

LOW INTENSITY EXERCISE TRAINING IMPROVES CARDIOVASCULAR PARAMETERS IN PULMONARY HYPERTENSION

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Introduction: Pulmonary hypertension (PH) is characterized by increasing in pulmonary vascular resistance, leading to right ventricle (RV) hypertrophy and failure, and autonomic nervous system (ANS) dysfunction. There was a reduction in heart rate variability (HRV) and an imbalance of the renin angiotensin system (RAS), increasing the vasoconstrictor axis, represented by the angiotensin converting enzyme (ACE)-angiotensinII-AT1 receptor (AT1R). It remains unclear the ideal intensity of exercise training (ET) in PH. **Objective:** We evaluate the effect of low and moderate ET on the ANS and RAS in the heart of PH-rats. **Methods:** PH was induced by a single injection of monocrotaline (MCT; 50mg/kg). Groups: control (CO), MCT-sedentary (MCT-S), MCT-low (MCT-L; 40%), and MCT-moderate exercise training (MCT-M; 60% of the maximal speed). ET was performed on treadmill for 50 minutes/5 times/week/3weeks. ANS was analyzed through HRV; RAS by the ACE, ACE2, AT1R and AT2R, and Mas receptor expression by western blot in the RV. Data were compared by one-way ANOVA follow by Student-Neumann-Keuls test ($P < 0.05$). **Results:** The weight of RV was higher in MCT-S vs all groups, and systolic pressure (RVSP) 120% higher than CO. HRV was significantly higher in the ET-groups than in sedentary groups, and MCT-L was 47% higher than CO. ACE expression was significantly decreased in MCT-L (46%) and MCT-M (44%) compared with MCT-S, but ACE2 was significantly increased in MCT-M (133%) vs CO. On the other hand, AT2R and Mas were decreased in MCT-S and Mas was 38% higher than CO. Regarding to AT1R, there was no difference between groups. **Conclusion:** Collectively, our results indicate that the low

intensity of ET was more effective in improving the ANS in favor to parasympathetic nervous system, and RAS balance in favor to the vasodilator axis.

*All procedures were approved by the Universidade Federal de Ciências da Saúde de Porto Alegre (UFCSPA) Ethics and Research Committee (protocol number 115/13).