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Short Commentary

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Can Yoga Prevent Fall?

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Commentary

Yoga exercises, aim to improve strength, flexibility and balance with the way of relaxation and meditation [1]. Yoga is increasing popularity among all age groups [2], and previous evidences demonstrate the physical benefits of yoga as follows; reduce hypertension [3], reduce chronic back pain and disability [4], and improve sleep quality [5] for general populations and specific morbidity group. There is such a little study of yoga's effect on independence in elderly, measured by balance and mobility, and no randomized controlled trials have evaluated the impact of yoga on falls in elderly. A meta-analysis review [6] provides preliminary evidence of improvements in strength, aerobic fitness and self-rated health among elderly after regular yoga exercise. Jeter and colleagues [6] reviewed 15 studies and concluded that yoga may have a beneficial effect on balance. However, this review included study participants of all ages (range from 10 to 93 years) and only included healthy study cohorts making it difficult to determine the effect of yoga on balance in elderly with a range of co-morbidities. Youkhana, et al. [7] did systematic review aimed to answer the following questions:

- What is the effect of yoga on balance in elderly people (> 60 years old)?
- What is the effect of yoga on physical mobility in elderly people (> 60 years old)?

In this review, balance was defined as 'The ability to maintain the projection of the body's center of mass within manageable limits of the base of support, during standing or sitting, or during move to a new base of support' [8]. Physical mobility was defined as 'The ability to walk, move around and change or maintain body position' [9]. To make recommendations based on the highest level of evidence, this review included only randomized controlled trials. They searched from the following electronic databases: MEDLINE, EMBASE, Cochrane Central Register of Controlled Trials, CINAHL, Allied and Complementary Medicine Database and the Physiotherapy Evidence Database (PEDro). Trials were included if they evaluated the effect of physical yoga (excluding meditation and breathing exercises alone) on balance in elderly people (> 60 years old). They extracted data on balance and the secondary outcome of physical mobility. Standardized mean differences and 95% Confidence Intervals (CI) were calculated using random-effects models. The quality of trials was assessed using the 10-point Physiotherapy Evidence Database (PEDro) Scale. Six trials of relatively high yoga interventions had a small effect on balance performance (Standardized Mean Differences (SMDs) using Hedges' g statistic = 0.40, 95% CI 0.15-0.65, 6 trials) and a medium effect on physical mobility (Hedges' g = 0.50, 95% CI 0.06-0.95, 3 trials). In conclusion, yoga interventions resulted in small and medium improvements in balance and physical mobility, respectively in elderly (> 60 years old). Further research is required to determine whether yoga-related improvements in balance and mobility translate to prevention of falls in older people.

In 2016, Suputtitada A. et al, [10] studied the effect of yoga on balance, lumbopelvic stability and back muscles power in women. There are few studies of effect of yoga on motor performance. Randomized, single blinded controlled study was done. The effect of 6-week yoga exercise, 30 minutes per day for twice a week, was studied in healthy middle-aged women.

Thirty-nine women, aged between 30-45 years old, were randomized into yoga and control group. Before and after 6 weeks, participants were measured postural sway by using force plate during double and single leg stance while eyes opened and closed, lumbopelvic stability by angular displacement and angular velocity during single-leg landing, Gluteus medius and back muscles activities by surface EMG and muscle power by using isokinetic dynamometer. Results: We found that balance in single-leg stand in yoga group were significantly greater than control group ($p<0.05$). There was no significant difference between groups for angular displacement and angular excursion. The angular velocity showed significant difference between groups for mean velocity of lateral

bend ($p<0.05$). EMG activities of gluteus medius muscles and back muscles power in yoga group revealed decrement than control, but no statistically significant difference. In conclusion, 6-week yoga exercise, 30 minutes per day for twice a week, totally 12 days, can improve balance, back muscles power and lumbopelvic stability. These might decrease risk for low back pain and fall risk in women. In conclusion, yoga can improve balance, back muscles power and lumbopelvic stability and might decrease fall risk.

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