

Exercise Training for Management Hypertensive Patients: A Systematic Review and Meta-Analysis

Authors : Noor F. Ilias, Mazlifah Omar, Hashbullah Ismail

Abstract : Exercise training has been shown to improve functional capacity and is recommended as a therapy for management of blood pressure. Our purpose was to establish whether different exercise capacity produces different effect size for Cardiorespiratory Fitness (CRF), systolic (SBP) and diastolic (DBP) blood pressure in patients with hypertension. Exercise characteristic is required in order to have optimal benefit from the training, but optimal exercise capacity is still unwarranted. A MEDLINE search (1985 to 2015) was conducted for exercise based rehabilitation trials in hypertensive patients. Thirty-seven studies met the selection criteria. Of these, 31 (83.7%) were aerobic exercise and 6 (16.3%) aerobic with additional resistance exercise, providing a total of 1318 exercise subjects and 819 control, the total of subjects was 2137. We calculated exercise volume and energy expenditure through the description of exercise characteristics. 4 studies (18.2%) were 451kcal - 900 kcal, 12 (54.5%) were 900 kcal - 1350 kcal and 6 (27.3%) >1351kcal per week. Peak oxygen consumption (peak VO₂) increased by mean difference of 1.44 ml/kg/min (95% confidence interval [CI]: 1.08 to 1.79 ml/kg/min; p = 0.00001) with weighted mean 21.2% for aerobic exercise compare to aerobic with additional resistance exercise 4.50 ml/kg/min (95% confidence interval [CI]: 3.57 to 5.42 ml/kg/min; p = 0.00001) with weighted mean 14.5%. SBP was clinically reduce for both aerobic and aerobic with resistance training by mean difference of -4.66 mmHg (95% confidence interval [CI]: -5.68 to -3.63 mmHg; p = 0.00001) weighted mean 6% reduction and -5.06 mmHg (95% confidence interval [CI]: -7.32 to -2.8 mmHg; p = 0.0001) weighted mean 5% reduction respectively. Result for DBP was clinically reduce for aerobic by mean difference of -1.62 mmHg (95% confidence interval [CI]: -2.09 to -1.15 mmHg; p = 0.00001) weighted mean 4% reduction and aerobic with resistance training reduce by mean difference of -3.26 mmHg (95% confidence interval [CI]: -4.87 to -1.65 mmHg; p = 0.0001) weighted mean 6% reduction. Optimum exercise capacity for 451 kcal - 900 kcal showed greater improvement in peak VO₂ and SBP by 2.76 ml/kg/min (95% confidence interval [CI]: 1.47 to 4.05 ml/kg/min; p = 0.0001) with weighted mean 40.6% and -16.66 mmHg (95% confidence interval [CI]: -21.72 to -11.60 mmHg; p = 0.00001) weighted mean 9.8% respectively. Our data demonstrated that aerobic exercise with total volume of 451 kcal - 900 kcal/ week energy expenditure may elicit greater changes in cardiorespiratory fitness and blood pressure in hypertensive patients. Higher exercise capacity weekly does not seem better result in management hypertensive patients.

Keywords : blood Pressure, exercise, hypertension, peak VO₂

Conference Title : ICPHCMS 2016 : International Conference on Prehypertension, Hypertension and Cardio Metabolic Syndrome

Conference Location : Kuala Lumpur, Malaysia

Conference Dates : August 18-19, 2016