

# European Respiratory Society Annual Congress 2012

**Abstract Number:** 4957

**Publication Number:** P867

**Abstract Group:** 4.1. Clinical physiology and Exercise

**Keyword 1:** Lung growth/development **Keyword 2:** Lung function testing **Keyword 3:** Spirometry

**Title:** Lung-packing and stretching increases vital capacity in recreational freedivers

Mr. Orio 30780 Johansson orio.johansson@hotmail.com<sup>1</sup> and Prof. Erika 30781 Schagaty erika.schagaty@miun.se<sup>1</sup>. <sup>1</sup> Department of Engineering and Sustainable Development, Mid Sweden University, Östersund, Sweden, 831 25 .

**Body:** Introduction: Lung volume is as an important factor for apneic diving performance, and diver's lung volume is larger than in matched controls. Some of this effect is likely due to predisposition, but elite divers often use stretching and "lung packing" in their training to improve lung capacity. Our aim was to study the effects on vital capacity of a training program involving a series of maneuvers typical of freedivers training. Methods: Subjects were 13 recreational freedivers with a mean (SD) height; 179cm (8.4), weight; 73kg (13.8), age; 23 years (9.7), training apneic diving in average 1-2 h per week, and 8 matched control non divers. The diver's lung training involved a set of 5 different lung exercises with yoga and lung packing maneuvers 5 times a week for 11 weeks. Subjects VC was determined before and after the training program using 3 maximal expirations for slow VC, with the largest volume used. Results: Mean (SD) VC had increased across the training period, from 5.9 (1.4) to 6.3 (1.5) L or by 7.5 (7.3) % (P<0.01). An increase in VC was observed in all but 1 subject. In the control group mean (SD) VC was 4.6 (0.7) L in test 1 and 4.7 (0.8) L in test 2 (NS), showing that the effect in divers was likely not due to retesting. Discussion: The training used by elite divers, involving lung packing and stretching, may improve VC in recreational divers, despite previous dive training. The increase is more than twice as great as that previously obtained with only lung packing (Lindholm et al 2007). The main mechanism responsible could most likely be reduced chest recoil after stretching. Conclusions: We conclude that vital capacity can be improved by training.