Multi-Center Analysis of Sports-Related Outcomes of Adolescents Following Hip Arthroscopy

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www.mashstudy.com
• Describe the changes of sports-related outcomes of adolescents at 2 years following arthroscopic hip preservation surgery.
METHODS

- IRB-approved retrospective review of multicenter prospective data
- The data from surgical practices that perform greater than 100 hip arthroscopy cases per year for a minimum of 8 years
- Preoperative and 2-year post-operative patient reported outcome measures (PROM)
  - Hip Outcome Score Sports subscale (HOS-Sports)
  - 12-item International Hip Outcome Tool (iHOT-12)
  - Visual Analog Scale for Pain
METHODS

• Statistical Analysis
  • Patient Reported Outcome Measures
    • Mean
    • Standard Deviation
    • Min/Max
  • Paired T-tests for change in scores from pre-operative to 2-years post hip arthroscopy (α = 0.05).

• Percentage of subjects that surpassed the Patient Acceptable Symptomatic State (PASS)
  • HOS ADL
  • HOS Sports
  • iHOT-12
SUBJECTS

- 50 adolescents at 2 year follow-up
  - 72% female
  - Age: 15-19 years
  - Height: 168cm
  - Body Mass: 64.5 kg

- Morphological Characteristics
  - 3.4° Tonnis angle
  - 50.9° Alpha angle
  - 31.0° lateral center edge angle
**Sports Participation**

<table>
<thead>
<tr>
<th>Subject</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Running</td>
<td>14</td>
<td>(28%)</td>
</tr>
<tr>
<td>Lacrosse</td>
<td>6</td>
<td>(12%)</td>
</tr>
<tr>
<td>Baseball</td>
<td>5</td>
<td>(10%)</td>
</tr>
<tr>
<td>Swimming</td>
<td>5</td>
<td>(10%)</td>
</tr>
<tr>
<td>Cheerleading</td>
<td>4</td>
<td>(8%)</td>
</tr>
<tr>
<td>Football</td>
<td>4</td>
<td>(8%)</td>
</tr>
<tr>
<td>Basketball</td>
<td>3</td>
<td>(6%)</td>
</tr>
<tr>
<td>Soft ball</td>
<td>2</td>
<td>(4%)</td>
</tr>
<tr>
<td>Martial arts</td>
<td>2</td>
<td>(4%)</td>
</tr>
<tr>
<td>Hockey</td>
<td>2</td>
<td>(4%)</td>
</tr>
<tr>
<td>Wrestling</td>
<td>2</td>
<td>(4%)</td>
</tr>
<tr>
<td>Dance</td>
<td>2</td>
<td>(4%)</td>
</tr>
<tr>
<td>Field hockey</td>
<td>2</td>
<td>(4%)</td>
</tr>
<tr>
<td>Gymnastics</td>
<td>2</td>
<td>(4%)</td>
</tr>
<tr>
<td>Volleyball</td>
<td>1</td>
<td>(2%)</td>
</tr>
<tr>
<td>Cycling</td>
<td>1</td>
<td>(2%)</td>
</tr>
<tr>
<td>Skiing</td>
<td>1</td>
<td>(2%)</td>
</tr>
<tr>
<td>Rowing</td>
<td>1</td>
<td>(2%)</td>
</tr>
<tr>
<td>Tennis</td>
<td>1</td>
<td>(2%)</td>
</tr>
</tbody>
</table>

**SUBJECTS**
Results

Pre vs Post Op Patient Reported Outcome Measures

<table>
<thead>
<tr>
<th>Measure</th>
<th>Pre-op</th>
<th>Post-Op</th>
<th>Mean Difference</th>
<th>p value</th>
<th>% that met PASS score</th>
</tr>
</thead>
<tbody>
<tr>
<td>iHOT-12</td>
<td>37.4</td>
<td>85.4</td>
<td>48.0</td>
<td>&lt;0.001</td>
<td>72%</td>
</tr>
<tr>
<td>HOS- Sports</td>
<td>43.7</td>
<td>90.0</td>
<td>47.3</td>
<td>&lt;0.001</td>
<td>54%</td>
</tr>
<tr>
<td>Pain VAS</td>
<td>39.7</td>
<td>12.4</td>
<td>-27.3</td>
<td>&lt;0.001</td>
<td>NA</td>
</tr>
</tbody>
</table>
Pre vs Post
Sport-Specific Skills

Percentage of Patients with Extreme or Moderate Difficulty With Sport-Specific Skill

<table>
<thead>
<tr>
<th>SPORT SPECIFIC SKILL</th>
<th>Pre-surgery</th>
<th>Post-Surgery</th>
</tr>
</thead>
<tbody>
<tr>
<td>run</td>
<td>50%</td>
<td>54%</td>
</tr>
<tr>
<td>jump</td>
<td>10</td>
<td>2</td>
</tr>
<tr>
<td>swing</td>
<td>20</td>
<td>2</td>
</tr>
<tr>
<td>landing</td>
<td>44</td>
<td>0</td>
</tr>
<tr>
<td>start/stop</td>
<td>62</td>
<td>8</td>
</tr>
<tr>
<td>cutting/lateral movements</td>
<td>58</td>
<td>8</td>
</tr>
<tr>
<td>low impact</td>
<td>54</td>
<td>8</td>
</tr>
<tr>
<td>sport-specific technique</td>
<td>64</td>
<td>8</td>
</tr>
</tbody>
</table>
Results

Pre vs Post Op Patient Reported Outcome Measures

- 46% of athletes rated running as extremely difficult prior to surgery.
- This dropped to 8% of athletes at 2 years post-hip arthroscopy.
- 88% - 90% reported slight or no difficulty with jumping, landing, stop/start movements, and cutting/lateral movements.
Pre vs Post Op Patient Reported Outcome Measures

- Running was shown to be the most difficult sport-specific skill to perform prior to hip arthroscopy.
- Large improvements after surgery included:
  - Running
  - Jumping/landing
  - Stopping/starting
  - Cutting/lateral movements.
- Despite large improvements, 46% of athletes report sports related dysfunction at 2 years following hip preservation surgery.
Conclusion

• Sport-specific function of adolescent athletes greatly improves and is sustained 2 years following hip preservation surgery.

• Despite large improvements, sports specific dysfunction still exists in nearly half of adolescent athletes 2-years after hip arthroscopy.