Effects on blood pressure and cardiorespiratory condition of an 8-week exercise programme of differing intensities in hypertensive patients: pilot study

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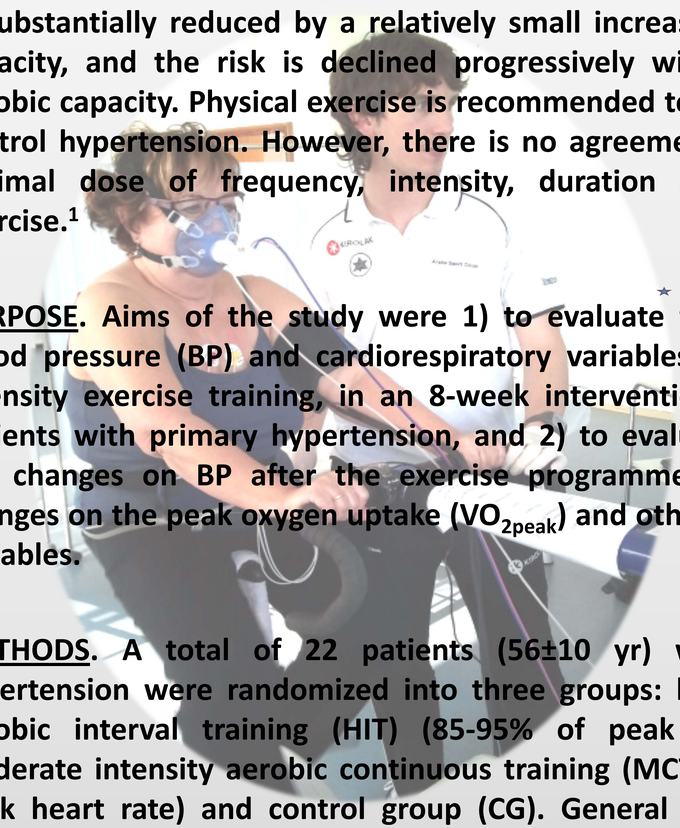
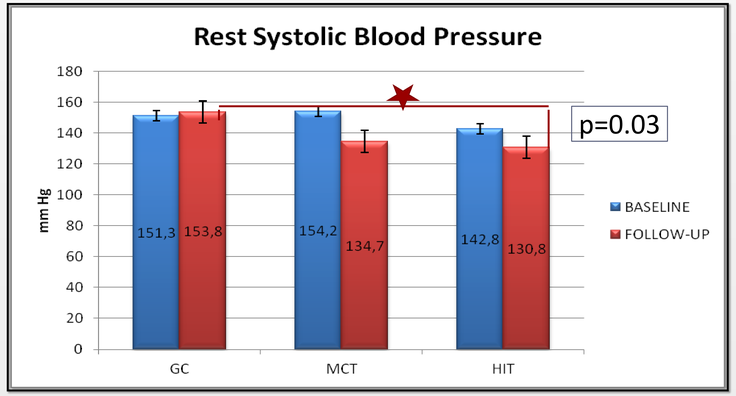


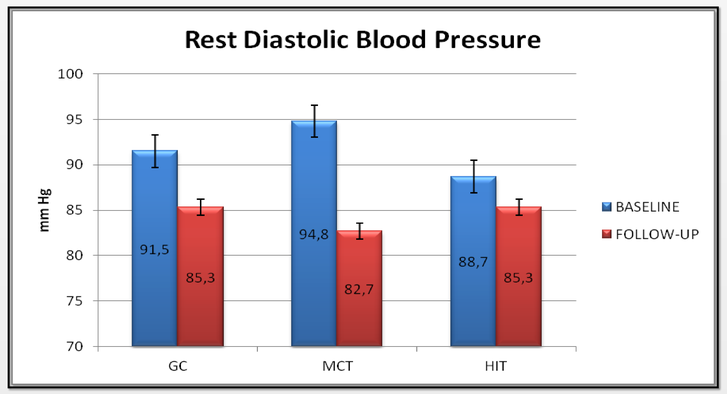
BACKGROUND. Hypertension is an important risk factor for cardiovascular diseases, affecting about 1 billion people worldwide, and is the top global risk factor for mortality. This risk is substantially reduced by a relatively small increase in exercise capacity, and the risk is declined progressively with increasing aerobic capacity. Physical exercise is recommended to prevent and control hypertension. However, there is no agreement about the optimal dose of frequency, intensity, duration and type of exercise.[1]

PURPOSE. Aims of the study were 1) to evaluate the effect on blood pressure (BP) and cardiorespiratory variables of different intensity exercise training, in an 8-week intervention period, in patients with primary hypertension, and 2) to evaluate whether the changes on BP after the exercise programme are due to changes on the peak oxygen uptake (VO_{2peak}) and other ventilatory variables.

METHODS. A total of 22 patients (56±10 yr) with primary hypertension were randomized into three groups: high intensity aerobic interval training (HIT) (85-95% of peak heart rate), moderate intensity aerobic continuous training (MCT) (60-80% of peak heart rate) and control group (CG). General advice about healthy lifestyle was given to all participants. Furthermore, HIT and MCT groups performed supervised exercise twice a week for 8 weeks on a treadmill and bicycle ergometers. All participants underwent before and at the end of the intervention period: 1) anthropometry, 2) a ramp incremental cardiopulmonary exercise test on a bicycle ergometer, and 3) Incremental Shuttle Walk Test.

RESULTS:





VARIABLES	CONTROL GROUP		CONTINUOUS GROUP (MCT)		INTERVAL GROUP (HIT)	
	T1	T2	T1	T2	T1	T2
VO_{2peak} ($L \cdot min^{-1}$)	2,2 ± 0,6	2,4 ± 0,7	2,2 ± 0,6	2,2 ± 0,6	1,9 ± 0,8	2,2 ± 0,9*
VO_{2peak} ($mL \cdot kg^{-1} \cdot min^{-1}$)	29,5 ± 10,5	30,3 ± 8,5	25,0 ± 7,4	25,3 ± 6,6	24,3 ± 7,5	28,2 ± 8,8*
VCO_{2peak} ($L \cdot min^{-1}$)	2,5 ± 0,7	2,7 ± 0,8	2,5 ± 0,6	2,6 ± 6,6*	2,3 ± 0,9	2,8 ± 0,9*
UV2 ($L \cdot min^{-1}$)	1,9 ± 0,5	2,3 ± 0,8	1,7 ± 0,5	1,9 ± 0,5	1,7 ± 0,7	2,2 ± 0,7*
UV2 ($mL \cdot kg^{-1} \cdot min^{-1}$)	25,5 ± 8,2	29 ± 11,3	20,3 ± 6,4	22,0 ± 6,4	21,4 ± 7,3	26,6 ± 7,0*
Workload (W)	162,5 ± 49,5	167,7 ± 56,1	158,0 ± 45,8	168,7 ± 40,2	140,7 ± 58,1	165,5 ± 58,9*
Time (min)	14,2 ± 4,9	14,5 ± 5,5	13,4 ± 4,6	14,8 ± 4,1	12,0 ± 5,7	14,3 ± 5,7*

* $p \leq 0.05$ •between T1 & T2

CONCLUSIONS. This study indicates that:

- ✓ both MCT and HIT exert effects on reducing rest BP in hypertensive patients.
- ✓ Nevertheless, high intensity interval training could offer better short-term cardioprotector effect than moderate intensity continuous training, due to a more effective reduction of rest systolic BP and higher cardiorespiratory capacity values.
- ✓ A complete lifestyle treatment is required to have a better control of BP.

REFERENCE: [1] The Fifth Joint Task Force of the European Society of Cardiology and Other Societies on Cardiovascular Disease Prevention in Clinical Practice. (2012). European Guidelines on cardiovascular disease prevention in clinical practice (version 2012). European Heart Journal, 19(4): 585-667.