



Guidelines for MR Imaging of Sports Injuries

European Society of Skeletal Radiology
Sports Sub-committee

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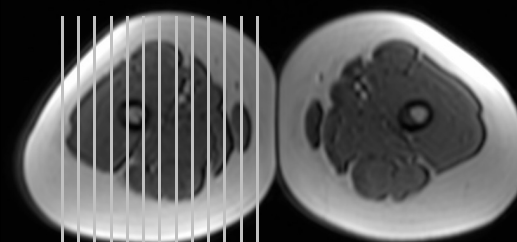
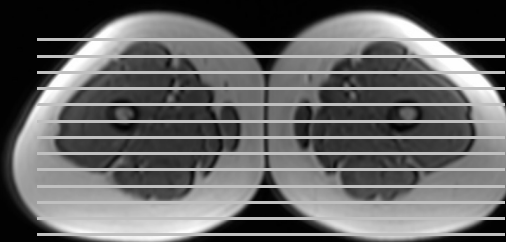
Abbreviations and clarifications



- 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

Hamstrings

- Patient feet first in supine position, phased-array surface coil over thighs
- Legs close together, marker at site of pain
- Axials of both thighs with wide margins above and below the markers
- Proximal injuries: axials and oblique coronals include bilateral hamstring origins
- Distal injuries: axials of the affected thigh and oblique coronal or sagittal images along the axis of the affected muscle. (Oblique coronal plane for medial or lateral injuries and sagittal plane for anterior or posterior injuries)



Hamstrings: proximal injuries

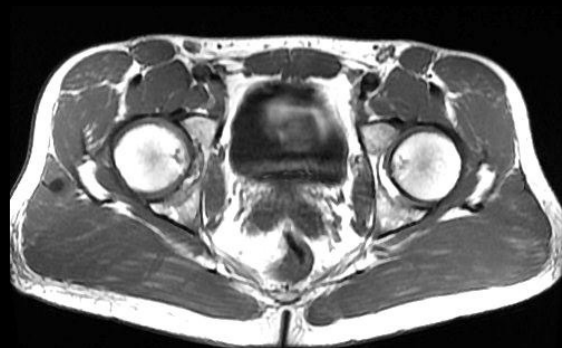


	Sequence	FOV (max)	Slice (max)	TE	Matrix (min)
BILATERAL SURVEY	Ax T1	38 cm	7 mm	Min	256x256
	AX STIR/FS	38 cm	7 mm	40-60	256x256
BILATERAL HAMSTRING ORIGINS	Ax T1	24 cm	5 mm	Min	288x256
	Ax PD FS	24 cm	5 mm	35	288x256
	Cor ObI PD FS	32 cm	3 mm	35	288x256
	Sag ObI PD FS optional	32 cm	3 mm	35	288x256

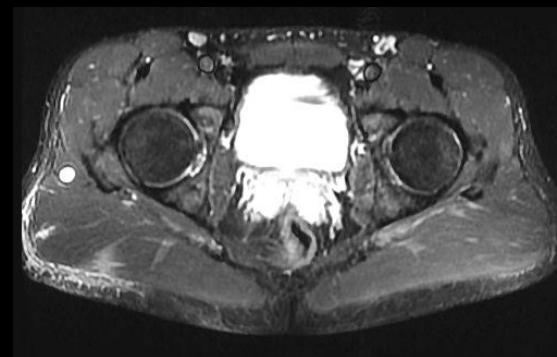
Hamstrings: proximal injuries



Ax T1



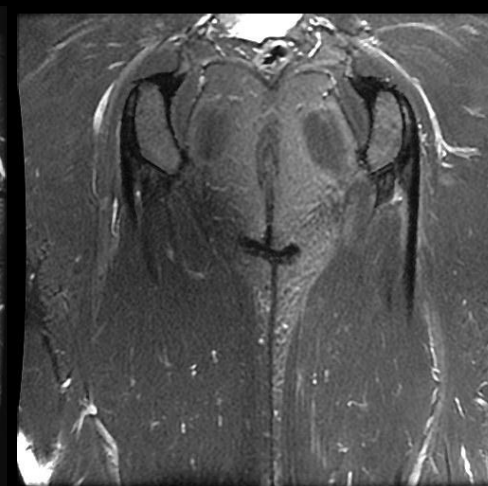
Ax STIR



Ax T1



Ax PD FS



Cor ObI PD FS

Hamstrings: distal injuries



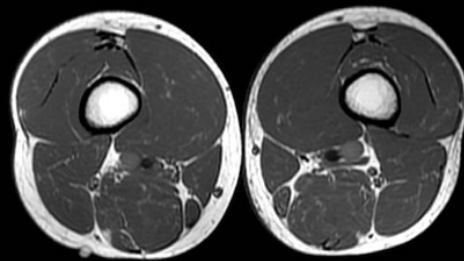
	Sequence	FOV (max)	Slice (max)	TE	Matrix (min)
BILATERAL SURVEY	Ax T1	38 cm	7 mm	Min	256x256
	AX STIR/FS	38 cm	7 mm	40-60	256x256
UNILATERAL INJURY	Ax T1	24 cm	5 mm	Min	288x256
	Ax PD FS	24 cm	5 mm	35	288x256
	*Cor/Sag Obl PD FS	32 cm	3 mm	35	288x256

* Oblique Coronal to the muscle in medial/lateral injuries. Oblique Sagittal to the muscle in anterior/posterior lesions

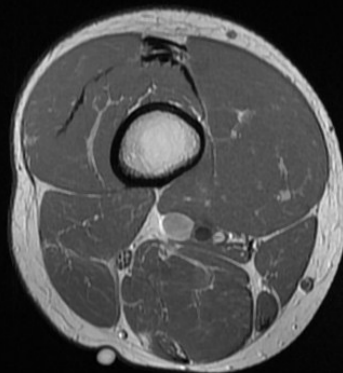
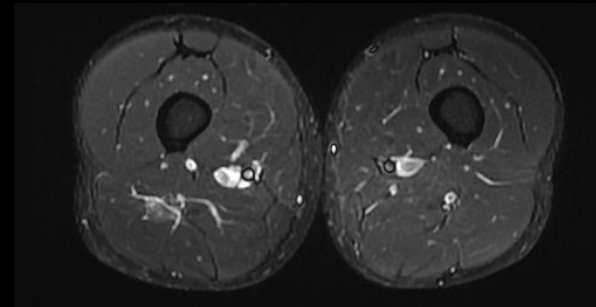
Hamstrings: distal injuries



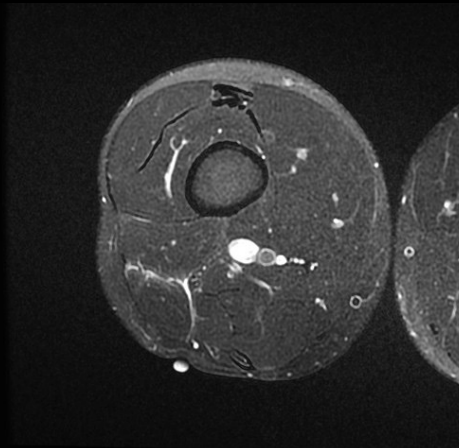
Ax T1



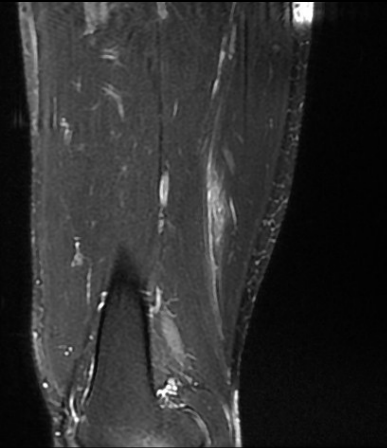
Ax STIR



Ax T1



Ax PD FS



Sag Oblique PD FS