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ISOKINETIC IDENTIFICATION OF KNEE JOINT TIME-TORQUE CURVE SHAPE AFTER MEDIAL MENISCUS TREATMENT

Keywords: isokinetics, meniscus tear treatment, collagen matrix wrapping

Shape of the isokinetic curve can be a reflection of knee biomechanical function during flexion-extension movement and might be representative for some of the knee dysfunctions. Therefore, the purpose of this study was to evaluate a change in knee joint isokinetic time-torque curve shape, described by newly-developed shape descriptors, in tests performed 6, 12 and 24 months after medial meniscus treatment. Isokinetic tests with 60°/s velocity were performed by 28 patients (20 males and 8 women) after medial meniscus repair. In all patients, medial meniscus was treated with an “all-inside” arthroscopic suture of the meniscus and wrapping with collagen membrane and bone marrow blood injection [1], while the lateral meniscus was intact. Isokinetic curve shape parameters for tests performed in follow-up periods were calculated as previously described [2] in Matlab 2014a, based on raw data obtained from isokinetic dynamometer Biodex 3 Pro, normalised by test time and patient body weight.

The averaged isokinetic curve shape for the operated knees was changing with time after treatment. This observation was supported by the objective results in the form of designated shape descriptors (magnitudes of peak values, time of their occurrence and angles of slopes). These values strive for the values determined by the model curve, calculated for group of healthy elite athletes.

Parameters of the isokinetic curve among patients after medial meniscus treatment are changing in the direction designated by the model curve, what can suggest a gradual progress and ability to perform more dynamic movements. However, there is still some deficit compared to the results of the elite soccer players, but these results should be rather compared to the healthy individuals with an average sport activity and should be reproduced based on more coherent and bigger sample size.

Acknowledgments: The presented research results were funded with the grant 0612/SBAD/3566 allocated by the Ministry of Science and Higher Education in Poland

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