ther loss in FEV₁, walking distance and inflammatory status.

Conclusion: This cohort of patients remained remarkably stable over a 2-year follow-up period. A small loss in lean body mass was observed in some patients but this could not be associated with adverse clinical outcomes during this period.

Test-Retest Reproducibility of Constant Rate Step and Shuttle Walk Test for the Assessment of Exertional Dyspnea in Patients with COPD

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Background: Alternatives for laboratory exercise testing are needed to better reflect symptoms of physical activities of daily living in chronic disease. Such a tool should accurately set the exercise intensity and show good reproducibility. This study examined the reproducibility of constant rate walking (CRWT) and stepping tests (CRST) to assess exertional dyspnea in patients with COPD.

Methods: Stable COPD patients (n=43; 65 ± 6.5 yr; FEV₁= 49 ± 16% pred.) equipped with a portable Jaeger Oxycon Mobile® metabolic system completed both the CRWT and the CRST. Each test included four 3-min constant rate stages separated by a 10-min rest period on two occasions separated by 7 to 14 days. For both exercise modalities the selected rates targeted intensities between 25 and 80% VO₂ peak for moderately-severe COPD patients. Ventilation (VE) and gas exchange were obtained during the third minute and the Borg dyspnea score at the end of each exercise bout.

Results: An equal proportion of patients (35%) completed stage 4 of the CRWT and of the CRST. The

test-retest correlation coefficients for dyspnea scores ranged from 0.79 to 0.95 for stages 1 through 4 for the CRWT and from 0.88 to 0.85 for the CRST while those for VE (L·min⁻¹) ranged from 0.95 to 0.98 and 0.91 to 0.95 respectively.

Conclusion: These results show both the CRWT and the CRST to be highly reproducible for the assessment of exertional dyspnea in patients with moderate-severe COPD. However, a better linearity in VE and VO₂ with exercise stages was seen for the CRST than for the CRWT since patients complied more easily to the imposed external load with stepping than with walking.

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Development of a Constant Rate Step Test to Assess Exertional Dyspnea in the Primary Care Setting in Patients with COPD Ashley Rycroft

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Background: There is a need to develop a field test to evaluate exertional dyspnea in the primary care setting. This study examined the applicability of a 3-minute constant rate step test in patients with COPD.

Methods: This test involved 4 stepping rates (18, 22, 26, 32 steps·min⁻¹) equivalent to approximately 4.5, 5.3, 6.0, and 7.2 MET with the ultimate goal that in its final development, the assessment will be made a single stepping rate based on disease severity. Stable COPD patients (N= 43; 65 ± 6.5 years; FEV₁= 49 ±

16% pred.; SpO₂ (%) rest: 95± 2) were equipped with a portable Jaeger Oxycon Mobile® metabolic system and followed an audio signal for stepping up and down a single 20 cm step for 3 minutes. Borg dyspnea scores were obtained at the end each stepping bout. A 10-min rest was given between each stepping bout.

Results: Of the 43 patients, 80% completed stages 1 and 2, 74 and 37% stages 3 and 4 while no patient of MRC class 4 or 5 (n=8) completed stage 1. Breathing frequency (breaths.min⁻¹) spanned from 26.5± 4.1 to 39.0±6.4 but VT (L) remained unchanged (1.4± 0.3 vs. 1.5±0.4) from stage 1 to 4 while Borg scores were 3 ± 1, 4 ± 1, 5 ± 2, 6 ± 3 respectively and SpO₂ (%) were 92±5, 91±4, 91±4 and 90±4.

Conclusions: Preliminary findings indicate that a 3-min constant rate step test may present a feasible alternative to laboratory testing to assess exertional dyspnea in moderately severe COPD. In this population, a stepping rate of 26 steps·min⁻¹ could be sustained by the majority of patients while producing a level of dyspnea potentially amenable to therapy.

This study was supported by an unrestricted grant from Boehringer-Ingelheim/Pfizer in the Primary Care Setting in Patients with COPD.

Quality Assurance and the Service Domain in Cardiac and Pulmonary Rehabilitation

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Background: Little is known about the quality assurance methods used on cardiac and pulmonary rehabilitation. Also, little is known as to what extent the service domain is evaluated and what methods are employed. Knowledge of what is being done in these regards may facilitate programs effectively and efficiently measuring these outcomes.

Methods: A survey was mailed to 1/3 of the programs (approximately 400) in both cardiac and pulmonary rehabilitation listed in the AACVPR Program Guide 2004. The survey included questions that would add to the knowledge of what is the extent of practice and

methods. 12 components of quality assurance were listed and 14 components of patient satisfaction were assessed as to the frequency of use. It was pilot tested and revised.

Results: The usable return rate was 48%. Program directors of both types of programs claimed daily formal assessment of most of the 12 areas listed for quality assurance. The three highest being assessment of adverse events, safety, and patient satisfaction. The three lowest use was in the area of efficiency, timeliness and continuity of care. The service domain was assessed as comparable to the other three: health, clinical and behavioral domains. Patient satisfaction was the most commonly assessed component of the service domain with more than 90% of both types of programs measuring program effectiveness, overall program quality and friendliness of the staff. Managers most commonly cited the acquisition of new equipment as the endpoint as the end results of patient satisfaction assessment.

Conclusions: There was surprising similarity in results from programs in cardiac and pulmonary rehabilitation. Quality assurance is very frequently assessed in both. Concern for adverse events, safety, and patient satisfaction predominate.

Use of Preparatory Stability Exercises with Chronic Obstructive Pulmonary Disease Patients (COPD) to Prevent Iatrogenic Injuries during Rehabilitation

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Background: The increasing incidence of injuries sustained by clients during pulmonary rehabilitation, created a need to develop a prevention strategy. A pre-pulmonary rehabilitation stability exercise class was created based on best practice principles from the orthopaedic literature. It has been discussed in the literature that patients who have COPD have poor stability strategies based on the dominance of the need to drive the respiratory system. If successful, it was felt that this program would decrease the incidence of in-