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Recovery of handball players after anterior cruciate ligament surgery: A retrospective study

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Background
Knee surgery, often necessary due to an anterior cruciate ligament tear, results in muscle atrophy and strength deficits, particularly in the quadriceps and hamstring muscles. This study aimed to compare the results of isokinetic and isotonic exercise in handball players on the torque restoration quadriceps after knee surgery.
Materials and methods
A sample of 18 subjects was analyzed, and divided into two groups according to the type of rehabilitation protocol applied. The isokinetic group consisted of 9 male subjects aged 24.33 ± 2.35 years, with a protocol based on isokinetic quadriceps exercise. The isotonic group consisted of also 9 male subjects, aged 25.78 ± 4.18 years, with an exercise program with additional resistance, i.e. isotonic exercise in the gym, to strengthen the quadriceps. Before starting the rehabilitation treatment, an initial isokinetic test was performed at an angular speed of 60°/s in all subjects. After 3 and 6 weeks of rehabilitation treatment, control tests were performed in the same way as in the initial test.
Results
Based on ANOVA analysis of repeated measurements, significantly better results were determined for the isokinetic group in comparison with the isotonic group for outcome Knee extensor (ANOVA, F = 234.98 p = 0.000; isokinetic group); (ANOVA, F = 27.36, p = 0.000; isotonic group). Also for the outcome of Knee flexor the isokinetic group had better results (ANOVA, F = 478.22, p = 0.000 isokinetic group); (ANOVA, F = 53.68 p = 0.000; isotonic group)
Conclusions
Based on the results of our study, we can conclude that isokinetic training has a better impact on participants following ACL surgery compared to isotonic training. The results showed that athletes in the isokinetic group could return to the field after six weeks of training and 18-24 weeks post-surgery.