



**EFFECTS OF YOGA ON LOW BACK STABILITY, STRENGTH AND  
ENDURANCE**

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**Abstract**

*AIMS: To investigate the effects of Yoga on improving low back stability (threshold of stability, and mean total velocity of center of pressure), trunk strength (isometric strength in extension and flexion), and back endurance (isometric endurance in extension, flexion, and side laterals).*

**Key Words:** *LBP (Low Back Pain), CAM (Complementary Alternative Medicine), TOS (Threshold of Stability)*



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**Introduction**

**1.1 Background and Significance**

Low Back Pain (LBP) disables around 5 million Americans every year and results in about \$100 Billion in direct and indirect costs related to LBP treatments (National Health Interview Survey, 2007, Springen, 2008). After the first episode of low back pain, about 25% of patients have a recurrence within the next year (Stanton et al., 2008). In addition to their pain, these patients' health problems typically include reduced physical function and psychological distress (Bogduk et al., 2004). Despite the availability of a variety of treatments for low back injuries, such as exercise, medications, and spinal manipulation, most treatments have shown mixed evidence in terms of a significant reduction in pain symptoms and disability (Bogduk et al., 2004). In an

effort to reduce work related injury, and promote health and wellness within the workforce, many of the nation's largest employers (i.e., workforce of 750+ employees) incorporate health promotion programs; about 65% of these employers have full or part-time employees that are responsible for such programs / activities within a company (Linnan et al., 2004). Considering the economic and social effects of low back pain, appropriate management is necessary. As such, there is not only a need to further investigate the existing treatments and pathology of low back pain but to also examine alternate LBP treatment modalities as some may act as a proactive step to help prevent LBP and the associated impact of its prevalence. Currently, about 17% of Americans who experience back pain have sought forms of complementary alternative medicine (CAM) within which Yoga is ranked as one of the top 10 CAM modalities (National Health Interview Survey, 2008). About 6.1% or 13 million adults in America practiced Yoga in 2007. While Yoga has been adopted by many as a form of CAM, and even adopted in some employer-based health promotion programs, empirical evidence is lacking in regards to its viability to reduce injury risk.

**METHODS:** A pretest posttest control group experimental design was used. Sixteen participants, 10 females and 6 males, without a history of low back pain, and no prior experience of Yoga, were recruited. Yoga participants were recruited following registration in a yoga class; the control subjects were selected and recruited selectively in order to match the stature and body mass of the Yoga participant pool. Performance was measured prior to the beginning of Yoga exercises and 7 weeks later for both the groups.

**RESULTS:** Contrary to the control group, the Yoga group significantly improved in terms of low back stability (decrease in threshold of stability by ~19%) and sway parameters (decrease in mean total velocity of COP by ~17%).

**CONCLUSIONS:** The results of the study demonstrate the positive effects of a 7 week Yoga intervention on Stability of the lower back, measured in terms of TOS and mean total velocity of center of Pressure. The study also found that the improvement in low back stability does not require higher endurance and strength and thus suggests that a Yoga intervention improves the neuromuscular control and proprioception of the lower back to bring about an improvement in the stability. Based on the current study results, Yoga appears to be a beneficial proactive and/or rehabilitative modality. It is a low cost intervention that could be easily implemented within a fitness program in occupational settings, helping employees improve lower back health and

assisting in the prevention of occupationally related injuries. However, it is warranted that future research be focused on measuring neuromuscular differences after a Yoga intervention, over a greater exposure period, using a larger sample, to quantify its prophylactic and therapeutic value, if possible.

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