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Title: The predictive value of inspiratory fraction to exercise capacity in patients with stable moderate to severe chronic obstructive pulmonary disease

Ms. Yan 669 Zhang zhangyanyueren@163.com [1], Prof. Dr Jinming 670 Liu jinmingliu_sh@hotmail.com MD [2], Dr. Wenlan 671 Yang yangwenlan888@hotmail.com [1] and Mr. Xiaoyue 672 Tan anlifei@163.com [1]. [1] Department of Pulmonary Function Test, Shanghai Pulmonary Hospital, Tongji University School of Medicine, Shanghai, China, 200433 and [2] Department of Respiratory Medicine, Shanghai Pulmonary Hospital, Tongji University School of Medicine, Shanghai, China, 200433 .

Body: Objective To study the relationship between inspiratory-to-total lung capacity ratio or inspiratory fraction to exercise capacity in patients with stable moderate to severe chronic obstructive pulmonary disease. Methods Pulmonary lung function test(PFT) and Cardiopulmonary exercise testing(CPET) were tested in 50 patients with stable moderate to severe chronic obstructive pulmonary disease and 34 controls, and measured the parameters of ventilation and gas exchange. The stopped reasons at the end of exercise testing were be noted. Results (1)IF was significant associated with peak peak VO_2%pred(r=0.52,p<0.001)in COPD and remained as independent predictor in the final model: peak VO2%pred = 65.9IF + 0.45FEV_1%pred + 35.8(R_C^2=0.39,p<0.001),the sensitivity and specificity of IF for predicting exercise capacity were both better than FEV_1%pred, (2)The patients with IF<0.23 had more severe hyperinflation and lower exercise capacity. In the peak exercise, the patients with IF<0.23 had lower peak VE and lower peak VT than the patients with IF≥0.23, and their peak breath frequencies had no significant difference. Conclusion Inspiratory fraction provides the efficient information to reflect lung hyperinflation and to estimate the exercise capacity in patients with stable moderate to severe chronic obstructive pulmonary disease, and its predictive value is better than FEV_1%pred.