

ABSTRACT

Introduction: The aim of this study was to explore the relationship between postural stabilization insufficiency and severe coxarthrosis indicated for total joint replacement. Postural stabilization insufficiency was assessed by abdominal wall activity.

Methods: 51 participants were recruited. 26 patients with hip arthrosis (13 males and 13 females) were included in the experimental group (mean age 70.5 years, SD 9.1) and 25 participants (10 males and 15 females) in the healthy control group (mean age 70.5 years, SD 7.7). The Ohmbelt device can be used to assess the intra-abdominal pressure indirectly via abdominal wall expansion measurement. The pressure sensor within the Ohmbelt device was attached to the abdominal wall at the area above the inguinal ligament (anterior sensor) and contralaterally at the trigonum lumbale (posterior sensor) by an adjustable belt. The pressure exerted by the abdominal wall was monitored by the sensors. All subjects were measured twice (once with the anterior sensor, the second time with the posterior sensor) in 3 postural situations – resting breathing in the upright sitting position, the diaphragm test, and holding a 2kg dumbbell in front of the body in the upright sitting position.

Results: No statistically significant differences ($p > 0.05$) were found between groups in any of the measured tests. There was also no statistically significant difference ($p > 0.05$) in pressure increase between the anterior and the posterior sensor in any of the tests.

Conclusion: The hypothesis that compared to the healthy population, patients with advanced coxarthrosis have insufficient postural stabilization assessed as the amount of the abdominal wall activation measured by the Ohmbelt device, was not confirmed.