
Objective: To determine the preoperative strength of the muscle group of the lower extremity that is most important in predicting functional recovery after primary unilateral total hip replacement (THR).

Design: Prospective observational study with inception cohort.

Settings: Joint care program (hospital care/clinical division of a nursing home/outpatient physical therapy).

Participants: Patients (N = 55) undergoing primary unilateral THR.

Interventions: Not applicable.

Main Outcome Measures: Baseline measures within 2 weeks preoperative and follow-up at 6 and 12 weeks postoperative included isometric strength measurement of the hip (flexors, extensors, abductors, adductors) and knee (flexors, extensors) musculature using a handheld dynamometer. Functional outcome was tested using performance-based (Timed Up and Go Test, 6-Minute Walk Test) and self-report measures (Western Ontario and McMaster Universities Osteoarthritis Index, subscale Physical Function [WOMAC PF], 36-Item Short Form Health Survey subscale Mental Health, visual analog scale for pain).

Results: Of the patients (N=55; mean age, 72.7±6.8y; 41 women) included; 18 dropped out, leaving 37 patients for analyses. After correction for WOMAC PF score at baseline, body mass index, sex, and age, the preoperative knee extensors strength measure of the operated site was the only muscle group showing a significant effect on functional outcome measured by using the WOMAC PF at 12 weeks postoperatively ($R^2 = .355; \beta = -.105; P for \beta = .004$).

Conclusion: Preoperative greater knee extensor strength of the operated site is associated with better physical function, measured by using the WOMAC PF at 12 weeks postoperative.

Key Words: Arthroplasty; Hip; Muscle strength; Quadriceps muscle; Rehabilitation; Replacement. © 2011 by the American Congress of Rehabilitation Medicine

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