

## II-A.28 | Maximal inspiratory pressure and exercise-induced inspiratory muscle fatigue in chronic nonspecific low back pain

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**Background and aims:** To compare maximal inspiratory pressure (MIP) and exercise-induced inspiratory muscle fatigue (IMF) between persons with chronic nonspecific low back pain (CNSLBP) and healthy controls (HC).

**Methods:** MIP was measured pre and 0, 15 and 30 min post a maximal cardiopulmonary exercise test (CPET) in 25 persons with CNSLBP and 15 HC. Absolute MIP values were converted to predicted MIP ( $MIP_{pred}$ ) values using age-, sex-, and BMI-specific reference equations. Inspiratory muscle weakness was defined as a  $MIP_{pred}$  below 80% and IMF as a  $\geq 10\%$  reduction in  $MIP_{pred}$  post- compared to pre-CPET. Correlations between  $MIP_{pred}$  and IMF with disability, pain intensity, exercise capacity, anxiety, and depression were calculated.

**Results:** There was no difference in age, gender, and BMI between both groups ( $p > 0.05$ ). Pre-CPET  $MIP_{pred}$  values were similar between persons with CNSLBP ( $87\% \pm 22\%$ ) and HC ( $94\% \pm 21\%$ ) ( $p = 0.362$ ), and revealed inspiratory muscle weakness in 36% of CNSLBP and 20% of HC participants ( $p = 0.777$ ). No exercise-induced IMF was observed 0 min (CNSLBP:  $-2\%$ , HC:  $-4\%$ ), 15 min (CNSLBP:  $-5\%$ , HC:  $-5\%$ ), or 30 min (CNSLBP:  $-5\%$ , HC:  $-7\%$ ) post-CPET ( $p > 0.05$ ). Higher  $MIP_{pred}$  values correlated with better exercise capacity in both groups (CNSLBP:  $r = 0.54$ , HC:  $r = 0.55$ ,  $p < 0.05$ ). In the CNSLBP group, lower  $MIP_{pred}$  correlated with higher anxiety ( $r = -0.49$ ,  $p = 0.012$ ), and higher IMF correlated with better exercise capacity ( $r = 0.56$ ,  $p < 0.05$ ).

**Conclusions:** No significant differences in  $MIP_{pred}$  and inspiratory muscle weakness were found between persons with CNSLBP and HC. Additionally, no exercise-induced IMF was observed in either group, indicating similar inspiratory muscle fatigability regardless of CNSLBP status.