

Variation In Gastrocnemius and Hamstring Muscle Activity During Peak Knee Flexor Torque After Anterior Cruciate Ligament Reconstruction with Hamstring Graft

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Abstract : The study's objective is to compare the muscular activity of the flexor knee muscle in patients who underwent an anterior cruciate ligament reconstruction with hamstring autograft and the individuals who have not undergone surgery. **Methods:** The participants were divided into two groups: a healthy group and an experimental group who had undergone an anterior cruciate ligament reconstruction with a hamstring graft. All participants had to perform a knee flexion strength test on an isokinetic dynamometer. The medial Gastrocnemius, lateral Gastrocnemius, Biceps femoris, and medial Hamstring muscle activity were measured during this test. Each group's mean muscle activity was tested with statistical analysis, and a muscle activity ratio of gastrocnemius and hamstring muscles was calculated **Results:** The results showed a significant difference in activity of the medial gastrocnemius ($p = 0,004901$), the biceps femoris ($p = 5,394.10^{-6}$), and the semitendinosus muscles ($p = 1,822.10^{-6}$), with a higher Biceps femoris and Semitendinosus activity for the experimental group. It is however noticeable that inter-subject differences were important. **Conclusion:** This study has shown a difference in the gastrocnemius and hamstring muscle activity between patients who underwent an anterior cruciate ligament reconstruction surgery and healthy participants. With further results, this could show a modification of muscle activity patterns after surgery which could lead to compensatory behaviors at a return to sport and eventually explain a higher injury risk for our patients.

Keywords : anterior cruciate ligament, electromyography, muscle activity, physiotherapy

Conference Title : ICHKSMESP 2022 : International Conference on Human Kinetics, Sports Medicine, Exercise and Sports Physiotherapy

Conference Location : Dubai, United Arab Emirates

Conference Dates : May 05-06, 2022