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Title: Benefits of a new device for inspiratory muscle training in COPD

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Body: In chronic obstructive pulmonary disease (COPD), inspiratory muscle weakness may occur as a result of the combined effects of increased work of breathing, malnutrition, hypercapnia/hipoxemia and others. The benefit of inspiratory muscle training (IMT) depends on patients phenotype but also on the type exercise methods. The aim of the study was the evaluation of medium (3 months) and short-term (at the end of a pulmonary rehabilitation program, PRP) effects of IMT using the TrainAir® electronic system. 47 patients with COPD (GOLD stage III, IV) without any previously PRP were divided in 2 groups. Both groups followed one month a comprehensive PRP, but to the group of patients that initially presented lower values of the respiratory maximal pressures IMT was added. Patients' assessment consisted of: spirometry, maximum inspiratory and expiratory pressures (MIP, MEP), 6-minute walk test (6MWT), body composition, MRC scale, and COPD Assessment Test (CAT). Our results demonstrated in both groups the increase of exercise capacity on short and medium term ($p=0.025$) measured by the distance expressed in meters walked to 6MWT as compared to the initial value (500±37 and 488±46 vs. 457±51 for the IMT group; 492±99, and 479±87 vs. 452±105 for the control group). IMT significantly reduced the difference between groups for MIP (kPa) (from 2.91±0.74 to 2.35±0.75, $p=0.002$), and the effect had been maintained over the medium term ($p=0.016$). Also, CAT score reduces more significantly on medium term in the presence of IMT (from 21.27±4.13 to 16.91±2.21 vs. from 22.25±2.19 to 19.50±1.85 in control group, $p <0.001$). In conclusion, in COPD patients, in addition to the improvement of MIP, IMT was beneficial for patients' symptomatology.