Return to Downhill Skiing after Total Knee Arthroplasty

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Introduction: Total joint arthroplasty is one of the most successful orthopaedic surgical procedures and enjoys a very high level of outcome and patient satisfaction. Initial expectations for arthroplasty were simply to relieve pain and restore motion. As implant technology, bearing characteristics and component survival continue to improve, the goal is no longer to simply eradicate pain, but to return patients to an active lifestyle. With improvements in technology, we have also seen an expansion of the indications for TKA to include younger patients, who often have the expectation to continue an active lifestyle to which they are accustomed. In general, there has been a trend toward allowing increased activity levels after TKA, but most surgeons still recommend against high impact activity such as contact sports and running. In this study we have reviewed patients operated on by a single surgeon and have chosen to return to skiing. We hypothesize that under the appropriate situations downhill skiing after total knee arthroplasty can be appropriate.

Methods: We contacted all patients who had undergone a primary TKA in the past 15 years to assess if they met inclusion criteria. If the patient met inclusion criteria and was willing to participate in the study they were scheduled for a clinic appointment in our office. During their appointment clinical questionnaires (Total Knee Function Questionaire, Tegner-Lysholm), physical examination and radiographic studies were completed. Those patients that do not ski after their TKA were assessed in the same fashion and serve as a control group in this study. Additionally, Kaplan-Meier survivorship analysis was carried out with failure defined as revision surgery on any component for any reason. All patients underwent a physical exam including assessment of range of motion, stability and strength of the knee. Gait examination and documentation of any use of assistive ambulatory devices was recorded. Body mass index (BMI) was recorded for all patients. Standard postoperative radiographs were obtained on all patients. Views included standing anterior-posterior, lateral and merchant. Radiographs were reviewed and assessed for evidence of radiolucent lines, loosening and gross polyethylene wear.

Results: To date, 29 patients (49 knees) have completed the study. Mean follow-up was 6.64 years (range 2-17 years). The mean age of all patients is 67.50 years (We are currently scheduled for 6 more weeks of data collection, and data will be updated prior to presentation). There were 19 patients (29 knees) that continue to ski after their TKA and 10 non-skiers (12 knees). In the group that returned to skiing there were 16 males and 3 females. Average age in the skiing group is 64.36 years. In the control group that did not return to skiing, there were 5 males and 5 females with an average age of 67.72 years. Encouraging results were seen in the group of patients that returned to skiing after TKA. Average days skied before TKA was 53.84 and increased by 6.2% to 57.42 days after TKA. Fifteen of the 19 patients skied the same or an increased number of days following TKA. There are 5 skiers who continue to ski >100 days per season after TKA. Fifteen patients ski the same or higher difficulty trail level following TKA and 13 patients (68.4%) continue to ski double black level runs after TKA. In the non-skier group, there are 5 patients that skied prior to their TKA, but do not continue to ski following TKA. All 5 of these patients chose to discontinue skiing for reasons other than their TKA specifically (ie. medical comorbidities). The mean Lysholm score for the group that returned to skiing was 97.39, and 69.36 for the non-skier control group. This difference was statistically significant (p<0.01). The total knee function score was 7.21 in the skier group and 6.09 in the non-skier group, which was statistically significant (p<0.05). The average BMI for skiers and non-skiers was 24.44 and 31.94 respectively, which was statistically significant (p<0.02).

Discussion: In this study we have shown that following TKA, patients are able to return to downhill skiing at a high level and intensity. Patients displayed marked improvement in pain and range of motion that is not affected by returning to downhill skiing. Those patients that returned to skiing had higher functional scores and lower BMI on average compared to patients in the non-skier group. These scores correlate with a higher overall activity and functional level in those patients that have chosen to return to skiing. Our results may not necessarily be able to translate to a general population, however it does show positive results in a group of highly active patients. Future studies are needed to determine long-term effects of skiing on the durability of TKA outcomes.

Significance: We have shown that following TKA, patients may safely return to downhill skiing without increasing the need for revision surgery at mid-term follow-up. Patients who were skilled skiers prior to surgery had the easiest return to skiing after TKA. The benefit of return to physical and aerobic activity is well established and many patients now expect to return to regular exercise and activity following TKA. Important considerations include the patient’s general heath, previous athletic experience, post-op expectations and the demands of particular sports when counseling patients. Our results show that patients may return to downhill skiing following TKA.

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References: 1.Kurtz S, Ong K, Lau E, Mowat F, Halpern M. Projections of primary and revision hip and knee arthroplasty in the

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