

Publication

Intramedullary screw fixation in proximal fifth-metatarsal fractures in sports
: clinical and biomechanical analysis**JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)****ID** 1194703**Author(s)** Leumann, André; Pagenstert, Geert; Fuhr, Peter; Hintermann, Beat; Valderrabano, Victor**Author(s) at UniBasel** [Valderrabano, Victor](#) ; [Hintermann, Beat](#) ; [Fuhr, Peter](#) ;**Year** 2008**Title** Intramedullary screw fixation in proximal fifth-metatarsal fractures in sports : clinical and biomechanical analysis**Journal** Archives of orthopaedic and trauma surgery**Volume** 128**Number** 12**Pages / Article-Number** 1425-30**Keywords** Proximal fifth-metatarsal fracture, Intramedullary screw fixation, Biomechanics, Gait, Dynamic pedobarography

INTRODUCTION AND PURPOSE: Intramedullary screw fixation (ISF) of proximal fifth-metatarsal fractures is known as first treatment option in young, sports active patients. No study analyzed functional and biomechanical outcome before. Hypothetically ISF leads to (1) a high bony union rate within 12 weeks, (2) normal hindfoot eversion strength, and (3) normal gait and plantar pressure distribution. **METHODS:** Fourteen out of 22 patients were available for follow-up with an average follow-up of 42 months; clinical and radiological follow-up, and biomechanical evaluation by isometric muscular strength measurement (inversion, eversion strength) and dynamic pedobarography, comparing to the non-affected contralateral foot. Level of significance: 0.05. **RESULTS:** Subjective result: Excellent or good result in 14 patients, none fair or poor. AOFAS midfoot score: 100 points in 13 patients and 87 points in 1 patient. The same sports activity level (0-4) was reached in 13 out of 14 patients. Radiologic examination: consolidation after 6 weeks in 9 patients and after 12 weeks in another 4 patients, one partial union. Average maximal eversion strength 59 N (ratio to the contralateral foot: 0.92, not significant). Dynamic pedobarography showed ratios of 0.99-1.01 to the contralateral side for ground reaction force, ground peak time, peak pressure and contact area (not significant). **INTERPRETATION:** A very-high patient-satisfaction, a fast bony healing and complete return to sports were documented. Muscular strength measurement and dynamic pedobarography showed complete functional rehabilitation. Therefore, ISF in proximal fifth-metatarsal fractures can be recommended as a secure procedure.

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