Wigley contains 20 items scored on a 5-point linear rating format with reverse scoring on ten out of 20 items (questions: 1, 3, 5, 8, 10, 12, 14, 15, 17, 20). The scores can range from 20 to 100. The VAS gives a single overall score that describes the disposition of an individual towards low, moderate, or high verbal aggressiveness. Scores from 20-46 suggest low verbal aggressiveness, 47-73 suggest moderate verbal aggressiveness and 74-100 suggest high verbal aggressiveness.

Validity: This scale is stable across time. The reported test-retest reliability is 0.82 for a four week period. Further, cross-culture reliability has been supported in a number of studies. [7]

Interventions

Yoga group

Table 2 shows the list of practices used for the two groups. The integrated yoga module was selected from the integrated set of yoga practices used in earlier studies on yoga for positive health. [22] The module was developed based on ancient Yoga texts [23] to bring about a total development at the physical, mental, emotional, social, and spiritual levels. [24]

The techniques included i) physical practices (Kriyas, asanas, healthy yoga diet), ii) breathing practices with body movements and Pranayama, iii) meditation, iv) devotional sessions, v) lectures on yoga, vi) stress management based on yogic philosophy, and vii) lifestyle change through notional corrections for blissful awareness under all circumstances (action in relaxation). Qualified yoga teachers taught yoga.

Physical exercise group

The set of physical exercises chosen for this study consisted of standard practices [25] to provide mild to moderate exercises designed by experts in physical education and taught by trained physical education teachers. This group also had interactive lectures on healthy lifestyle including diet habits and stress management based on modern medical knowledge. The daily sessions began with short talks of five minutes on lifestyle and health covering the topics of (a) healthy diet (six talks) such as classification of foods, energy-yielding foods, role of animal fat and relation to cholesterol, vegetarian vs nonvegetarian diet, value of fiber etc., (b) value of exercise and health (six sessions) explaining different type of exercises, effects on muscles, joints, the value of regular sport activity etc, (c) bad effects of smoking (four talks), alcohol and other chemical abuse (two sessions), (d) effects of mental stress on health and the role of physical exercise in management of stress. This was followed by practice of the physical exercises for 45 minutes with enough rest in between. The sessions ended with ten minutes of self-relaxation (without guided instructions) in the supine position.

Data extraction

The scoring of the questionnaires was carried out as per the instructions in the manual and under the guidance of a psychologist. They were decoded after the scoring of both pre- and post- data.

Data analysis

Data was analyzed using SPSS version 10.0. A sample size of 164 was calculated based on previous studies, [26] which showed an effect size of 0.8, with a power of 0.8 and alpha set to 0.05. This calculation was done using G power. [27] The size of the sample actually recruited was 226 while only data on 173/226 subjects were available for analysis.

The statistical tests used were paired samples t-test for pre-post comparison and ANCOVA for change score comparison of the two groups. Interaction between males and females in their change scores in yoga and control groups was checked by Repeated Measures ANOVA (RMANOVA). As the study population had a wide age range, analysis was also carried out by considering the median age of 25 years as the value for grouping them as juniors (age ≤ 25 years) and seniors (age > 25 years). The interaction between these two groups in their change scores were also checked by RMANOVA.

Results
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