

Evolution of muscular strength after total knee arthroplasty

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Abstract

Background. Knee osteoarthritis is a very common joint disorder and the leading indication for knee replacement surgery. Knee osteoarthritis and, consequently, knee arthroplasty are even more frequent in athletes. Total knee arthroplasty successfully alleviates pain and improves function in knee osteoarthritis people, but muscular deficit may persist long term after the intervention. How impairments change over the first 6 months from the isokinetic point of view has not yet been well studied in the literature.

Aims. To measure changes in muscular strength from before to 6 months after total knee arthroplasty and to compare outcomes with data from a control group consisting of healthy adults.

Methods. The study was a prospective cohort trial including 17 patients undergoing TKA, recruited from 3 orthopaedic departments in Cluj-Napoca, who were compared to 11 healthy adults. Patients' assessment was performed preoperatively, as well as at 1, 2 and 6 months postoperatively, by the isokinetic method. Healthy adults were assessed once by the same method. Isokinetic evaluation of knee extensor and flexor muscles was performed using a Gimnax Iso 2 dynamometer. After a warm-up protocol, measurements were done at angular velocities of 90 and 180 degrees/sec. Statistical analysis was carried out using Microsoft Excel 8.0 for Windows and Epiinfo version 3.5.3.

Results. Patients performed significantly worse at all times ($p < 0.05$) for both extension and flexion, compared to healthy adults. One month postoperatively, patients experienced significant losses in extensor strength from preoperative levels, recovered back to preoperative levels by six months, but never reached values of healthy adults.

Conclusions. Persistent muscle impairments 6 months after knee replacement suggest that more intensive rehabilitation should be recommended to restore function to the levels of healthy adults.

Keywords: total knee arthroplasty, muscular strength, isokinetic, rehabilitation, osteoarthritis.