Efficacy of preoperative progressive resistance training in patients undergoing total knee arthroplasty – 12 month follow-up

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Introduction

Efficacy of preoperative progressive resistance training on functional performance and muscle strength has been demonstrated 6 and 12 weeks after total knee arthroplasty.

The purpose of this study was investigate the efficacy of preoperative progressive resistance training on functional performance and muscle strength 12 month postoperatively in patients undergoing total knee arthroplasty.

Conclusion

High-intensity training before total knee arthroplasty improves muscle strength 12 months after surgery. Higher muscle strength will possibly improve functional performance.

A limitation of the present 12 month follow-up study was that the study was initially underpowered and several patients were lost along the way, increasing the risk of type II errors.

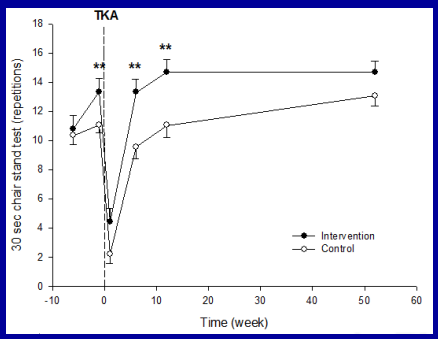

Figure 1. 30s chair stand test between groups (mean (SEM))

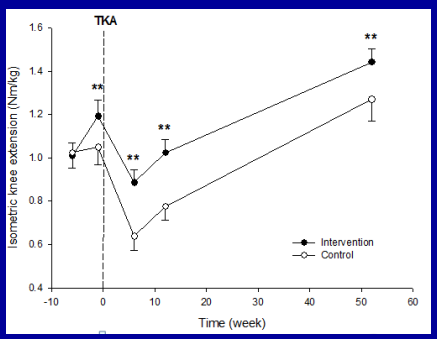

Figure 2. Normalised isometric extension between groups (mean (SEM))

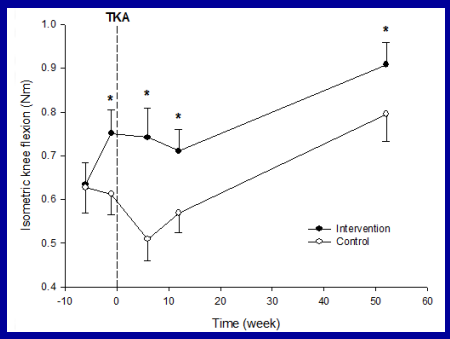

Figure 3. Normalised isometric flexion between groups (mean (SEM)

Progressive resistance training program


Leg press


Knee flexion


Knee extension


Hip abduction


Hip adduction


Hip extension

Methods

59 patients were enrolled in a single-blinded, randomized, clinical, controlled trial. The intervention group had 4 weeks preoperative progressive resistance training; the control group "lived as usual". Both groups completed 4 weeks of postoperative progressive resistance training. **Outcome measures;** the 30s chair stand test (primary outcome), knee extensor and knee flexor muscle strength and patient-reported outcomes. Statistical analyses were performed according to the intention-to-treat principle.

Results

15 patients dropped out before follow-up. The intervention group had significantly higher weight-normalized knee extensor muscle strength (0.5 Nm/kg vs. 0.2 Nm/kg, p=0.002) and knee flexor muscle strength (0.3 Nm/kg vs. 0.2 Nm/kg, p=0.042) in the operated leg when compared to the control group. A borderline significant group difference was found for the 30s chair stand test (4.0 rep. vs. 2.3, p=0.067) in favour of the intervention group.