Guidelines for MR Imaging of Sports Injuries

European Society of Skeletal Radiology
Sports Sub-committee

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Abbreviations and clarifications

- Ax = axial
- Cor = coronal
- Sag = sagittal
- FOV = field of view
- PD = proton density
- TE = time to echo in milliseconds
- FS = fat suppressed
- Int = intermediate
- Int FS: this is a fat suppressed sequence with a long TR and a TE between that of a traditional PD (e.g. TE= 10-20) and a traditional T2 (e.g. TE=80-100). The advantage of this sequence is that the TE is short enough to maintain sufficient signal for visualisation of the anatomy (like a PD) yet long enough to be more fluid sensitive (like a T2)
- For STIR sequence, TI (inversion time) should be 140-150 at 1.5T
Shoulder

- Patient in supine position with arm in mild external rotation
- Coronal obliques parallel to scapular body or parallel to supraspinatus tendon - include entire humeral head
- Sagittal obliques include volume lateral deltoid to scapular body
- Axials include volume from above AC joint to below axillary pouch
# Shoulder

<table>
<thead>
<tr>
<th></th>
<th>FOV (max)</th>
<th>Slice (max)</th>
<th>TE</th>
<th>Matrix (min)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ax Int FS</td>
<td>16 cm</td>
<td>3.5 mm</td>
<td>40-60</td>
<td>256x256</td>
</tr>
<tr>
<td>Cor Obl Int FS</td>
<td>16 cm</td>
<td>3.5 mm</td>
<td>40-60</td>
<td>256x256</td>
</tr>
<tr>
<td>Sag Obl Int FS</td>
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<td>3.5 mm</td>
<td>40-60</td>
<td>256x256</td>
</tr>
<tr>
<td>Sag Obl T1</td>
<td>16 cm</td>
<td>4 mm</td>
<td>min</td>
<td>256x256</td>
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<tr>
<td>Cor Obl T2</td>
<td>16 cm</td>
<td>3.5 mm</td>
<td>80-100</td>
<td>256x256</td>
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<tr>
<td>Ax GRE (optional)*</td>
<td>16 cm</td>
<td>3.5 mm</td>
<td>10-20</td>
<td>256x256</td>
</tr>
</tbody>
</table>
Shoulder

Ax Int FS  Cor Obl Int FS  Sag Obl Int FS

Sag T1  Cor Obl T2  Ax GRE*
Shoulder MR Arthrogram

- Patient in supine position with arm in mild external rotation
- Coronal obliques parallel to course of supraspinatus tendon (identified on axial) - include coracoid and entire humeral head
- Sagittal obliques perpendicular to coronal obliques - include entire coracoid and humeral head, and extend medially to scapular body to include some rotator cuff muscles bellies
- Axials include volume from above AC joint to below axillary pouch
# Shoulder MR Arthrogram

<table>
<thead>
<tr>
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<th>FOV (max)</th>
<th>Slice (max)</th>
<th>TE</th>
<th>Matrix (min)</th>
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</thead>
<tbody>
<tr>
<td>Axial T1</td>
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<td>Min</td>
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<tr>
<td>Axial PD FS</td>
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</tr>
<tr>
<td>Cor Obl T1 FS</td>
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<td>3.5 mm</td>
<td>Min</td>
<td>256x256</td>
</tr>
<tr>
<td>Cor Obl T2 FS</td>
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<td>3.5 mm</td>
<td>80-100</td>
<td>256x256</td>
</tr>
<tr>
<td>ABER T1 FS</td>
<td>16 cm</td>
<td>3.5 mm</td>
<td>Min</td>
<td>256x256</td>
</tr>
</tbody>
</table>

*(optional)*
Shoulder MR Arthrogram

- Patient positioned hand and above or behind head (abduction external rotation)
- Start with coronal scout
- Align sections perpendicular to glenoid

![Image of shoulder MR Arthrogram with annotations: Ideal Plane for ABER and Plane for ABER with arm more abducted]
Shoulder MR Arthrogram

Axial PD FS  Axial T1  Sag Obl PD FS

Cor Obl T1 FS  Cor Obl T2 FS  ABER T1 FS