

STUDY PRINT OF SELECTED RESULTS

EFFECT OF TWO DIFFERENT FUNCTIONAL BRACES ON LAXITY AND FUNCTIONAL ACHIEVEMENTS IN PATIENTS WITH ANTERIOR CRUCIATE LIGAMENT RUPTURES

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ABSTRACT

Functional knee orthoses are used, amongst other things, for the treatment of instability of the knee joint or in the recovery phase after replacement of the cruciate ligament. In order to achieve an optimum treatment result, the orthosis should not restrict joint kinematics and should protect the joint from unwanted movements. In the design of the orthosis, adjustment of the pivot and stabilization effect are particularly important.

In the study, both types of orthosis are subjected to a series of different tests of varying degrees of complexity. The aim is to examine the effect of the orthoses in everyday activities. The study is presented below in extracts only.

The results show that mechanical stabilization is achieved with both orthoses, with the SofTec Genu achieving values which are virtually comparable with a healthy knee. In the case of complex movement sequences, the SofTec Genu is superior to the hard frame orthosis. The counter movement jump shows a significant increase in explosive strength. In conclusion, it can be said that, in terms of functionality, the SofTec orthosis achieves better results than the hard frame orthosis

STUDY STRUCTURE

Randomized, prospective cross-section study (evidence class 1b)

METHODOLOGY

Random sample:	n = 28, age: 40 ± 13 years
Test orthoses:	Soft brace (SofTec Genu, Bauerfeind), hard frame (4TITUDE Donjoy)
Data analysis:	Variance analysis with significance level of 5 %
Test method:	KT 1000 measurement, counter movement jump (selection)
Inclusion criteria:	<ul style="list-style-type: none">· Age: 18-60 years· Fresh or previous unilateral non-treated rupture of the ACL· At least wound healing phase 3 (rehabilitation)· KT 1000 measurement (20 pounds) injured/healthy comparison > 3 mm· One-legged long jumps (symmetry index SI > 85%)· > 1 instance of giving way since injury
Exclusion criteria:	<ul style="list-style-type: none">· Osteoarthritis of the knee, grade 2-4· Injury of the posterior cruciate ligament· Other injuries and diseases of the locomotor system· Meniscus suturing

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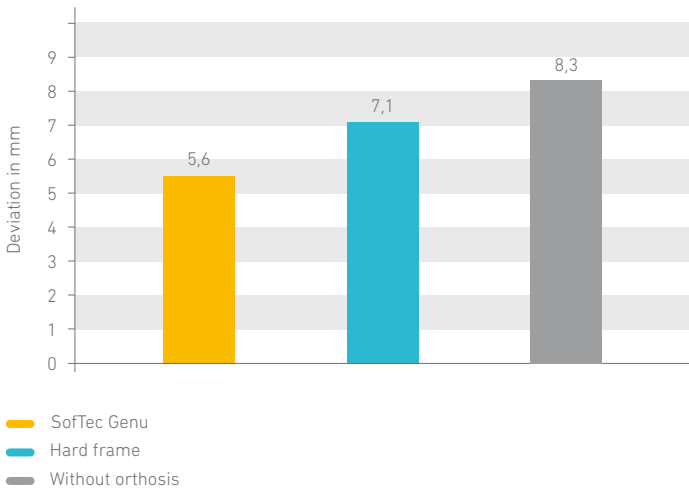
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RESULTS (SELECTION)

Passive stability

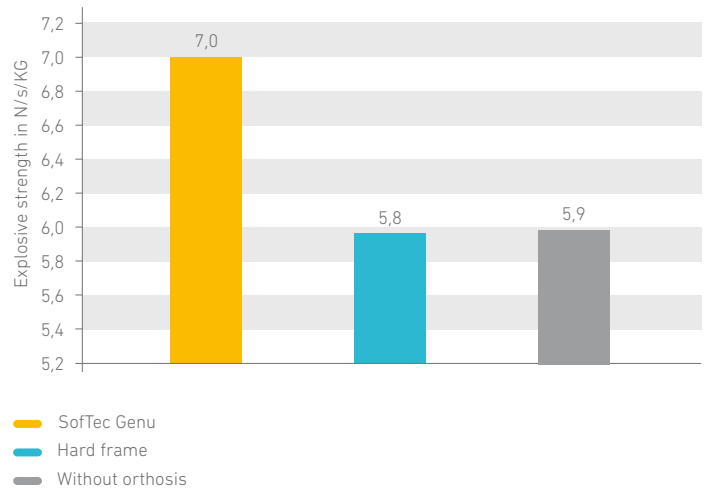
[KT 1000 arthrometer measurements]



Anterior movement of the tibia with treatment involving SofTec Genu is virtually comparable with that of a healthy knee. By wearing the SofTec Genu, anterior movement can be reduced by 32% (hard frame 14%).
 $p < 0.05$

Explosive strength

[Counter movement jump]



The higher the explosive strength, the faster power can be realized. With SofTec Genu, the reaction time of the musculature improves significantly. Wearing a hard frame orthosis does not have a beneficial effect on explosive strength.
 $p < 0.05$

DISKUSSION

The test methods examine the effect of orthoses during activities with which an average patient is confronted in everyday life. Both with regard to passive stabilization and in the case of functional demands, treatment of the injured leg with both types of orthoses leads to an improvement in the situation.

The KT 1000 measurement demonstrates that the purely mechanical function of reducing anterior movement of the tibia is achieved by both orthoses. The SofTec Genu also achieves values which resemble those of a healthy knee. With the counter movement jump, a significant improvement in explosive strength is shown with SofTec Genu, while treatment with the hard frame orthosis shows comparable values with the non-treated situation.

Transferred to an everyday life situation, this could mean that, with involuntary movements, the patients are able to summon up muscle strength more quickly and, as a result, are also able to protect the knee joint more quickly and effectively than without treatment or with a hard frame orthosis. This result also indicates a positive effect of the SofTec orthosis on proprioceptive factors. With complex demands in particular, these lead to improved stabilization and thus effective protection of the knee joint.