Cardiorespiratory fitness, pulmonary function and activity level in lung cancer patients undergoing VATS vs thoracotomy

Ms. Silje 31045 Rustad siljerustad@hotmail.com 12, Mr. Henrik 31046 Aamodt henrika@broadpark.no MD 3, Mr. Fredrik 31047 Borchsenius fredrik.borchsenius@ullevaal.no MD 2, Prof. Dr Ole Henning 31048 Skjønsberg o.h.skjønsberg@medisin.uio.no MD 2 and Mrs. Elisabeth 31049 Edvardsen elisabeth.edvardsen@nih.no 12. 1 Department of Sports Medicine, Norwegian School of Sport Sciences, Oslo, Norway, 0806; 2 Department of Pulmonary Medicine, Oslo University Hospital, Oslo, Norway, 0424 and 3 Department of Thoracic Surgery, Oslo University Hospital, Oslo, Norway, 0424.

Body: Background: Video-assisted thoracoscopic surgery (VATS) is gaining popularity as a technique for performing lobectomy in lung cancer patients, showing lesser pain, shorter hospital stay and lower blood loss compared to patients undergoing traditional thoracotomy. Aim: To compare the change between pre- and post-operative pulmonary function, cardiorespiratory fitness ($VO_{2max}$) and physical activity level in lung cancer patients undergoing VATS and thoracotomy. Methods: 37 patients (male =13), age 35 - 80 with non-small lung cancer underwent either VATS (n=10) or thoracotomy. Measurement of pulmonary function and $VO_{2max}$ was performed before and four to six weeks after surgery. In addition, physical activity was measured six weeks after surgery with ActiGraph accelerometer for seven consecutive days. Results: There were no differences between the groups before surgery regarding gender, pulmonary function and $VO_{2max}$. The average number of segments removed by VATS was 4.4 and thoracotomy 3.8. VATS patients had a significant lower reduction in FVC (9 %, P=0.05), MVV (16 %, P<0.01) and $VO_{2max}$ (17 %, P<0.01) compared to patients undergoing thoracotomy. There was no significant reduction in FEV$_1$ (P=0.06) and DLco (P=0.75). The variation in activity level was large, ranging from 1027 to 13964 steps per day, but there was no difference between the groups (P=0.65). Conclusion: Patients undergoing VATS appear to preserve the vital capacity, ventilatory capacity and $VO_{2max}$ better than patients undergoing thoracotomy. The number of patients is, however, too small to draw firm conclusions, and should therefore be interpreted with caution.