Materials and Methods
Six fresh knee joints (3 female and 3 male knee joints, age 68–92 years) were obtained from autopsy. All soft tissues were left intact. Three tantalum beads (0.8 mm diameter) were inserted in the periphery of the medial meniscus. Each specimen was then fixed in a specially developed motion and loading apparatus (Fig.1) [4], allowing the tibia six degrees of freedom-of-motion relative to the femur (f). Consequently, for each specific flexion angle prescribed (a), the axial load (200N) was applied on the femur (b) and a pulling force on the rectus femoris muscle tendon of 90N (not shown). Torques of 3 Nm (c) were applied to induce tibial rotation (d) [4]. Each knee was tested without tibial torque (neutral position) with internal tibial torque (IT) and external tibial torque (ET) in different degrees of flexion (0°, 15°, 30°, 60°, 90°, 60°, 30°, 15°, 0°). By means of Röntgen Stereophotogrammetric Analysis kinematic parameters were calculated, which describe the motions on the tibia relative to the position at full extension in anterior-posterior direction (AP) and medio-lateral direction (ML) of the different parts of the meniscus during flexion of the knee joint. Next, the meniscus was excised and replaced by the porous polymer prosthesis, made of Estane 

Results
In AP direction, all parts of the menisci and prostheses moved in posterior direction during knee joint flexion. The pathways of the prosthesis showed significantly less excursion and tended to remain more anteriorly on the tibia plateau (Fig. 1). In the meniscus, the anterior horn showed greater excursions than the posterior horn, while in the prosthesis the excursions were smaller and the differences between its horns non-significant. With internal tibial torque, especially the pathway of the meniscus but also the pathway of the prosthesis showed an anterior shift on the tibia plateau, although this shift was not statistically significant (Fig.2). With external tibial torque, a significant posterior shift of the meniscal pathway was observed. In the prosthesis this shift was also observed, however not significant. In ML direction, meniscal movements were less while the prosthesis was almost immobile (Fig.2).