MAXIMUM ISOMETRIC STRENGTH OF THE TRUNK MUSCLES : DEVELOPMENT OF NORMATIVE VALUES IN ADULT WOMEN

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I. INTRODUCTION

Valid and reliable assessments are necessary to appreciate spine muscle quality. Considering that a previous study reported important significant differences between the old and the new dynamometers DAVID BACK® regarding the maximal isometric peak torques (PT), establishing new normative values for the maximal isometric PTs is particularly relevant.

II. MATERIALS AND METHODS

79 women (aged 30 to 60) reporting no low back pain (LBP), attended an assessment session. The isometric PT of their extensor, flexor, rotator and lateroflexor trunk muscles were measured on the four new dynamometers DAVID BACK®. Patients were divided into three groups according to their ages (30-39, 40-49 and 50-60 years). Analysis and corelative studies were realized between groups but also in the whole population.

Figure 1 : David Back Dynamometers (David International Ltd., Vantaa, Finland) for trunk extension, flexion, rotation and lateral flexion respectively.

III. RESULTS

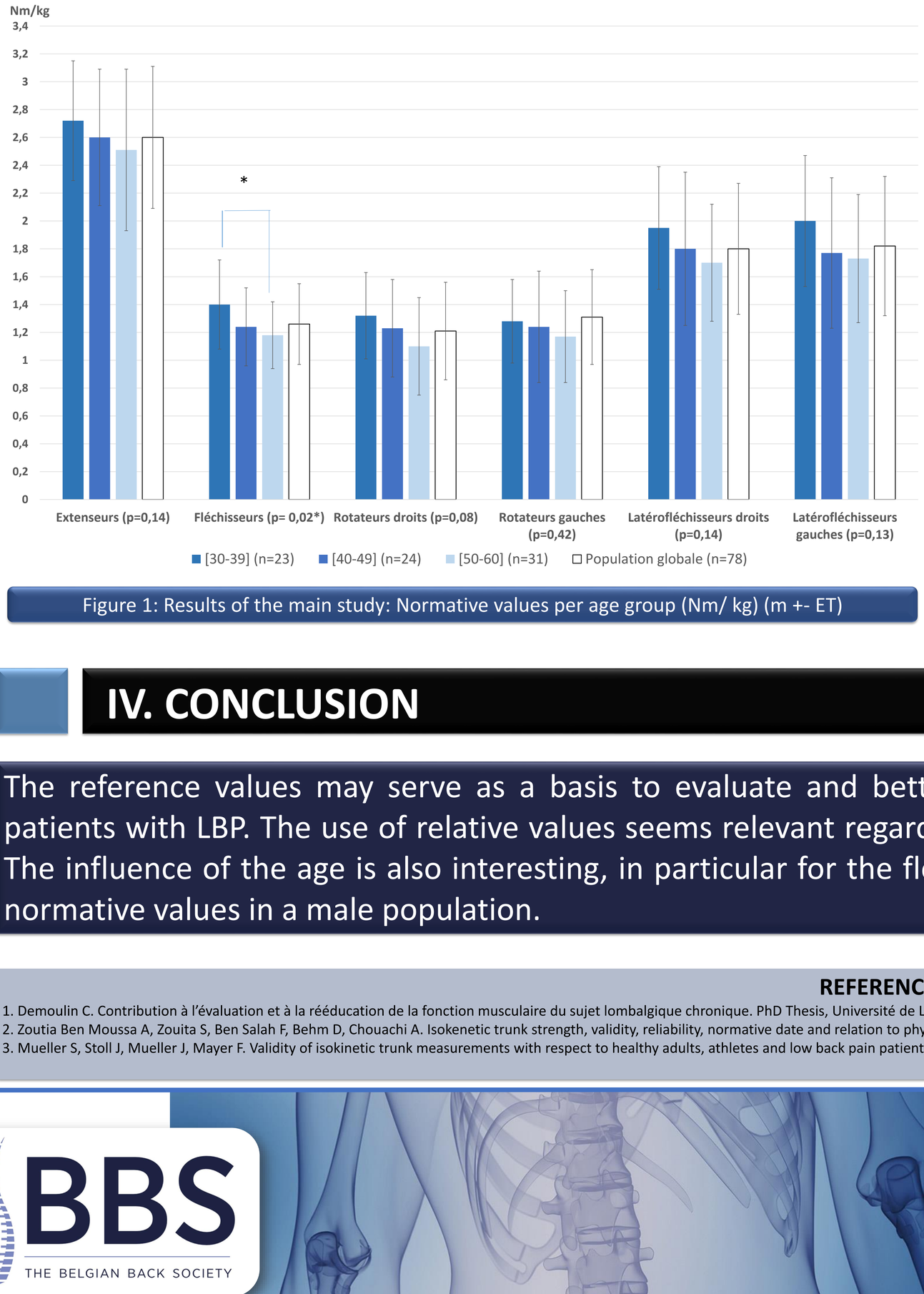

Figure 1: Results of the main study: Normative values per age group (Nm/ kg) (m +- ET)

The results did not reveal any significant difference in the maximal isometric PT between the age groups ([30-39] - [40-49] - [50-60]), except for the flexor muscles. The flexor/extensor ratio in the general population is equal to 0.5, which is slightly lower than that found in the literature (ref). The ratio of rotations and lateroflexion on the dominant/non-dominant side is close to 1, in agreement with the literature.

Few correlations were found to be significant. The parameters correlated were age, physical activity level assessed by the IPAQ score, height, weight and BMI. In the overall population, weak to moderate correlations between absolute isometric PT and weight or BMI ($0,28 \leq r \leq 0,49$) were observed.

IV. CONCLUSION

The reference values may serve as a basis to evaluate and better interpret trunk muscle strength performance in female patients with LBP. The use of relative values seems relevant regarding to the correlation between MFMV and weight and BMI. The influence of the age is also interesting, in particular for the flexion movement. Further research is necessary to establish normative values in a male population.

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