Sports and Physical Activities After Primary Arthrodesis for Lisfranc Injuries in Young Patients

Aoife MacMahon; Paul Kim; David Levine; Matthew Roberts; Mark Drakos; Jonathan Deland; Andrew Elliott; Scott Ellis

Introduction/Purpose:
Research regarding outcomes in sports and physical activities after primary arthrodesis for Lisfranc injuries has been sparse, and primarily consists of athletes with low-impact Lisfranc injuries incurred in sport. The purposes of this study were to assess sports and physical activities in young patients following primary arthrodesis for Lisfranc injuries and to compare these with clinical outcomes. Our hypothesis was that patients would be able to participate in a variety of physical activities postoperatively.

Methods:
Patients who underwent primary arthrodesis for a Lisfranc injury between January 2008 and April 2014 by seven fellowship-trained foot and ankle surgeons were identified using the Foot and Ankle Registry at the investigators’ institution. Inclusion criteria were primary arthrodesis for a Lisfranc injury, minimum one-year followup, and age less than 50 at surgery. Exclusion criteria were hindfoot or ankle injuries. Sports participation was assessed with a previously used questionnaire that allowed patients to list physical activities and asked about pre- to postoperative changes in participation and difficulty for each. Clinical outcomes were also assessed with the Foot and Ankle Outcome Score (FAOS).

Results:
Thirty-seven of 45 eligible patients (80%) responded for followup at a mean of 62.7 (range, 12.0 to 111.6) months. There were 19 males and 18 females with a mean age at surgery of 32.1 (range, 16.8 to 50.3) years. Patients participated in 29 distinct and 155 total physical activities; 47.1% (73/155) were high impact. Thirteen were discontinued in 9 patients and 3 were initiated in 3 patients after surgery, such that 44.8% were high impact postoperatively. The most common activities were walking, bicycling, weight lifting, and running (Table 1). Compared to preoperatively, patients rated 64% of physical activities as the same and 36% as more difficult. They rated participation levels as improved in 10%, the same in 63%, and impaired in 27%. In regards to return to physical activity, 97% of respondents were satisfied with their surgical outcome. Patients spent on average 80.7 minutes less per week (95% CI [-132.8, -28.7]) on physical activities at followup than preoperatively (p < 0.01), primarily due to a mean decrease of 0.9 sessions per week (95% CI [-1.6,-0.3], p < 0.01) and 13 minutes per session (95% CI [-24.5, -1.7], p < 0.01). Mean postoperative FAOS subscores were 91.5, 87.6, 95.8, 85.7, and 75.2 for Pain, Symptoms, Activities of Daily Living, Sports, and Quality of Life, respectively.

Conclusion:
Most patients were able to participate in a variety of sports and physical activities following primary arthrodesis for a Lisfranc injury, many of which were high impact, and demonstrated good clinical outcomes as assessed by the FAOS. However, the discontinuation or increase in difficulty of a number of these activities and mean decrease in weekly participation time suggests that some patients experience limitations in physical activity participation postoperatively. Surgeons can use this information to counsel patients regarding postoperative expectations in sports and physical activities following primary arthrodesis for Lisfranc injuries. Future studies could compare sports outcomes between patients with Lisfranc injuries treated with primary arthrodesis or open reduction internal fixation (ORIF).