

International Conference and Expo on **Biomechanics & Implant Design**

July 27-29, 2015 Orlando, USA

Effect of ACL fixators' diameter on the damage of graft under cyclic loading

Tae-Soo Bae¹, Sang-Hyug Park¹, Han Wool Seo¹, Moon Jong Jang² and Joon Ho Wang²

¹Jungwon University, Republic of Korea

²Samsung Medical Center, Republic of Korea

When the anterior cruciate ligament (ACL) has been ruptured, if normal functions are not recovered with conservative treatment methods or the knee joint is unstable even after normal muscle strength training and hamstring rehabilitation training, surgical treatment will be conducted in general. Recently, although many studies have been conducted on the fixing force of fixing wires used in ACL reconstruction, studies on damage to grafts are currently insufficient, despite loads being continuously delivered to grafts connected to fixing wires following repeated movements of the knee. The present study was intended to quantitatively analyze the degree of damage to grafts following repeated use of the knee after ACL reconstruction through computational analyses and verification experiments. A model for finite element analysis was made using a structural design program, the material property values of the ACL were used for grafts, and the material property values of ultra-high molecular weight polyethylene (UHMWPE) were set for fixing wires. A computational analysis was conducted using a finite-element analysis program. In the present study, the degrees of damage to ACL structures at different fixing wire diameters were quantitatively calculated through a computational analysis and the results were verified through experiments. When the diameters of the fixing wires were 1, 2, or 3 mm, grafts and fixing wires showed stress values somewhat higher than their own yield strength, indicating that plastic deformation might occur.

bmebae@gmail.com

Kinematics differences of payment and landing phases of the skill of the correction aviation wing (right - left) - Front line to the handball players

Tarek Salah Aldien Sayied Mostafa

Assiut University, Egypt

Aim: The present research aims to study the kinematics differences of payment and landing phases of the skill of the correction aviation wing (right - left) - Front line to the handball players and to identify the optimal values of the angles payment and downs of the skill of the correction aviation wing (right - left) - Front line to the handball players.

Method: Descriptive (case study) was carried out based on analysis using the computer. Community includes players from the squad for the Egypt Premier League.

Results: Kinematics showed that the highest value for the outcome of payment cadre (19) is a moment that pays football an amount of (27.094 Nm/s), where it generates a reaction force larger than the Earth, which increases the value of the outcome of the payment at that moment compared to the same moment; for the time series of gravity centers the body, which was worth (17.334 Nm/s).

tarek_salah11@yahoo.com