

# The Effect of Early Progressive Resistive Exercise Therapy on Balance Control of Patients with Total Knee Arthroplasty

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## Introduction

Total knee arthroplasty (TKA) is a commonly accepted surgical procedure recommended for severe OA characterized by radiographic evidence of joint damage, moderate to severe persistent pain, and clinically significant functional limitations affecting the quality of life when conservative treatments fail [1]. Rehabilitation following TKA is crucial to the success of the surgery. Most studies recommend that rehabilitation be initiated immediately after discharge from the hospital [2]. The aims of this study were thus to investigate whether an early progressive strengthening exercise program could improve static, dynamic, and semi-dynamic balance compared with routine physical therapy in patients with TKA. We hypothesized that (i) a 6-week rehabilitation program after TKA would improve balance and (ii) the addition of early progressive resistive exercise to routine physical therapy after TKA would yield greater improvement in balance.

## Methods

In this double-blind randomized controlled trial study, 40 patients with severe osteoarthritis, sampled by a simple convenient method, were randomly assigned into either control group or early resistive exercise group. After TKA surgery, both groups attended a routine rehabilitation program while the experimental group received extra early resistive exercises. Static, semi-dynamic, and dynamic balance were assessed by the Sharpened Romberg (SRBT), Star Excursion (sebt), and berg (BBT) balance tests prior to surgery, after the rehabilitation process (seventh weeks), and at a 2-week later follow up time (ninth week).

## Results

At the end of the seventh and ninth weeks, in both groups all 3 balance scores were significantly enhanced comparing the baseline scores ( $p < 0.001$ ). The experimental group had significantly higher scores than the control group in SRBT, SEBT, and BBT after the intervention and at the follow-up time ( $p < 0.001$ ).

## Discussion

The findings of this study showed that rehabilitation following TKA is accompanied by balance (static, semi-dynamic, and dynamic) improvement, and this improvement is greater among patients participating in and early resistive exercise regimen. Early progressive resistive exercise in addition to routine physical therapy may lead to better balance performance than routine physical therapy and might be incorporated into the postoperative physical therapy of these patients. Further studies with longer follow-up periods are needed to confirm these results.

## References

1. American Academy of Orthopaedic Surgeons. Treatment of Osteoarthritis of the Knee (Non-Arthroplasty). Rosemont, IL: American Academy of Orthopaedic Surgeons; 2008.
2. Artz N, Elvers KT, Lowe CM, Sackley C, Jepson P, Beswick AD. Effectiveness of physiotherapy exercise following total knee replacement: systematic review and meta-analysis. *BMC Muscu- loskelet Dis.* 2015;16(1):15-36.

