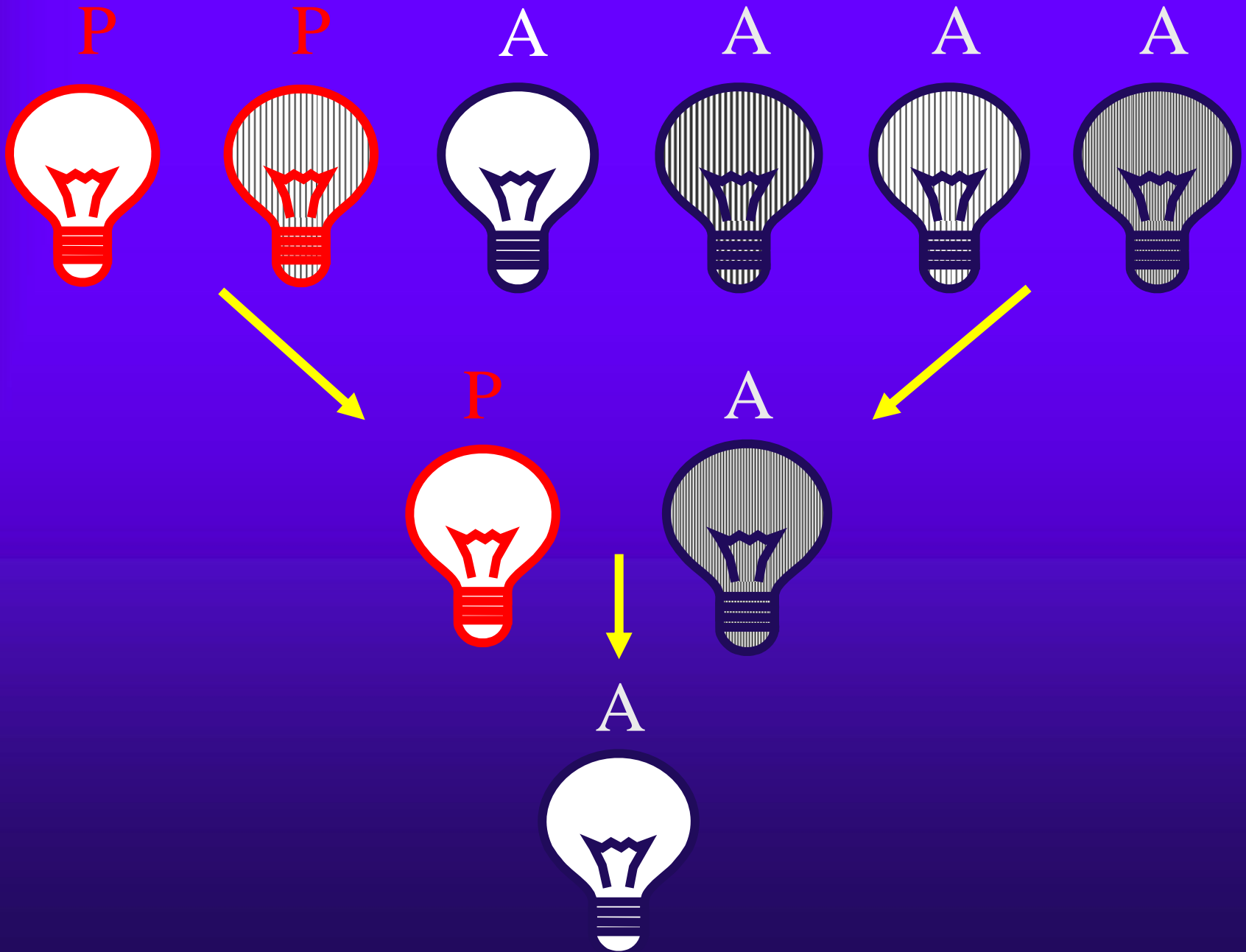


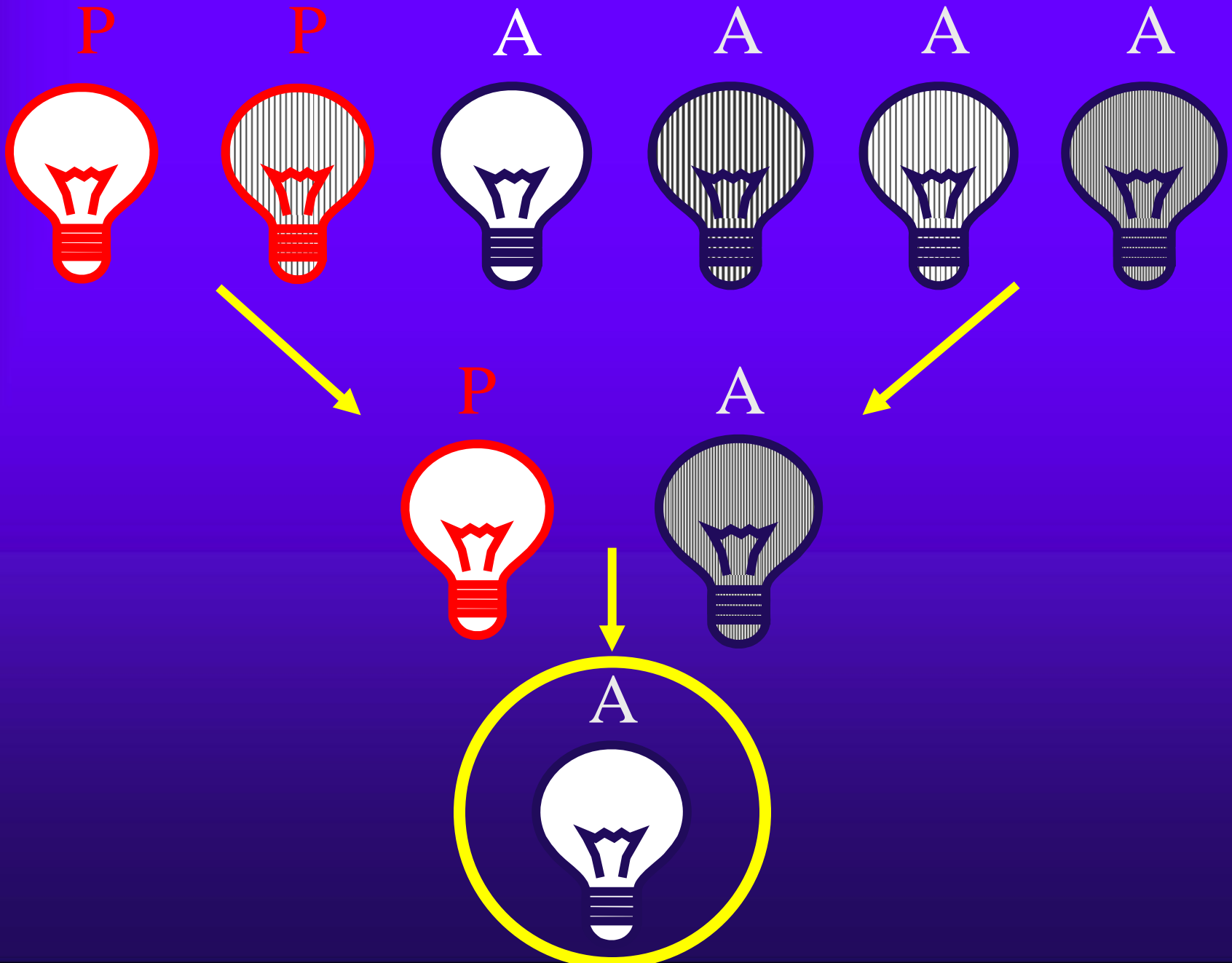
Role of MRI for Detection of Early Arthropathy: A proposed New International MRI Score

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MRI scoring systems for hemophilic arthropathy

- * 2000 Nuss R, Kilcoyne RF, Geraghty S, Shroyer AL et al.
- * 2000 Mathew P, Talbut A, Frogameni A, Singer D et al.
- * 2002 Funk MB, Schmidt H, Becker S, Escuriola C et al.
- * 2002 Soler R, Lopez-Fernandez F, Rodriguez E, Marini M et al.
- * 2003 Dobon M, Lucia JF, Aguidar C, Mayayo E et al.
- * 2004 Lundin B, Pettersson H, Ljung R





MRI Scoring System (preliminary)

Effusion/haemarthrosis	small moderate large	(1)_____ (2)_____ (3)_____
Synovial hypertrophy	small moderate large	(1)_____ (2)_____ (3)_____
Haemosiderin	small moderate large	(1)_____ (2)_____ (3)_____
Changes of subchondral bone or joint margins: Surface erosion	any surface erosion half or more of the articular surface eroded in at least one bone	(1)_____ (1)_____
Subchondral cysts	one subchondral cyst multiple subchondral cysts	(1)_____ (1)_____
Cartilage loss	any loss of joint cartilage height full-thickness loss of joint cartilage in at least some area in at least one bone loss of half or more of the total volume of joint cartilage in at least one bone	(1)_____ (1)_____ (1)_____
Scoring total		16 (9:7)

MRI Scoring System (preliminary)

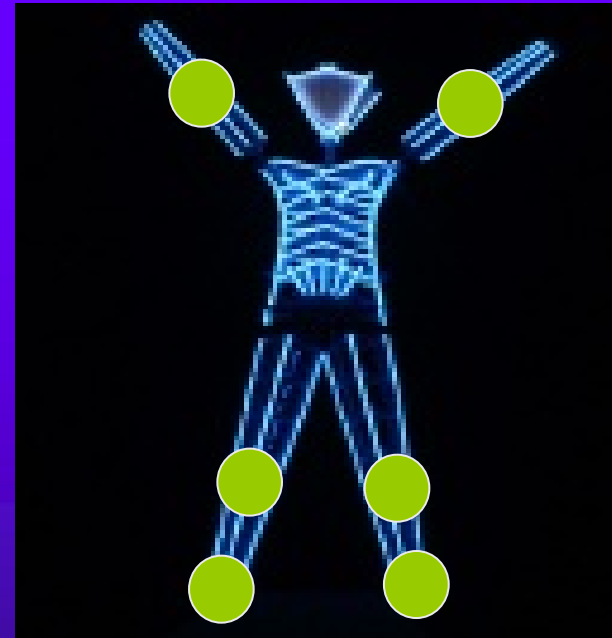
Effusion/haemarthrosis	small (1)_____
	moderate (2)_____
	large (3)_____
Synovial hypertrophy	small (1)_____
	moderate (2)_____
	large (3)_____
Haemosiderin	small (1)_____
	moderate (2)_____
	large (3)_____
Changes of subchondral bone or joint margins: Surface erosion	any surface erosion (1)_____
	half or more of the articular surface eroded in at least one bone (1)_____
Subchondral cysts	one subchondral cyst (1)_____
	multiple subchondral cysts (1)_____
Cartilage loss	any loss of joint cartilage height (1)_____
	full-thickness loss of joint cartilage in at least some area in at least one bone (1)_____
	loss of half or more of the total volume of joint cartilage in at least one bone (1)_____
Scoring soft tissues	16 (9:7)

MRI Scoring System (preliminary)

Effusion/haemarthrosis	small moderate large	(1)_____ (2)_____ (3)_____
Synovial hypertrophy	small moderate large	(1)_____ (2)_____ (3)_____
Haemosiderin	small moderate large	(1)_____ (2)_____ (3)_____
Changes of subchondral bone or joint margins: Surface erosion	any surface erosion half or more of the articular surface eroded in at least one bone	(1)_____ (1)_____
Subchondral cysts	one subchondral cyst multiple subchondral cysts	(1)_____ (1)_____
Cartilage loss	any loss of joint cartilage height full-thickness loss of joint cartilage in at least some area in at least one bone loss of half or more of the total volume of joint cartilage in at least one bone	(1)_____ (1)_____ (1)_____
Scoring osteochondral changes		16 (9:7)

MRI Scoring System (preliminary)

Effusion/haemarthrosis	small moderate large	(1)_____ (2)_____ (3)_____
Synovial hypertrophy	small moderate large	(1)_____ (2)_____ (3)_____
Haemosiderin	small moderate large	(1)_____ (2)_____ (3)_____
Changes of subchondral bone or joint margins: Surface erosion	any surface erosion half or more of the articular surface eroded in at least one bone	(1)_____ (1)_____
Subchondral cysts	one subchondral cyst multiple subchondral cysts	(1)_____ (1)_____
Cartilage loss	any loss of joint cartilage height full-thickness loss of joint cartilage in at least some area in at least one bone loss of half or more of the total volume of joint cartilage in at least one bone	(1)_____ (1)_____ (1)_____
Scoring total		16 (9:7)



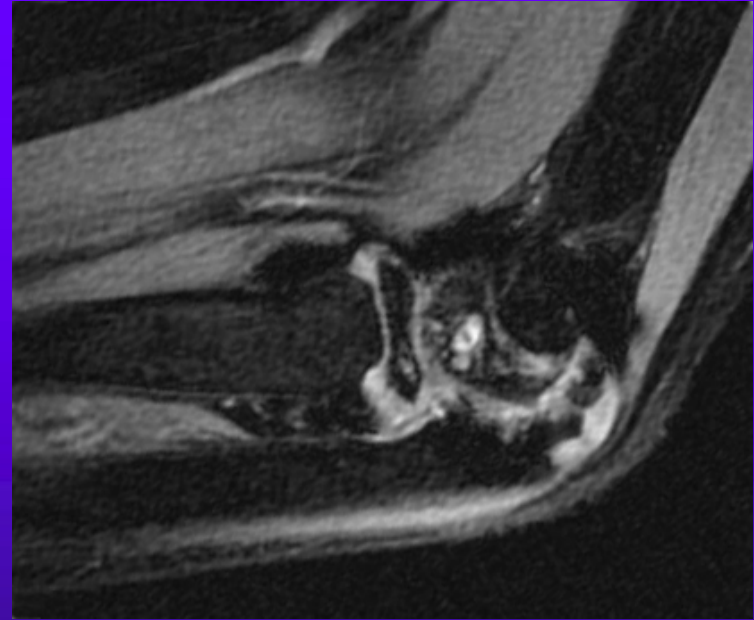
T1 GE Pd/T1

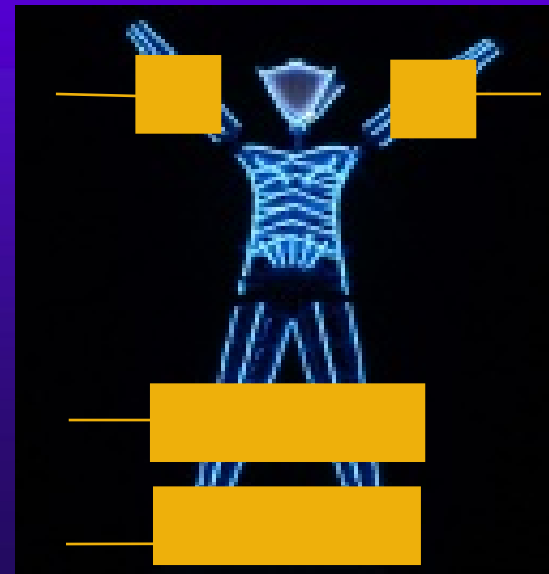
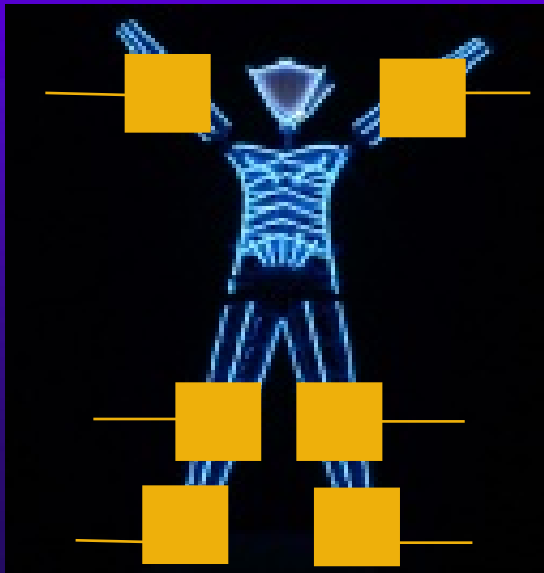
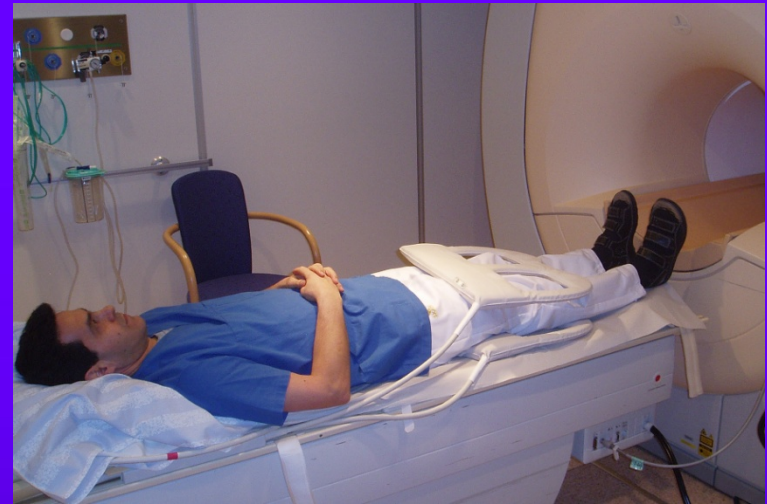


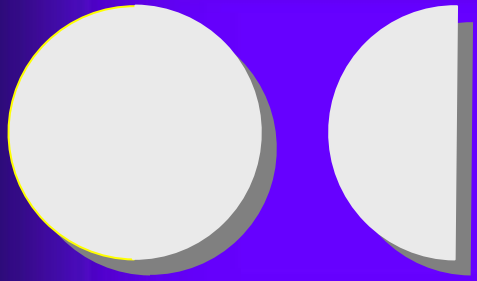
T2

FS T2

GE T2*



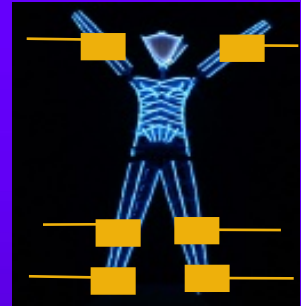
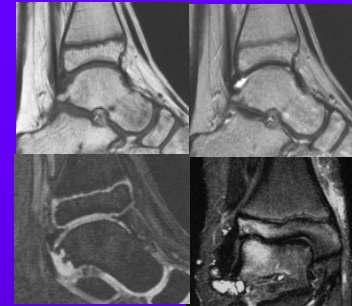




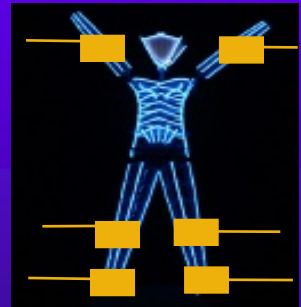
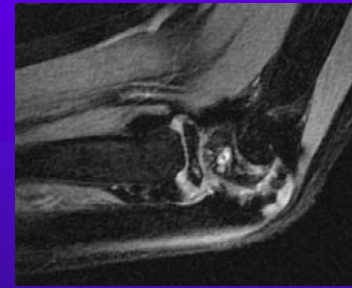
1h 30m



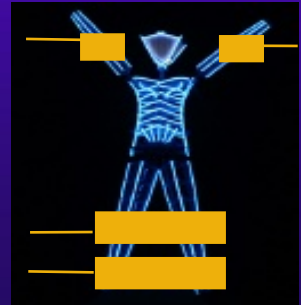
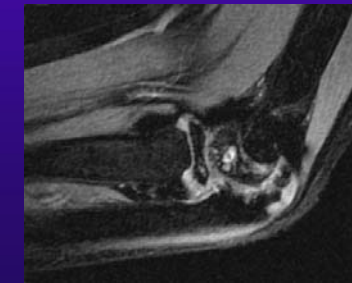
3h



2h



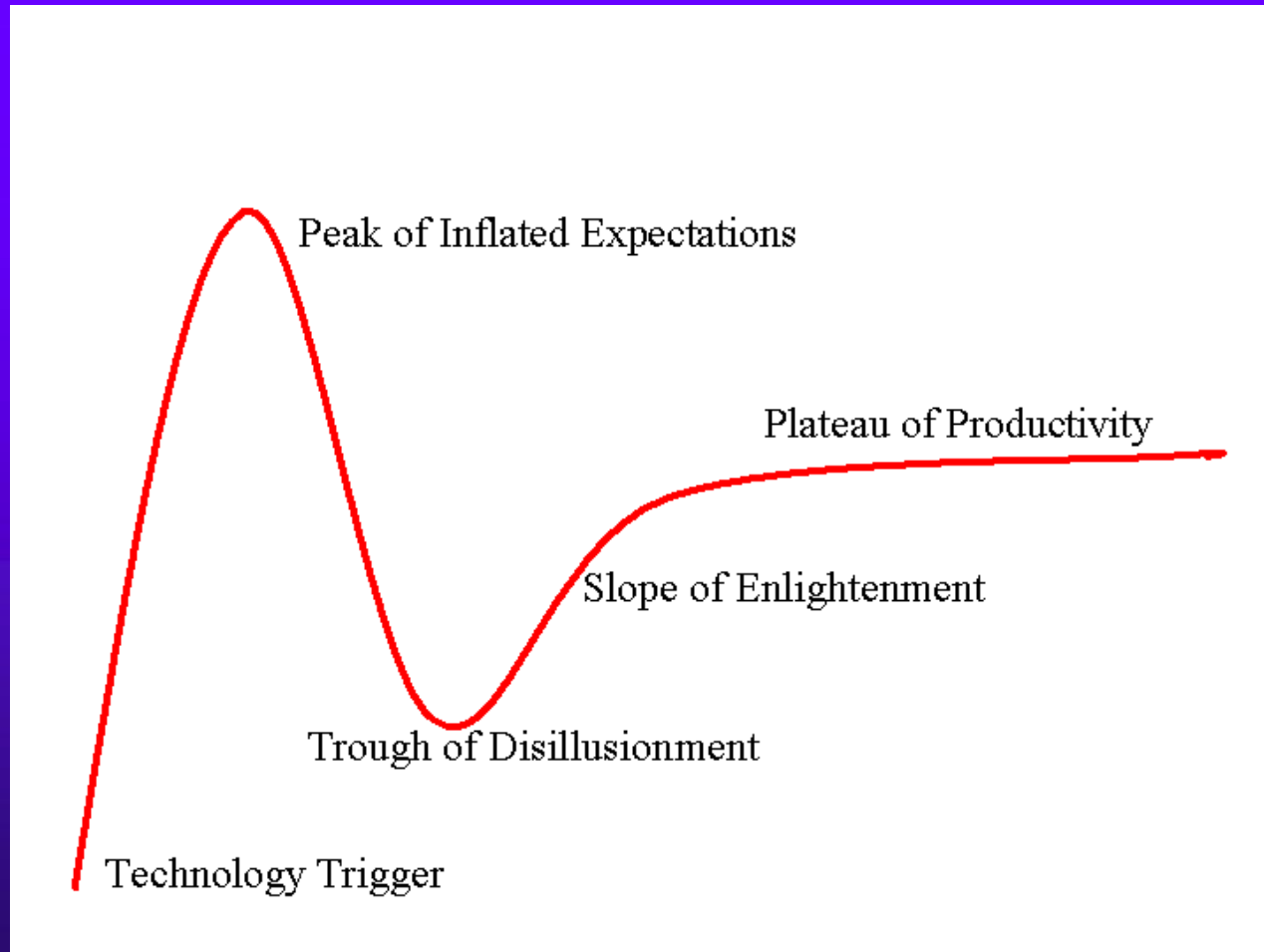
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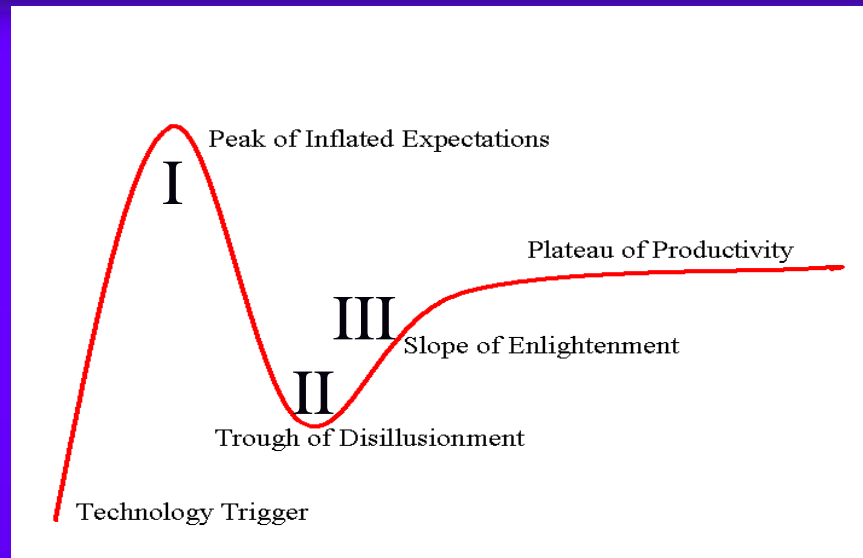


Faster joint MRI in the future?

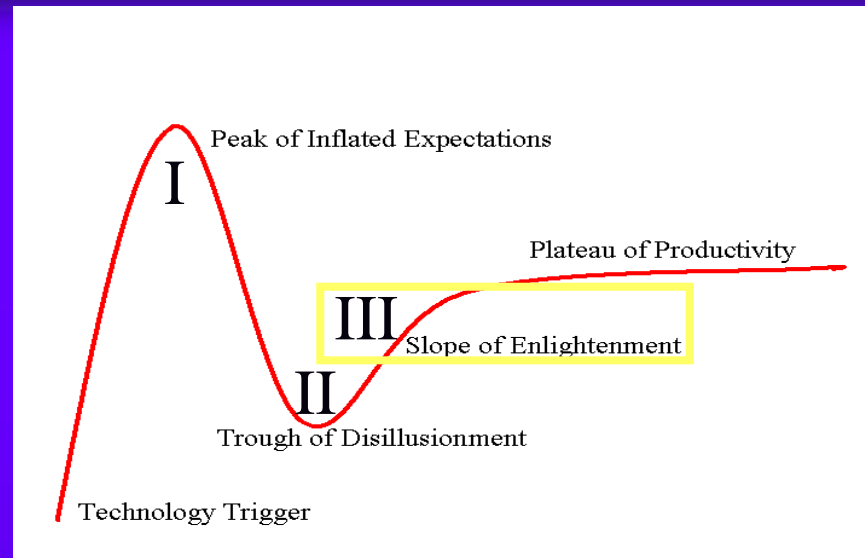
- * Improved coil technology
- * Higher field strength
- * Faster sequences for joint imaging

The Gartner Hype Cycle of New Technologies





- I MRI is fantastic! We can detect all changes in all joints, and it is easy too!! MRI is a perfect tool for evaluation of hemophilic arthropathy, and will have a revolutionary impact on hemophilia care in the close future.
- II MRI is not usefull for evaluation of hemophilic arthropathy. It is to complicated and expensive, and will never become practical. We will have to stay with X-ray, and focus developmental efforts on other alternative imaging modalities.
- III MRI is the most sensitive imaging modality we have. MRI is not easy to use, but can be used already today and will gradually become more practical. MRI is one of several imaging options for evaluation of hemophilic arthropathy, and will contribute to further improvement of hemophilia care.



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