Title: Respiratory muscle strength and physical performance in elderly hospitalized patients

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Body: Age-related changes in pulmonary function increase respiratory muscle work. In front of this increased demand, sarcopenia frequently associated with age and multimorbidity, can reduce endurance and strength of respiratory muscles. Furthermore, sarcopenia may per se contribute to reduction of physical performance. Aim of the study: to evaluate the correlation between the respiratory muscle strength and physical performance in elderly. Population: 75 patients (30 men and 40 women) aged over 65 years (mean 78 yrs, SD: 6.6) admitted to the acute care geriatric ward of the Hospital University Campus Bio-Medico. Exclusion criteria: active malignancies, thyroid disease, renal failure (GFR < 30 ml/min), sepsis, severe cognitive impairment and arterial disease of lower limbs. After the resolution of the acute disease, we assessed the function of respiratory muscles by MIP and MEP and pulmonary function by FEV1 and FVC. Physical function was assessed using the 6MWT and dynamometry of the lower limbs. Nutritional assessment was based on the Mini Nutritional Assessment and the BMI. We evaluated the correlation between MIP/MEP and physical function using the Pearson’s coefficient of correlation. To evaluate the association between the variables of interest taking into account potential confounders we used multiple linear regression models. Results: The mean age of our sample was 77.8 ± 6.6, 31 patients had COPD (GOLD I: 36%, GOLD II: 48%, GOLD III: 16%). There was a statistically significant correlation between MIP and dynamometry ($r^2=0.23, p=0.07$) and between MIP/MEP and 6MWT (MIP: $r^2=0.38$, p=0.001; MEP: $r^2=0.398$, p<0.001). The correlation between MIP/MEP and 6MWT was maintained after adjustment for FEV1, FVC, dynamometry and sex.