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Title: Feasibility of progressive knee-extension strength training using ankle weight cuffs in patients hospitalized with COPD for acute exacerbation

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Body: Introduction Muscle weakness in COPD is associated with increased morbidity and mortality. It is desirable to develop an easily applicable method of training to prevent patients with COPD from losing strength and function Objective To examine the feasibility of progressive strength training using ankle weight cuffs in patients hospitalized with COPD in acute exacerbation Methods Twenty patients with COPD (12 men and 8 women – mean (SD) age of 71.6 (10.1) years) with a mean FEV1 33% (16.2) and a MRC 4.3 (0.6) conducted daily unilateral knee-extension strength training. The patient was seated on the bedside using ankle weights cuffs in 3 sets of 10 repetition maximum loadings (adjusted on a set-by-set basis). The Sit-to-stand (STS) and Timed Up and Go (TUG) tests were assessed before and after the strength program Results Weight loads increased progressively by an average of 33% (P<0.001) from 7.4 (3.9) to 9.4 (4.1) for the 20 patients who performed 83 out of 92 possible sessions over 4 (3) days. Dyspnea did not compromise strength training. Eight patients did not complete the program due to: transfer to other wards (n=4), weekend (n=2) and diarrhea (n=1) and training load > 20 kg (n=1). Patients who conducted more than two training sessions (n=11) increased weight loads with 57% after a mean of 6 (2.9) days. The TUG and STS improved (n=11, P≤0.001) by 15% and 56% respectively Conclusions Progressive knee-extension strength training using ankle weight cuffs seems feasible and may be effective in improving function and preventing loss of strength in patients hospitalized with severe COPD. Confirmation in a randomized design is needed.