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Title: Intensity of training and physiologic and clinical changes after pulmonary rehabilitation programme in patients chronic obstructive pulmonary disease

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Body: The aim of the study was to evaluate the efficacy of a pulmonary rehabilitation programme (PRP) in relation to the intensity of exercise training achieved during PRP in patients with Chronic Obstructive Pulmonary Disease (COPD). We performed a retrospective analysis on 92 COPD patients (FEV1% 54) who participated in a PRP between 2007 and 2009. All subjects did an outpatient training exercise programme lasted 2 months. The training sessions were 20 and each session consisted in 30 min of cyclergometer exercise associated with 30 min of upper limb exercise. Before and after the PRP the following measurements were done: the exercise tolerance by 6MWT and cardiopulmonary exercise test (CPET), upper and lower limb endurance (ULE;LLE), MRC, MIP and MEP, quality of life by SGRQ. Patients were divided into two groups based on the achievement (Group 1) or not (Group 2) of high intensity training, meaning the intensity of 75% of Wmax reached in CPET pre PRP, sustained for as long as 25 - 30 minutes for 8 final sessions of the PRP.

	Group 1		Group 2		Group1 vs Group 2
	Δ	p	Δ	p	
watts	13.4	p<0.001	2.55	ns	*
VO2 spec (ml/min/Kg)	-1.87	p<0.001	-1.65	ns	
VE isow (L/min)	-3.65	p<0.01	-2.01	ns	
HR isow (BPM)	-14.9	p< 0.001	-5.63	ns	*
ULE(sec)	37.7	p<0.001	35.5	p<0.01	
LLE(sec)	409.	p<0.01	230.	p<0.01	
MIP(cmH2O)	5.7	p<0.05	7.5	p<0.05	

MRC	-0.39	p<0.01	-0.44	p<0.01	
6MWT(mt)	31.2	p<0.01	40.2	p<0.001	
SGRQ Impact	-6.48	p<0.01	-2.39	ns	
SGRQ tot	-5.72	p<0.01	-2.22	ns	

After PRP,changes from baseline were signiicant for all measurements in Group 1, but not in Group 2. Therefore, reaching and maintaining high intensity of exercise training is associated with better results obtained by PRP in COPD patients.