Dokumenttyp: journal article

Autor(en) des Beitrags: Hofmann, Ulf Krister; Jordan, Maurice; Rondak, Ina; Wolf, Petra; Kluba, Torsten; Ipach, Ingmar

Titel des Beitrags: Osteoarthritis of the knee or hip significantly impairs driving ability (cross-sectional survey).

Abstract: Advising patients about when they can drive after surgery is common practice after arthroplasty of the knee or hip. In the literature, the preoperative braking performance values of the patients are frequently taken as the "safe" landmark. We hypothesized that osteoarthritis (OA), the most frequent reason for arthroplasty, already compromises the ability to perform an emergency stop. We expected that both Reaction Time (RT) and Movement Time (MT) as components of the Total Brake Response Time (TBRT), would be prolonged in patients with OA of the knee or hip in comparison with healthy subjects. We also expected maximum pressure levels on the brake pedal to be reduced in such cases. A real car cabin was equipped with pressure sensors on the accelerator and brake pedals to measure RT, MT, TBRT and maximum Brake Force (BF) under realistic spatial constraints. Patients with OA of the knee (right n = 18, left n = 15) or hip (right n = 20, left n = 19) were compared with a healthy control group (n = 21). All measured values for TBRT in the control group remained below 600 ms. OA of the right hip or knee significantly prolonged the braking performance (right hip: TBRT p = 0.025, right knee: TBRT p < 0.001), whereas OA of the left hip did not impair driving ability (TBRT p = 0.228). Intriguingly, OA of the left knee prolonged RT and MT to the same degree as OA on the contralateral side (RT p = 0.001, MT p < 0.001). This
study demonstrates that depending on the localisation of OA, driving capability can be impaired; OA can significantly increase the total braking distance. To ensure safe traffic participation the safety margin for TBRT should be strictly set, under our experimental conditions, at around 600 ms. Moreover, therapeutic approaches to OA, such as physiotherapy, and patients receiving surgery of the left knee should take into account that left knee OA can also impair driving ability. Project number of the ethics committee of the University of Tübingen: 268/2009BO2; 267/2009BO2.