

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 fatiguability regardless of CNSLBP status.