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Title: Physiological phenotype and daily physical activity in COPD patients. A pilot study in Greece

Ms. Eleni 5292 Kortianou ekortianou@teilam.gr^{1,2}, Mr. Zafeiris 12103 Louvaris zafkimi@phed.uoa.gr¹, Mr. Vasileios 12104 Andrianopoulos andrianopoulos.v@lycos.com¹, Ms. Stavroula 12105 Spetsioti roula_spe@hotmail.com¹, Ms. Maroula 12106 Vasilopoulou maroulavas@yahoo.gr¹, Ms. Marianneta 12124 Roumpani m.roumpani@hotmail.com¹ and Dr. Ioannis 15698 Vogiatzis gianvog@phed.uoa.gr¹.¹ Thorax Foundation, Research Center of Intensive and Emergency Thoracic Medicine, Athens, Greece and² Department of Physiotherapy, Technological Educational Institute, Lamia, Greece .

Body: Background: Although impaired lung function and skeletal muscle dysfunction impact on exercise intolerance and reduced physical activity in patients with COPD, there is limited available information on those phenotypic factors that determine real-life daily physical activity. Aim: The objective of this pilot study was to examine the impact of baseline lung dysfunction, exercise capacity and quadriceps muscle strength on daily walking movement intensity (WalkMI), walking energy expenditure (WalkEE) and average energy expenditure (AvgEE) in patients with COPD. Methods: 20 COPD patients (age: 66±10; FEV₁: 48±15 %predicted; FFMI: 18±3) were assessed using an incremental work-rate test, the 6MWT and quadriceps muscle force (QuadsMF). Physical activity was measured over 14 consecutive days using the DynaPort MoveMonitor triaxial accelerometer. Results: WalkMI was related to 6MWT (r=0.44, p=0.05) and inversely related to dyspnea sensations during the 6MWT (r=-0.56, p=0.009). WalkEE was positively related to peak oxygen uptake (r=0.57, p=0.009), peak work rate (r=0.59, p=0.006) and FEV₁ %predicted (r=0.52, p=0.017) and inversely related to dyspnea sensations during the 6MWT (r=-0.47, p=0.03). AvgEE expressed in Mets was related to QuadsMF adjusted by body weight (r=0.42, p=0.046) and inversely related to dyspnea sensations during the 6MWT (r=-0.53 p=0.017). Conclusions: Strategies to enhance whole body endurance capacity and locomotor muscle strength would ameliorate daily physical activities along with dyspnea sensations in patients with COPD. Funded by the Innovative Medicine Initiative Joint Undertaking (IMI JU# 115011).