Sporting Activity after Total Joint Replacement

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Conflicts of Interest

- None related to this talk
The Question

• “Doc, can I [run, jog, ski, golf, hike, do yoga, play tennis, basketball, volleyball, softball, football, baseball, swim, dive, wrestle, karate, etc...] after total joint replacement?”
Bo knows revision hip surgery
The Clinical Problem

• Hip and Knee Replacement is a very successful operation with excellent outcomes
• Younger patients seeking surgery
• Higher patient demands
• Improvements in implant materials
• Prosthetic longevity
What are the concerns?

• Several historical studies have demonstrated increased activity in low impact exercise following joint replacement
• Periprosthetic fractures, dislocations remain a risk
• Repetitive loading and wear of the joint can lead to problems with loosening and osteolysis
### Table 1  Activity After Total Hip Arthroplasty—1999 Hip Society Survey

<table>
<thead>
<tr>
<th>Recommended-Allowed</th>
<th>Allowed with Experience</th>
<th>Not Recommended</th>
<th>No Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stationary bicycling</td>
<td>Low-impact aerobics</td>
<td>High-impact aerobics</td>
<td>Jazz dancing</td>
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<tr>
<td>Croquet</td>
<td>Road bicycling</td>
<td>Baseball/softball</td>
<td>Square dancing</td>
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<tr>
<td>Ballroom dancing</td>
<td>Bowling</td>
<td>Basketball</td>
<td>Fencing</td>
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<tr>
<td>Golf</td>
<td>Canoeing</td>
<td>Football</td>
<td>Ice skating</td>
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<tr>
<td>Horseshoes</td>
<td>Hiking</td>
<td>Gymnastics</td>
<td>Roller/inline skating</td>
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<tr>
<td>Shooting</td>
<td>Horseback riding</td>
<td>Handball</td>
<td>Rowing</td>
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<tr>
<td>Shuffleboard</td>
<td>Cross-country skiing</td>
<td>Hockey</td>
<td>Speed walking</td>
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<tr>
<td>Swimming</td>
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<td>Jogging</td>
<td>Downhill skiing</td>
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<td>Doubles tennis</td>
<td></td>
<td>Lacrosse</td>
<td>Stationary skiing</td>
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<tr>
<td>Walking</td>
<td></td>
<td>Racquetball</td>
<td>Weight lifting</td>
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<td></td>
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<td>Squash</td>
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<td></td>
<td></td>
<td>Rock climbing</td>
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<td></td>
<td></td>
<td>Soccer</td>
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<td></td>
<td></td>
<td>Singles tennis</td>
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### Table 2  Activity After Total Knee Arthroplasty—1999 Knee Society Survey*

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<td>Cross-country skiing</td>
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<td>Horseback riding</td>
<td>Stationary skiing†</td>
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Current Literature Guidelines

- Golant et al, Hosp for Joint Diseases 2010
- Break down of athletic activity after joint replacement
- Most important factor was preoperative level of activity
- Low and potentially low impact activity is encouraged
- Intermediate impact activity allowed with experience
- High impact activity is strongly discouraged
Predictors of Sport after TJA

- Williams et al, CORR 2012
- Retrospective review 736 patients—primary and revision THA, TKA; UKA; Hip resurfacing
- Mean follow-up 1 year
- Preoperative UCLA activity score, age, male gender, BMI predicted postoperative high activity regardless of procedure or implant material
Predictive factors after THA

- Ollivier et al 2014 Bone Joint J
- 815 patients reviewed retrospectively
- 64% returned to UCLA>5 activity at 10 years
- Preop HHS, patient motivation, shorter duration of symptoms predicted higher activity
- Fears: dislocation, wear, surgeon advice
Sporting Activity in TKA >60yrs

- Mayr et al J Arthroplasty 2015
- 81 patients avg f/u 6 years
- Sport practiced 5.3 hrs/week, 3.5x/week
- 25% performed high impact, 47% medium impact, 52% low impact
Jogging after THA

- 804 hips in 608 patients examined
- Mean age 62yrs, avg f/u 4.8 years
- 33 pts (5.4%) jogged preoperatively, 23 pts (3.8%) jogged postoperatively
- Reasons for not jogging: anxiety, pain, loss of motion, weakness, back pain, knee pain
- No short term negative effect
High impact activities after resurfacing?

- Girard et al 2013 Int Orthop
- Prospective series of 202 patients
- Oxford Hip, Harris Hip, UCLA, specific questionnaires regarding physical activity
- Only 50 patients high impact preoperatively
- 98% return for sport of any impact; 82% for high impact
- No consensus, but high impact seems compatible, long term follow-up needed
Sporting and Activity after UKA

- Fisher et al 2006 Knee
- 76 patients, mean age 64, f/u 18 months
- Overall 93% returned to regular sporting and physical activity
- 59% regularly participated in sports
TKA vs UKA

- Hopper and Leach 2008
- 110 patients surveyed, 76 TKA, 34 UKA
- 96% UKA vs 64% TKA returned to sport
- 24% UKA vs 43% TKA reported pain during sport
- 80% TKA vs 88% UKA felt surgery increased or maintained physical activity postop
Systematic Literature Review

- Bloomfield and Hozack 2014
- PubMed review from 2000-2013
- Lack of high quality evidence of total hip and knee replacement in younger athletes
- Minority of patients engage in high impact
- Overall activity increases, high demand athletics limited by pain, function, or restrictions
- Lifespan of prosthesis may be shortened with high impact and repetitive loading
Systematic Literature Review

- Jassim et al 2014
- PubMed, Embase, Sports Discus searches
- Preoperative patient activity levels, BMI, age determine participation in sport following joint replacement
- Sport tends to be at lower intensity
- No evidence for early implant failure, loosening
My practice

• Most patients want to be out of pain
• Significant percentage of patients inquire about low impact activities
• Few, if any, patients return to high-impact sports
• I discourage running/high impact

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My practice

- Patients with UKA can return to higher level of activity because normal biomechanics of knee preserved
- I do not offer hip resurfacing because of concerns of metal-on-metal bearing
- I have performed ceramic-on-ceramic total hip replacements on patients younger than 50 years
Conclusions

• Total Hip and Total Knee Replacement is an excellent operation for relief of pain and restoration of function
• Higher patient demands and younger age population seeking surgery will put prosthetic longevity to the test
• Careful patient counseling and activity recommendations on a case by case basis
• No running