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Anterior cruciate ligament reconstruction with a quadrupled hamstrings tendon autograft does not restore tibial rotation to normative levels during landing from a jump and subsequent pivoting

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Abstract

Aim: Recent research suggested that the anterior cruciate ligament (ACL) reconstruction does not restore tibial rotation to normal levels when a bone patellar tendon bone (BPTB) graft is used during high demanding activities. Our goal was to determine if the usage of an alternative graft, as the quadrupled semitendinosus-gracilis (ST/G), restore tibial rotation to normal values in a population of athletically active individuals while performing a usual for their sport activity.

Methods: Eleven subjects, all reconstructed with an ST/G graft, were assessed in vivo, 9 months postoperatively, while they jumped off a 40 cm platform, landed on the ground and subsequently pivoted at 90 degrees. The evaluation period was identified from initial foot contact with the ground, included the pivoting of the ipsilateral leg, and was completed upon touchdown of the contralateral leg. By that time the patients had already returned to their sports activities.

Results: The maximum range of motion of the tibial rotation for the pivoting leg, during the evaluation period was found significantly ($P=0.0001$) larger in the reconstructed leg as compared to the intact contralateral, although both clinical and arthrometer assessments revealed restoration of anterior translation.

Conclusions: It was concluded that ACL reconstruction with an ST/G graft does not restore tibial rotation to normal levels during this high demanding activity. It seems that new surgical techniques are needed to better replicate the actual anatomy and function of the natural ACL in order to address this problem.