

THE VALUES OF FORCES IN LUMBAR SPINE ESTIMATED DURING MAXIMAL STATIC EXTERNAL LOADS IN A SELECTED POSITION

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The investigation of the loads on the individual levels of the lumbar spine was carried out. To record the maximum effort of the tested person - "the back and leg dynamometry", in five separate positions of the body, was analysed. For one subject, radiography and phonography were used.

External moment of force, compressive, shear and reaction forces were estimated using mathematical methods. For the study, 120 persons were tested without x-ray photos as well as with radiography data of one person were used in developing a mathematical model to estimate the range of values of the forces created on the level L5-S1.

The individual segments of the lumbar spine were loaded irregularly and the values of five of the forces created during testing indicate that there must exist some mechanisms (like intrabdominal pressure) which must reduce these forces, otherwise one may reach potential limits of failure as estimated for bones in laboratory testing.