American Society of Exercise Physiologists
2nd Annual Meeting, 1999
Abstract # __24___ Submission Category and Topic: __ Research - Professional__

Results of 6 Minute Ambulation and MET Tolerance of Patients With Severe Chronic Obstructive Pulmonary Disease (COPD) Utilizing 2 Different Aerobic Training Regimes: Interval Training Versus Continuous Training

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Introduction: Exercise Therapy increases the exercise tolerance of patients with COPD and should be regarded as a mainstay of pulmonary rehabilitation.(1) However, research is divided on optimal aerobic conditioning regimes for individuals with COPD. (1,4) The purpose of this study was to examine the efficacy of interval training versus continuous training in patients with severe COPD comparing 6 minute ambulation results and MET tolerance during week 1 of training and at time of discharge form a pulmonary rehabilitation program. **Methods:** Thirteen subjects (females=8, males=5) with severe COPD were randomly assigned to either the interval training group (IT) or continuous training group (CT). Aerobic exercise was performed on a treadmill and NU-STEP recumbent stepper. Duration of exercise started at 10 minutes and increased to 30 minutes by time of discharge. IT subjects were trained using a 2:1 active rest to work ratio with a standard cadence of either 1.5 miles/hour on the treadmill or 70 steps/minute on the recumbent stepper. CT subjects exercise with a uniform cadence throughout their aerobic session. Aerobic intensity levels were increased 1 MET every 2 weeks in both groups. **Statistics:** Demographic data (age, height, weight, BMI, FEV1, pack years) and outcome measures (6 minute ambulation and MET tolerance at week 1 and discharge) were analyzed using 2 tailed independent t-tests ($p<0.05$). **Results:** The mean and standard deviation values are presented in Tables 1 and 2.

Table 1: Demographic Data of 2 Groups (X+SD)

	Interval Training Group (n=7)	Continuous Group (n=6)
age	71.4 ± 5	69.2 ± 10.7
height (cm)	163.7± 11	171.3 ± 8.0
weight (kg)	62.6 ± 11.1	77.2 ± 20
BMI	23.9 ± 3.7	27.0 ± 6.8
FEV1	37 ± 5.6	41.0 ± 8.0
Pack Years	67 + 21.4	54.1 ± 47.8

Table 2: 6 Minute Ambulation and MET Tolerance of Groups at Week 1 and Time of Discharge (X + SD)

Group	6 minute ambulation (feet walked)		MET Tolerance	
	Week 1	Discharge	Week 1	Discharge
Interval	882.9 ± 206.9	1145.9 ± 205.1	2.7 ± 0.62	5.0 ± 1.5
Continuous	637 ± 269.3	765.8 ± 246.9	2.8 ± 0.7	3.8 ± 1.2

(no significant difference between groups p< 0.05)

Discussion: Current research suggests that interval training can have a significant effect on functional mobility in patients with chronic diseases. (1-4) We hypothesized that interval training would result in significantly greater increases in 6 minute ambulation results and MET tolerance to aerobic exercise in patients with sever COPD. However, our results at this time indicate no statistically significant difference in either outcome measure with either training regime. The major limitations of this study were the small sample size and no subjective ratings of patient performance of 6 minute ambulation. Further research with a larger number of participants and subjective ratings of perceived exertion and shortness of breath is underway to examine this topic detail in greater detail.

References: **1**. Casaburi R. *Principles and Practice of Pulmonary Rehabilitation*. Philadelphia: W. B. Sanders Company, 1993. **2**. Sullivan M. et al, *Circulation* 79: 324-329, 1989. **3**. Faryniarz K. et al;. *J Respir Dis*. 11(7):638-644, 1990. **4**. Ries A. *Clinics in Chest Medicine* 15(2):327-336, 1994.