

9. SWACSM Abstract

Effects of an Achilles Speedbridge on Ankle Joint Motion: A Case Study

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ABSTRACT

Over 80% of Achilles injuries are related to individuals who participate in sports or recreational activities that involve either jumping or running. Current research does not provide insight into the longitudinal recovery effects following an Achilles repair surgery. **PURPOSE:** To evaluate the longitudinal effects of lower extremity kinematics following an Achilles Speedbridge surgery. **METHODS:** A 35-year-old male (1.85m, 86.4kg) presented right Achilles insertional tendinitis and a large retrocalcaneal bone spur which had fractured and was partially embedded in the Achilles tendon. One week prior to operation the subject completed over ground walking trials at 1.0 m/s velocity. Following surgery to repair the Achilles tendon, smooth down excess calcaneal bone, and remove fragments from the tendon and six weeks of no weight bearing, the subject repeated the overground walking trials at 8-, 12-, and 16- weeks. **RESULTS:** At 8-weeks post-operation, an increase of 13.9° in peak dorsiflexion angle had occurred, increasing the peak angle from 0.6° pre-operation to 14.5°. Furthermore, a 7° increase in plantarflexion ROM and a decrease in knee flexion ROM of 12° occurred. Along with these changes, during the over ground walking trials, the participant was only able to achieve a maximum gait velocity of 0.89 m/s at the 8-week post-operation trial. At 12- and 16-weeks, the peak dorsiflexion angle decreased from the 8-week post-operation trial to 10.4° and 10.7°, respectively, while the ankle ROM decreased to -24.5° and -25.4°, respectively. By the 12-week trial, knee flexion ROM returned to pre-operative levels. **CONCLUSION:** Kinematic data were used to quantify ROM changes to a recovering limb after an Achilles repair surgery. The subject had displayed a lower peak dorsiflexion angle in the pre-operation trial. After the Achilles repair surgery, there was a complete shift of the ankle angle curve during the stance phase into a more dorsiflexed pattern. Although the peak dorsiflexion angle reduced at the 12-week trial, the alteration in the curve continued to be present as peak dorsiflexion was still 10° higher than pre-op levels. The use of an Achilles Speedbridge had a significant effect on the alteration of ankle motion as there was a significant increase in the peak dorsiflexion angle following the operation.