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Effectiveness of Inspiratory muscle training on pulmonary function and functional capacity in chronic smokers vs non-smokers patients undergoing open abdominal surgery - A pilot-feasibility study

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Introduction: The presence of pre-existing risk factors such as smoking in patients undergoing abdominal surgeries have a higher chance of developing pulmonary complications due to a combined pathophysiological cascade of post-operative effects and smoking that reduces pulmonary function. Chest physiotherapy along with an adjunct device such as Inspiratory Muscle Training (IMT) plays a major role in post-surgical physiotherapy management. **Purpose**: To compare the effectiveness of IMT on pulmonary function and functional capacity in smokers vs non-smokers patients undergoing open abdominal surgery. **Methodology**: This pilot-feasibility study was registered under clinical trial registry India (CTRI/2020/01/022812). Patients undergoing abdominal surgery were screened for eligibility and divided into smokers group and non-smokers group according to their smoking habit. Both the groups received threshold IMT from POD1 till POD5 at 30-50% of Maximum Inspiratory Pressure, twice a day. Primary outcome measures were pulmonary function test, respiratory muscle strength and functional capacity. **Results**: 28 patients were included in this study. Mean difference in FVC between pre-operative and POD5 was 7.429 and 3.071 and FEV1 was 14.78 and 13.57 in smokers and non-smokers group, respectively. Improvement in FEV1 was not statistically significant between group ($p=0.213$) and significant for FEV1/FVC ($p=0.42$), however within group was highly significant for all parameters ($p < 0.001$). No incidence of PPCs were reported. **Conclusions**: Threshold IMT protocol was effective in improving respiratory muscle strength and pulmonary function in both group but showed better recovery in smokers group.