Reconstruction of the extensor mechanism is essential for good extremity function after endoprosthetic knee replacement following tumor resection. Only a few biological methods have been able to reliably restore a functional extensor mechanism, but they are often associated with significant complication rates. Reattachment of the patellar tendon to the prosthesis using an alloplastic patellar ligament (Trevira cord) can be an appropriate alternative. In vivo and in vitro studies have already shown that complete fibrous ingrowth in polyethylene chords can be seen after a period of six months. However, until now, no biomechanical study has shown the efficacy of an alloplastic cord and its fixation device in providing sufficient stability and endurance in daily life-activity until newly formed scar tissue can take over this function. In a special test bench developed for this study, different loading regimes were applied to simulate loads during everyday life. Failure loads and failure modes were evaluated. The properties of the cord were compared before and after physiological conditioning. It was shown that rubbing was the mode of failure under dynamic loading. Tensile forces up to 2558 N did not result in material failure. Thus, using an artificial cord together with this fixation device, temporary sufficient stable fixation can be expected.
Sarcoma

Jahr:

2011

Occurences:

- Einrichtungen > Fakultäten > Fakultät für Maschinenwesen > Institut für Produktionstechnik > Fachgebiet f. Sportgeräte u. -materialien (Prof. Senner) > 2011

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