

## ISOKINETIC ECCENTRIC TRAINING IS BETTER THAN CONSTANT LOAD ECCENTRIC TRAINING ON THE QUADRICEPS REHABILITATION FOLLOWING PARTIAL MENISCECTOMY: A RANDOMIZED CLINICAL TRIAL

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### INTRODUCTION

Eccentric training is effective for quadriceps muscle strengthening following knee surgery<sup>1</sup>. Eccentric overload exercise can be performed both with conventional (constant load) gym machines and with isokinetic dynamometers. The isokinetic exercise has been adopted in rehabilitation regimes in order to optimize muscle strengthening, especially in athletes<sup>2</sup>.

However, it is unclear whether isokinetic eccentric exercise is better than constant load eccentric exercise in patients following partial meniscectomy. This study aimed at comparing the effects of conventional eccentric training and isokinetic eccentric training on quadriceps muscle mass, strength and functional performance in recreational athletes following partial meniscectomy.

### METHODS

The current study was a prospective randomized clinical trial and blinded for assessors. Thirty two recreational male athletes (~27 years old) undergoing partial meniscectomy received a standard rehabilitation program. Volunteers were randomized to conventional group (CG; n=16) or isokinetic group (IG; n=16) to be engaged in a 6-week (2 sessions/week) quadriceps eccentric training program at the extensor chair or at the isokinetic dynamometer, respectively. Assessments of quadriceps muscle mass (through magnetic resonance imaging), strength (through isokinetic dynamometry) and functionality (through questionnaire and hop test) were performed before and after training programs. This study was approved by the XXXXX ethics committee (protocol number 1.461.842)

### RESULTS AND DISCUSSION

IG had significant higher percent improvements ( $p < 0.05$ ) for all muscle mass outcomes, strength outcomes, and Lysholm score; but single leg hop performance improved equally between groups (Figure 1). The magnitude-based inference supports that results 'very likely' or 'almost certainly' favour IG compared to CG for all outcomes, with exception of single leg hop test (Figure 2).

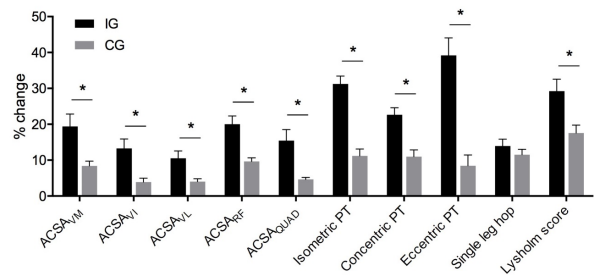


Figura 1 – Percent change (mean and standard error) pre- to post-training for conventional group (CG) and isokinetic group (IG).

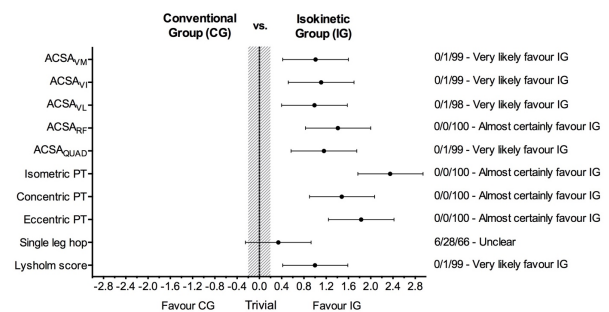


Figura 2 – Forest plot: standardized mean differences and 95% CI for conventional group (CG) and isokinetic group (IG); Right column: chances for results favorable to CG, trivial effects, or results favorable to IG (percent values and interpretation)..

### CONCLUSION

After partial meniscectomy, isokinetic eccentric training promotes greater adaptations than conventional eccentric training on quadriceps muscle mass, strength, and functional capacity.

### ACKNOWLEDGEMENTS

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### REFERENCES

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