Abstract Cutting movements in football (soccer) induce high loads on the anterior cruciate ligament in the knee. The injury risk is affected by the shoe-surface interaction. For the evaluation of different influencing factors of this interaction the TrakTester, a custom-made device, was used. To obtain significant results from testing ACL loading a realistic plantar pressure distribution in the shoe is required. Using the TrakTester several cutting movements were carried out using two different foot models with the resultant plantar pressure analysed with three different systems: The original foot model with Parotec insoles (24 integrated sensors; Paromed GmbH, Markt Neubeuern, Germany), the modified version of this foot model with Pedar-X insoles (99 sensors; novel GmbH, Munich, Germany) and the inflexible model was surveyed with the OpenGo science system (13 sensors, Moticon, Munich, Germany). For the inflexible model distinct angles between the lower leg and the surface were adjusted and the obtained plantar pressure distributions were analyzed. As the first version showed high pressures in the arch region, it was modified to reduce the load in this area. A second inflexible model induced the pressure in the heel and forefoot region. For various angles similar plantar pressure distributions were obtained. Highest pressures were applied on the medial side of the heel and forefoot with minor load in the arch region. This corresponds to literature data investigating cutting movements with subjects. Tests with
the inflexible foot model achieved similar and realistic patterns of the plantar pressure distribution for different angles. This is an important precondition to obtain reproducible data for ACL loading during cutting movements.

Stichworte: Football; soccer; Football boots; Foot model; Plantar pressure distribution

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