

## Does Preoperative Exercise Influence the Outcome of ACL Reconstruction

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### Summary:

Does Preoperative Exercise Influence the Outcome of ACL Reconstruction

### Abstract:

Background and Purpose:

Although volume of literature have been generated every year relating to the rehabilitation parameters and protocols to be followed postoperatively, very few studies have addressed the pre operative period of an individual selected to undergo ACL reconstruction. We hypothesized that a structured pre-operative exercise program would enhance postoperative functional outcomes following ACL reconstruction. The objective of the present study was to investigate the effectiveness of a structured pre operative exercise program.

Methods:

A single blind, prospective, randomized controlled study was undertaken. A total of 63 subjects were allocated into two groups. One group performed a structured pre-operative exercise program for 3 weeks (pre-op exercise group, n=32), and the second group did not perform any exercise pre-operatively (No pre-op exercise group, n=31). Both groups underwent an identical post operative exercise regimen. A range of outcome measures were documented by a blinded assessor post operatively at 6 weeks, 3 months, 6 months and one year.

Results:

The preoperative exercise program significantly improved number of functional outcomes in the group that performed these exercises. Statistically significant differences were observed between the groups in the extension ROM measures at 6 weeks ( $p=0.02$ ) and 3 months ( $p=0.01$ ) and in the flexion ROM at 3 months ( $p=0.02$ ) with the preoperative exercise group achieving better ROM at each of these measurement periods. No significant differences were found between both the groups in pain scores and girth measurements. However, a statistically significant difference was found between the groups in wide range of subjective and objective functional measures. Statistically significant differences were found between both the groups in Lysholm scores ( $95.5\pm3.4$  Vs  $89.32\pm5.6$ ,  $p=0.005$ ) and Tegner activity scores ( $5.06\pm0.11$  Vs  $4.2\pm0.06$ ),  $p=0.002$ ) especially in the early postoperative period, with the pre-operative exercise group reporting better scores. Significantly better results were also demonstrated by the pre-operative exercise group at long term in the scales that measured the participation levels. Lower extremity functional scale (LEFS) scores of  $76.2\pm5.07$  &  $78.5\pm2.9$  for the preoperative exercise group as compared to scores of  $72.1\pm6.6$  &  $76.2\pm3.6$  for the no pre operative exercise group at 6 months ( $p=0.009$ ) & 1 year ( $p=0.032$ ) respectively were reported. Statistically significant differences were also found between both the groups in the IKDC scores at 6 months ( $85.9\pm6.5$  Vs  $80.9\pm9.6$ ,  $p=0.01$ ) and at 1 year ( $89.7\pm5.2$  Vs  $85.6\pm8.1$ ,  $p=0.02$ ) post operatively. The pre-operative exercise group also performed better in the battery of functional hop tests, with statistically significant limb symmetry index scores (LSI %) in the single hop test at 6 months ( $85\pm4.3$  Vs  $80.9\pm6.6$ ,  $p=0.005$ ) and 1 year ( $87.7\pm3.7$  Vs  $83.8\pm7.6$ ,  $p=0.01$ ) post operatively.

Conclusion:

A structured pre operative exercise program resulted in better post operative functional outcomes at the long term.