

European Respiratory Society Annual Congress 2012

Abstract Number: 944

Publication Number: 1671

Abstract Group: 1.2. Rehabilitation and Chronic Care

Keyword 1: Rehabilitation **Keyword 2:** Peripheral muscle **Keyword 3:** COPD - mechanism

Title: Effects of a 3-week inpatient pulmonary rehabilitation (PR) on muscle remodelling in patients with emphysema

Ms. Inga 4121 Heinzelmann iheinzelmann@schoen-kliniken.de ¹, Mr. Sebastian 4122 Gehlert gehlert@dshs-koeln.de ², Mr. Axel 4123 Clever aclever@gmx.de ², Mr. Christian 4124 Wingels c.wingels@gmx.net ², Dr. Bernd 4125 Sczepanski bsczepanski@schoen-kliniken.de MD ¹, Prof. Dr Bloch 4126 Wilhelm w.bloch@dshs-koeln.de MD ² and Dr. Kenn 4127 Klaus kkenn@schoen-kliniken.de MD ¹. ¹ Department of Pneumology, Schoen Klinik Berchtesgadener Land, Schoenau am Koenigssee, Germany and ² Department for Molecular and Cellular Sports Medicine, German Sport University, Cologne, Germany

Body: Rationale: Exercise training of at least 10 weeks duration induces significant changes in myofiber size, capillarization and distribution in patients with emphysema. Up to date it is unknown which changes in muscle structure can be achieved by a German inpatient PR with a standard duration of 3 weeks. Methods: Ten patients with emphysema (age: 57±5y; BMI: 24±3kg/m²; FEV₁: 31±9%pred.) were included in this prospective trial. All patients performed an incremental cycle test to determine the peak work rate (PWR). The PR included daily supervised exercise training sessions (strength- and endurance training). Pre and post PR, biopsies from vastus lateralis muscle were taken. Results: PWR improved significantly during PR (+17Watt [95% CI, 6.3 to 27.7] p<0.01). We observed a significant increase in the capillary to fibre ratio in fibre types I and IIa respectively (+0.5% [95% CI, 0.1 to 1.0] p=0.03; +1.0% [95% CI, 0.6 to 1.4] p<0.01) in skeletal muscle. We found a significant negative correlation between FEV1% pred. and the change in capillary to fibre I ratio (r=-0.633, p<0.05). A non-significant but notable increase in the quantity of fibre type I (+6.5%), IIa (+2.2%) and IIx (+2.6%) was detected. Hybrid fibres decreased during PR (type I/IIa: -1.3% [95% CI, -2.21 to -0.39] p<0.01; type IIa/IIx: -5.2%, p=0.09). Conclusions: These preliminary data show that an inpatient 3-week PR is able to exert relevant adaptations in peripheral muscle of COPD patients. This includes an increase in capillarization and an augmented type I myofiber distribution. To confirm these first results, further patients will be investigated.