Effect of Various Combinations of Yogic Practices on Physical Performance of Non-Sport and Sport Persons

Doctor of Philosophy
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By

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ABSTRACT

Background: Previously, improvements in different physical fitness parameters were reported by yoga. Yoga has beneficial effects at both the physical and mental levels. Its potential to improve V̇O2max is questioned because of its low exercise stimulus. Considering the positive impact of Yoga Breathing Maneuvers (YBM) on cardio-respiratory systems, its effect on V̇O2max needs to be studied. The applications of *yogasanas* (physical postures) and Breathing Maneuvers (YBM) in the training programme on muscular strength, flexibility, agility, and balance were explored.

Study's Purpose: The primary purpose of the present study was to investigate the effects of various combinations of yoga intervention on physical fitness of both non-sports and sportspersons.

Methods: The study was conducted to understand the effect of 12 weeks of yoga training on the physical fitness of two population groups. They are, namely healthy Non-Sports Persons (NSP) and Sportspersons (SP). The study was split into two sections. **Section A** under the healthy NSP and **Section B** under the sportsperson. Both sections used a controlled study design with an Experimental Group **(EG)** that received yoga training and a Control Group **(CG)** that did not. Measurements were taken at baseline, 6 week and 12 weeks (baseline-middle-past intervestion) . All participants were given similar environment, diet, and daily routine to minimize external variables.

Section A: 32 male undergraduate students, aged 18-21 participated in this study. They are divided into two groups of 16 each. The EG practiced a 45-minute yoga session (including Asana, YBM, and Meditation) six days a week for 12 weeks. The CG did not practice yoga.

Section B: 60 male youth football players participated in this study. However, finally, the inclusion and exclusion criteria were fulfilled by 54 participants, comprising 26 in the EG and 28 in the CG. Both groups were part of a football academy and continued their regular sports training. The EG received 45 minutes of yoga training in addition to their regular sports training. The CG received only their regular sports training.

Results:

Section A: Cardiovascular Fitness (V̇O2max) in the EG, significant improvements were found in predicted V̇O2max throughout the study. The improvement in 6th week end was 49.36 and further better improvement was found 53.03 in 12 week end. The CG showed no significant changes of improvement found.

The improvement of muscular strength, flexibility and balance of EG was found in 6th week and 12 week end. The improvement of BS was 113.25 in 6th week end and 12 week end 113.69. HGS, flexibility, and balance showed similar improvement patterns in the EG, while the CG remained unchanged.

Section B: Cardiovascular fitness (predicted V̇O2max), explosive strength (Jump height), flexibility, agility and balance were measured. The EG had initial higher improvement that were not sustained 12th week end. EG saw higher early improvements in $\dot{V}O_2$max, flexibility, and agility. But these gains slowed down in 12th week end were surpassed by the control group (CG). The EG consistent benefit was in balance, where they showed superior improvements over the control group throughout the 12 weeks. In terms of jump height, the EG ultimately achieved slightly better results than the control group in 12 week end.

Discussion:

Section A: The substantial improvement in $\dot{V}O_2$max are attributed to the progressive incorporation of Yoga Breathing Maneuvers (YBM). These breathing exercises positively conditioned the participants' cardiovascular and respiratory systems which improved their aerobic capacity. Muscular strength, flexibility and balance were improved. The improvements are linked to the practice of Yogasanas (physical postures). The isometric nature of these postures enhances muscular strength, similar to resistance training. The improved flexibility is a direct result of the stretching and increased blood circulation to muscles during asanas practice. The study also suggests that the gains in strength and flexibility indirectly contributed to the participants' improved balance.

Section B: EG initially showed superior gains in $\dot{V}O_2$max, balance, flexibility, and agility during the Phase 1. These improvements were not always sustained. The gains often slowed or were reduced in the Phase 2, except for jump height. $\dot{V}O_2$max, Flexibility, and Agility; The initial improvements were likely

due to the yoga intervention, but the reducetion in Phase 2 suggest that either the training stimulus was insufficient over time or other factors maybe happened. EG was particularly effective for balance, as the EG consistently performed better than the control group throughout the study. This suggests yoga effectively enhances neuromuscular coordination and proprioception. In Jump Height,both groups improved, but the yoga group showed a slightly better performance in Phase 2, indicating that yoga may contribute to long-term neuromuscular adaptations that enhance explosive power.

Conclusion: The study suggests that a 12-week yoga intervention is very important to improve the physical fitness of non-sports individuals. Yogic training has potential comprehensive effects to improve all fitness components. For athletes, yogic training role as a supplementary or remedial training tool for developing or maintaining physical fitness.