E-Poster

EP-478

What are the Criteria for an Acute form of Anterior Cruciate Ligament Tear for the Severity of the Process by Gait Analysis Data?

Topic: Biomechanics

Dmitry Skvortsov[1], Alyona Altukhova[1], Sergey Kaurkin[1], Alexander Akhpashev[2]

[1]*Biomechanics Lab, Research and Clinical Centre, Moscow, Russian Federation*
[2]*Orthopedic, Research and Clinical Centre, Moscow, Russian Federation*

BACKGROUND

There is still controversy over the criteria for acute anterior cruciate ligament (ACL) tear. In this paper, knee joint function and walking were considered possible ones.

METHODS

The study included 21 subjects with acute ACL tear and 20 healthy volunteers as a control group. Biomechanical gait analysis was performed using the inertial sensor system including EMG recording. All subjects (but for controls) were divided into two groups: Group 1—"up to four weeks" and Group 2—"from four weeks to three months".

RESULTS

Temporal gait parameters in subjects from Group 1 demonstrate the asymmetry of 4% and more in terms of the gait cycle with a decrease in the affected limb, and are within normal range in Group 2. The amplitudes at the hip and knee joints in the affected limb are reduced which is especially pronounced in Group 1 (2–4 and 6–10 degrees, respectively). The affected knee joint shows a decrease in the range of motion by up to 5 degrees in the first half of the stance phase and flexion by less than 40 degrees in the swing phase. The tibialis anterior and quadriceps femoris muscle function is decreased in the affected limb only in Group 1 (72% and 78% from normal, re-spectively).

CONCLUSION

The severity of the condition after an ACL tear is largely determined by functional changes. The time factor is of secondary importance.

Statement of Disclosures

None

Doi: 10.5606/archisprm.2026.EP-478

Corresponding Author:
Dmitry Skvortsov
Biomechanics Lab, Research and Clinical Centre, Moscow, Russian Federation
Email: skvortsov.biom@gmail.com