

## Exercises in Essential Hypertension: Is it Really Essential to Exercise?

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### Abstract

This short communication paper intended to provide a descriptive evidence summary on efficacy studies of exercises in essential hypertension through a PubMed-based search for systematic reviews and/or meta-analyses. There were high quality evidence for aerobic exercise, device-guided breathing exercise, Tai Chi exercise, with an evidence-based recommendation and American college of sports medicine endorsing a position statement, all of which favored use of exercises as a safe and effective treatment modality.

**Keywords:** Cardiovascular Rehabilitation; Hypertension; Blood Pressure; Exercise Rehabilitation.

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### *Aerobic Exercise*

An individually tailored short-duration low intensity aerobic exercise (moderate intensity (40% to <60% of VO<sub>2</sub> Reserve), for 30 minutes or more of continuous or accumulated physical activity per day) had immediate antihypertensive effect [1].

Hameret al [2] did a systematic review of 15 randomised controlled trials (RCTs) on the effect of acute aerobic exercise on blood pressure (BP) responses to psychosocial stress. Ten RCTs demonstrated significant dose-dependent reductions in post-exercise stress related BP responses compared with control. The minimum exercise dose to show a significant effect was 30 min duration at 50% VO<sub>2</sub>max intensity.

### *Device-Guided Breathing Exercise*

Mahtaniet al [3] studied effects of device-guided

breathing (DGB) on blood pressure (BP) by systematically reviewed eight trials consisting of 494 adult patients. The device produced reductions in SBP by 3.67 mmHg and decreased DBP by 2.51 mmHg, with no overall effects observed on heart rate or quality of life using the device.

### *Tai Chi Exercise*

Yehet al [4] did a systematic review of 26 studies (9 randomized controlled trials, 13 nonrandomized studies, and 4 observational studies) on the effect of tai chi exercise on blood pressure (BP) in patients with and without cardiovascular conditions. Majority of studies reported reductions in BP with tai chi (3-32 mm Hg systolic and 2-18 mm Hg diastolic BP reductions).

### *Evidence-Based Recommendations*

Gordon et al [5] provided recommendations based upon a recent meta-analysis of 25 longitudinal aerobic training studies, in which the average sample-size-weighted reductions in resting systolic and diastolic blood pressures were 10.8 mm Hg and

8.2mm Hg, respectively. Aerobic exercise prescription should adhere to 5 basic principles: the type of exercise to be performed, and the frequency, intensity and duration of exercise training. Aerobic exercise training performed at an intensity 60 to 85% of maximal heart rate and duration and frequency modulated to achieve a weekly energy expenditure of between 14 and 20 kcal/kg of bodyweight is considered to be beneficial.

#### *Position Statement*

American College of Sports Medicine published a position stand which is as follows; "Exercise programs that primarily involve endurance activities prevent the development of HTN and lower blood pressure (BP) in adults with normal BP and those with HTN. The proposed mechanisms for the BP lowering effects of exercise include neurohumoral (decreased catecholamines), vascular (decreased peripheral resistance), and structural adaptations (improved insulin sensitivity, and alterations in vasodilators and vasoconstrictors). Individuals with stable controlled HTN and no CVD or renal complications may participate in an exercise program or competitive athletics, and it is reasonable for the majority of patients to begin moderate intensity exercise (40-<60% VO<sub>2</sub>R) such as walking. Drugs such as angiotensin converting enzyme (ACE) inhibitors (or angiotensin II receptor blockers in case of ACE inhibitor intolerance) and calcium channel blockers are currently recommended for recreational exercisers and athletes who have HTN. Exercise remains a cornerstone therapy for the primary prevention, treatment, and control of HTN in adults while the optimal training frequency, intensity, time, and type (FITT) need to be better defined to optimize the BP lowering capacities of exercise, particularly in children, women, older adults, and certain ethnic groups. Frequency: on most, preferably all, days of the week. Intensity: moderate-intensity (40-<60% VO<sub>2</sub>R). Time: > or = 30 min of continuous or

accumulated physical activity per day. Type: primarily endurance physical activity supplemented by resistance exercise" [6].

There were high quality evidence for aerobic exercise, device-guided breathing exercise, Tai Chi exercise, with an evidence-based recommendation and American college of sports medicine endorsing a position statement, all of which favored use of exercises as a safe and effective treatment modality.

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