

ABSTRACT

Introduction

Childhood visual deficiency impairs children's neuro-psychomotor development, considerably affecting physical, mental, social, and emotional health. Yoga's benefits for various aspects of health for sighted children has been substantially supported by the literature. India is leading with one-fifth of blind children worldwide. Yoga's multi dimensional benefits help to improve their ability to handle many of their challenges.

Aim

This study was aimed to evaluate the effect of yoga practice on physical and psychological health of children with VI.

Objectives

The objectives of this study were:

- a) To develop a special module and accompanying protocol for teaching yoga to children and adolescents with VI
- b) To determine preferred method of learning
- c) To develop, validate and assess the feasibility of the said yoga module
- d) To evaluate the effects of the module on (i) physical health, and (ii) psychological health of children and adolescents with VI.

Material and Methods

This is a single-blind, waitlist control trial, with two groups matched on age, gender, height, weight and degree of blindness. Eighty three children with VI aged 9–16years were enrolled by convenience sampling from the Ramana Maharishi Academy for the Blind (residential school), Bengaluru. They were divided into two groups: yoga (n = 41) and control (n = 42).

The yoga group participated in one hour of yoga practice, five days per week, for 16-weeks while the control group followed their regular activities.

The following were assessed as indicators of physical fitness: a) muscle strength, b) endurance, c) flexibility, d) coordination, e) motor speed, f) static and dynamic balance, and g) lung function; and for psychological health: a) depression, b) anxiety, c) self-esteem, and d) working memory. All were evaluated pre and post the 16 week intervention.

Data were analyzed using the SPSS-20 (IBM Corporation, USA). Categorical variables were analyzed using Chi square test. Independent samples t' test was used to assess significance of differences between groups for demographic measures. Repeated measures ANOVAs (time x group) were used to determine significant differences relative to the intervention.

Results

Demographic characteristics were found to be matched for both the groups.

a) Physical fitness

Baseline values of the yoga and control groups matched on all variables ($p > 0.05$). Within group analysis found highly significant pre-post intervention improvements ($p < 0.001$) for the yoga group in all variables except static balance at 20 secs ($p = 0.128$), i.e. bilateral muscles strength: hand grip strength (HGS), pinch strength, elbow extension and flexion, knee extension and flexion, coordination, finger tapping speed, muscle endurance and flexibility, lung function, and for balance: all trials of dynamic balance, but lesser significance for trials of static balance, 30 sec ($p = 0.009$) and 40 sec ($p = 0.018$). In contrast, the control group showed almost no significant within group improvement, i.e. marginally significance in left HGS ($p = 0.043$) and lung function ($p = 0.047$), although a significant positive result occurred in motor coordination for both hands ($p = 0.005$).

b) Psychological variables

There were no significant differences between groups at baseline. Within group comparisons showed significant improvements ($p < 0.001$) in yoga group scores on State Trait Anxiety Inventory for children (STAI-C), Children's Depression Inventory-2 (CDI), Rosenberg Self Esteem Scale and the N-back test; whereas controls showed marginally significant changes in total scores of STAI-C ($p = 0.043$) and significant changes on CDI ($p = 0.008$).

Conclusion

The study suggests that yoga has considerable ability to improve physical and psychological health in children with VI. Results indicate that yoga is effective in promoting health, and may be prescribed to enhance individual psychophysiological performance in visually impaired children and adolescents, possibly as an exercise program within normal curricula.