High Activity Level and Return to Sports Following Knee Osteotomy in Young Athletic Patients

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Summary:
Knee osteotomies in young patients resulted in 95% return to sports of which 60% could return to their pre-injury main sports, which included high-impact activities in 74%, suggesting that it might not be the realignment osteotomy that prevents returning to pre-injury levels of sport, but rather other reasons such as the disease state of the knee.

Abstract:
Introduction
Treating young patients at risk of developing or suffering from early knee osteoarthritis (OA) as a result of joint trauma is challenging, and the possibility of returning to activity and sport is an important consideration. Realignment osteotomy has been proven to be an effective procedure to offload damaged compartments in the knee; however it is often thought of as having a detrimental effect on returning to sport. Osteotomy was originally only indicated for unicompartmental knee OA, but indications have broadened to athletic patients with knee instability and as adjuvant procedures to unload compartments during meniscus and cartilage restoration. The purpose of this study was to investigate the level of activity of young athletic patients after knee osteotomy, including understanding their highest level of sports participation and whether they are satisfied with their activity levels.

Methods
We performed a cross-sectional survey within a cohort of eligible study patients of age 45 years or younger, who underwent high tibial or distal femoral knee osteotomy between 2005 and 2015. Questions concerning work activities, sports participation and satisfaction were asked utilising a combination of modified questionnaires of Naal and Weiss, Numerical Rating Scales (NRS) of satisfaction and Net Promoter Score (NPS).

Results
Survey analysis was performed with data from 60 patients (mean age 35 years (15-45) being available for analysis (response rate 67%). The main preoperative sport type involved 65% high-impact, 23% intermediate-impact and 12% low-impact activities. Of the 60 patients, 95% returned to sports following surgery, of which 60% could return to their main pre-injury sport, with 14% even returning to different sport of higher impact. The highest level of sport participation preoperatively was 13% professional, 7% varsity and 80% amateur (58%, competitive, 42% recreational). Postoperatively 5% returned to professional level, 4% varsity and 89% amateur (14% competitive, 86% recreational). After a mean follow-up of 5.4 (1.4-11.3) years the mean Marx Activity Rating Scale for the total group was 3.5 (0-14) and 5.9 (0-14) for the patients who still performed high-impact sports. 22% of patients had retired from sports at follow-up. The NRS satisfaction regarding activity level was 6.2 and regarding activities of daily living, work and leisure time was 8.0, 6.5 and 6.2 respectively. The main reasons for dissatisfaction were persisting knee
pain (67%) and lack of ROM (29%). The NPS was 62, indicating that patients would recommend the surgery to friends or family.

Conclusion
95% of patients of 45 years old or younger at the time of their knee osteotomy returned to sports. 74% returned to their pre-injury sport or an activity of even higher impact (53% high-impact). At follow-up 37% were still performing their favourite sport, but 22% retired fully and 41% were not satisfied about their current activities. However, only 9% would discourage the procedure to family or friends. Based on this research, it would appear that realignment osteotomy may not prevent returning to pre-injury levels of sport, but rather other reasons such as the disease state of the knee will likely determine the degree and longevity of sports participation.