Patella Tendinopathy - The Non Surgical Management

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Freeman Hospital

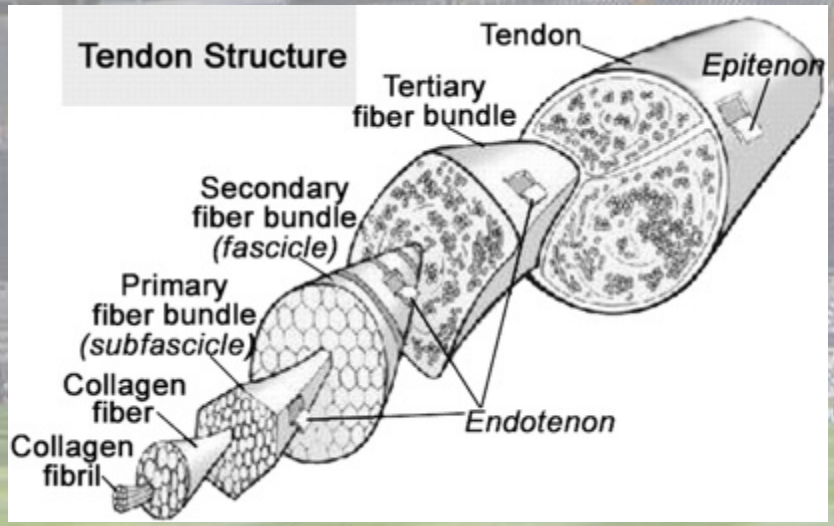
23 November 2015

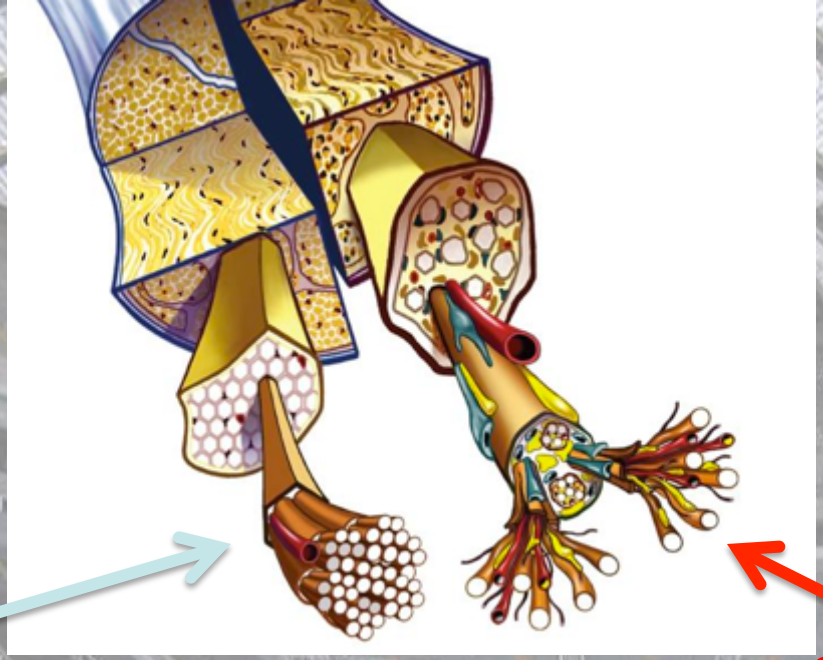
Background

- MBBS 1999
- MRCP 2002
- Dip SEM 2005
- MFSEM 2007
- FCEM 2008
- Emergency Medicine Consultant 2008
- Club Doctor NUFC 2009
- Training Programme Director 2012
- PgC MSK US 2013

Anatomy of a Tendon

- Collagen bundles
- Cells, tenocytes
- Extracellular matrix
- Proteoglycans
- Paratenon





Healthy

- Glistening white
- Hierarchical, parallel, tightly packed collagen fibers
- Normal extracellular matrix
- Vasculature, tenocytes inconspicuous

Symptomatic

- Grey, amorphous
- Collagen fibers, Disrupted disorganized
- Mucoid+ Lipid (yellow)
- Proteoglycan increase (Blue)
- Vascularity (Red)

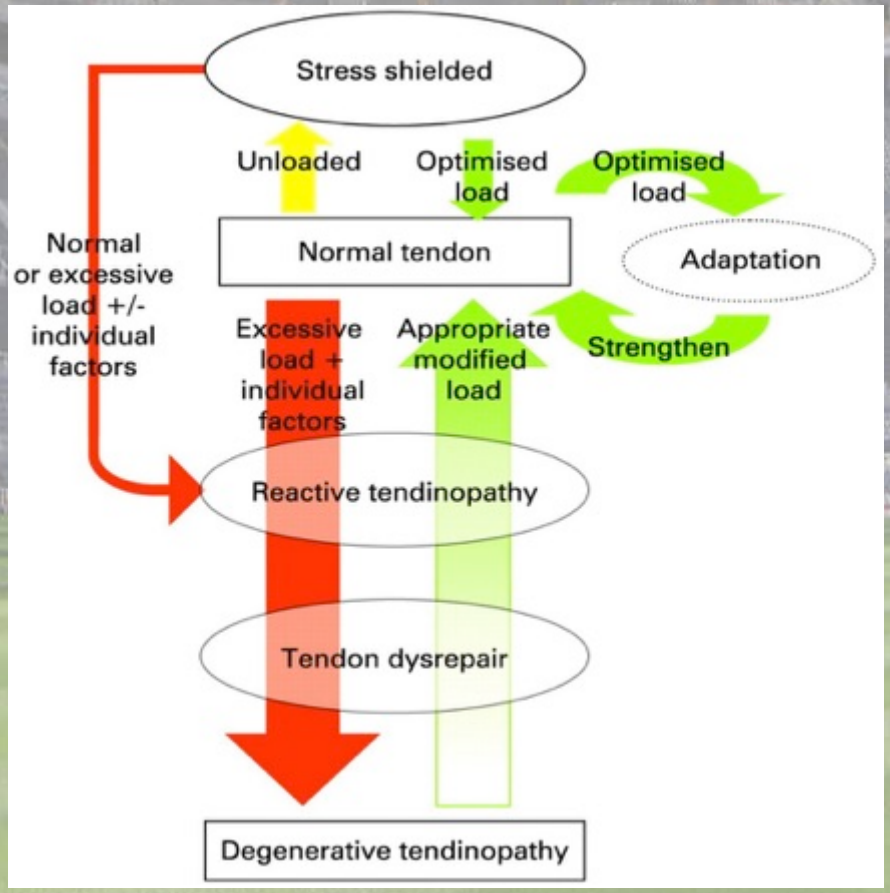
Histology= Mucoid degeneration+ Neovascularization

BJSM

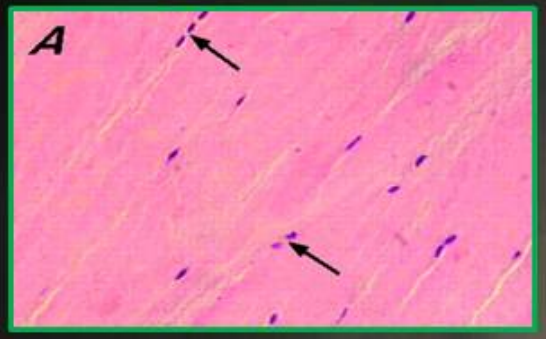
Is tendon pathology a continuum? A pathology model to explain the clinical presentation of load-induced tendinopathy

J L Cook and C R Purdam

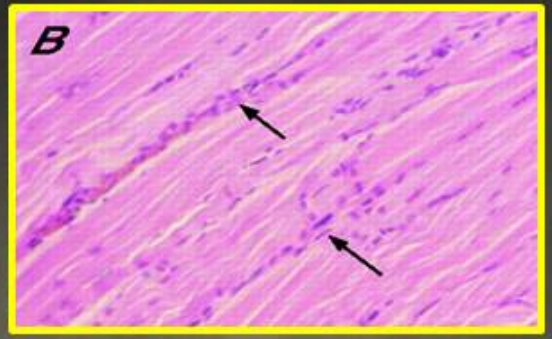
Br J Sports Med 2009 43: 409-416 originally published online September 23, 2008
doi: 10.1136/bjsm.2008.051193



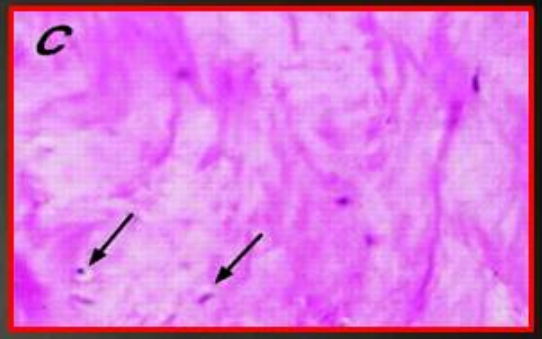
Healthy



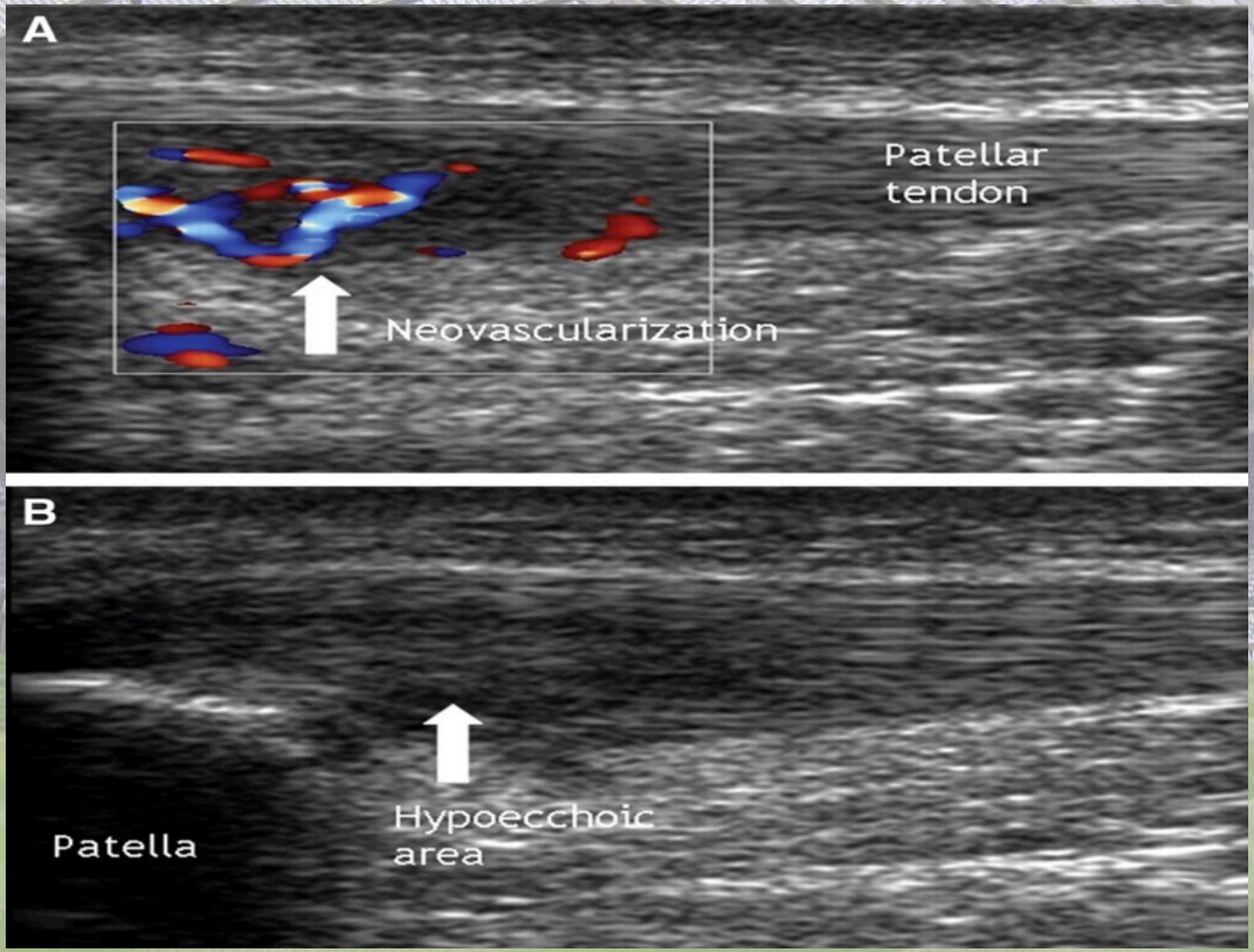
Reactive Tendinopathy

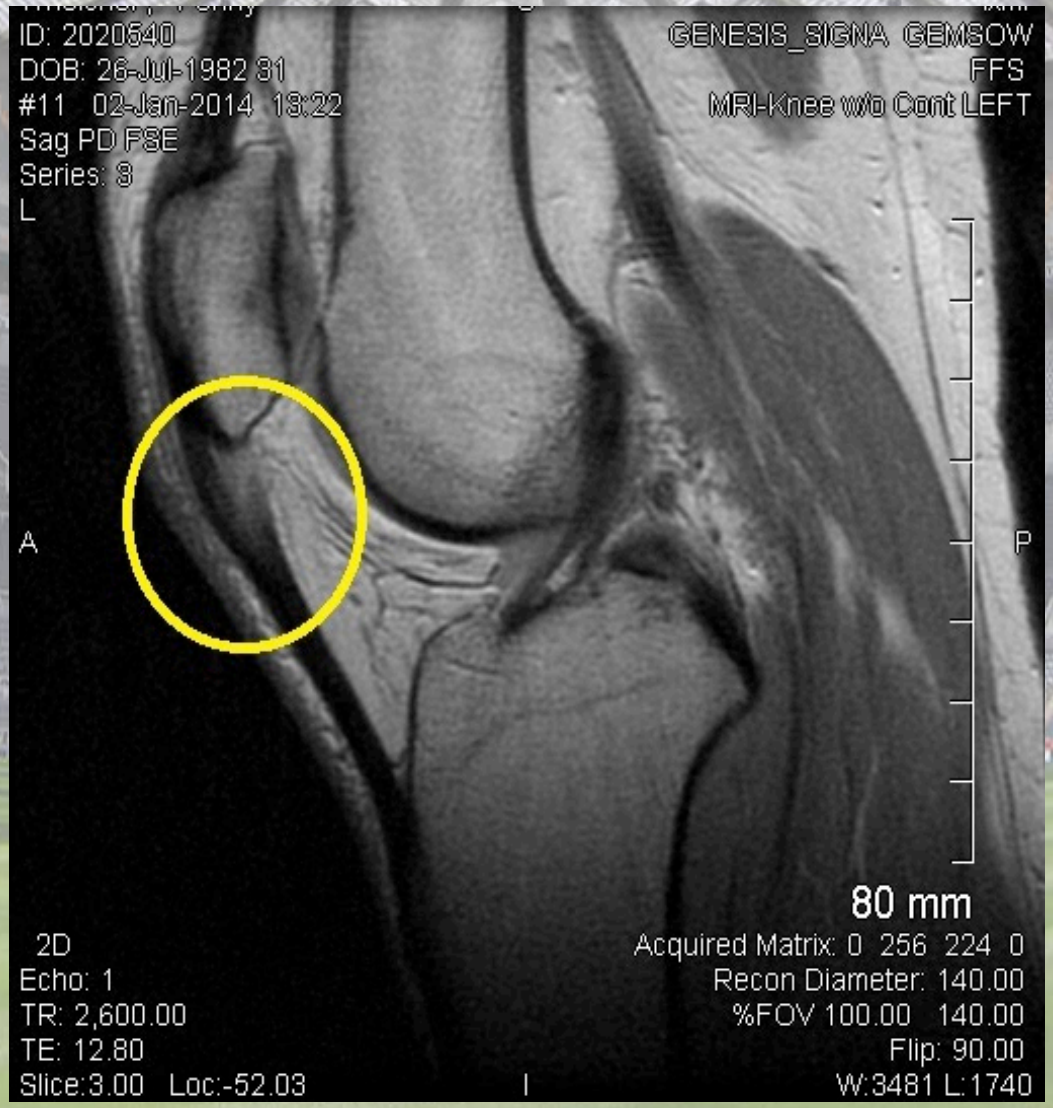


Degenerative Tendinopathy

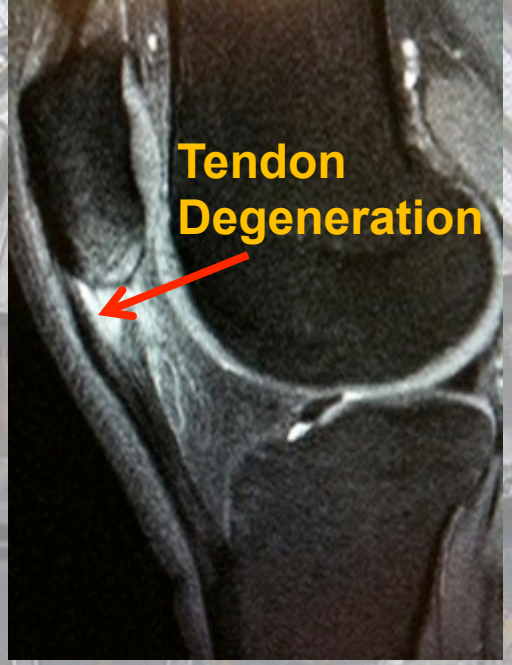


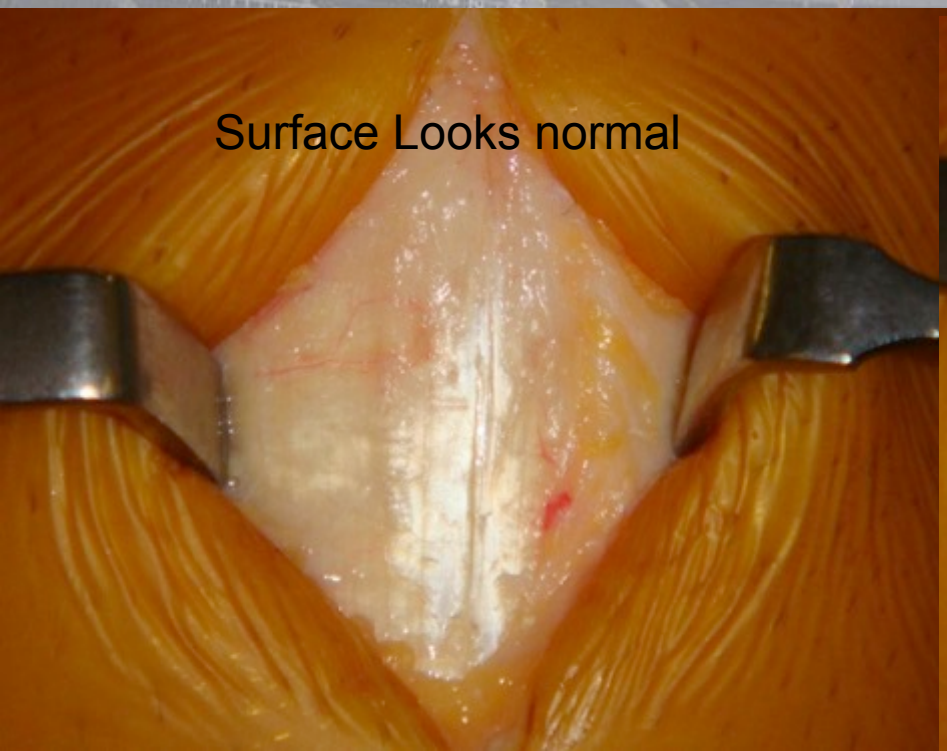
Stage / Demographic	Tendocyte	Matrix / Ground Substances	Collagen Integrity	Neo-vascularization	Imaging	Therapy Options
Normal to Reactive Tendinopathy	NORMAL TISSUE PROPERITIES					
Reactive Tendinopathy Young jumping athlete Tendons chronically exposed to low levels of load	**SENSITIZATION** Tenocytes become sensitized and change shape becoming chondroid in shape with increased cytoplasmic organelles for increased protein production.	• increased proteoglycans (aggrecan and Versican) • Increased Glycoprotein (hyauronan)	**INTACT** Largely maintained but may have some longitudinal separation	None	Swollen Increased tendon diameter **Ultrasound** Diffuse hypoechogenicity **MRI** Minimal or no signal increase	Load Management Movement Development
Tendon Dysrepair	**PROLIFERATION** Increase in cell number which are condrocytic	**FOCAL MATRIX CHANGES** • Introduction of myofibroblasts • Marked production of proteoglycans • Disorganization of matrix	**SEPARATION** Increase Collagen type III Separation and disorganization of collagen	None		Eccentric Exercise
Degenerative Tendinopathy Chronically overloaded tendon– elite athlete Older person	**DEATH** Areas of cell death due to apoptosis, trauma or tendocyte exhaustion	Large areas of the martix are disordered and filled with vessels Matrix breakdown products	**DISINTEGRATION** Disintegration of focal areas of collagen	YES	**Ultrasound** Hypoechoic regions with few reflections from collagen fascicles	ESWT Ultrasound

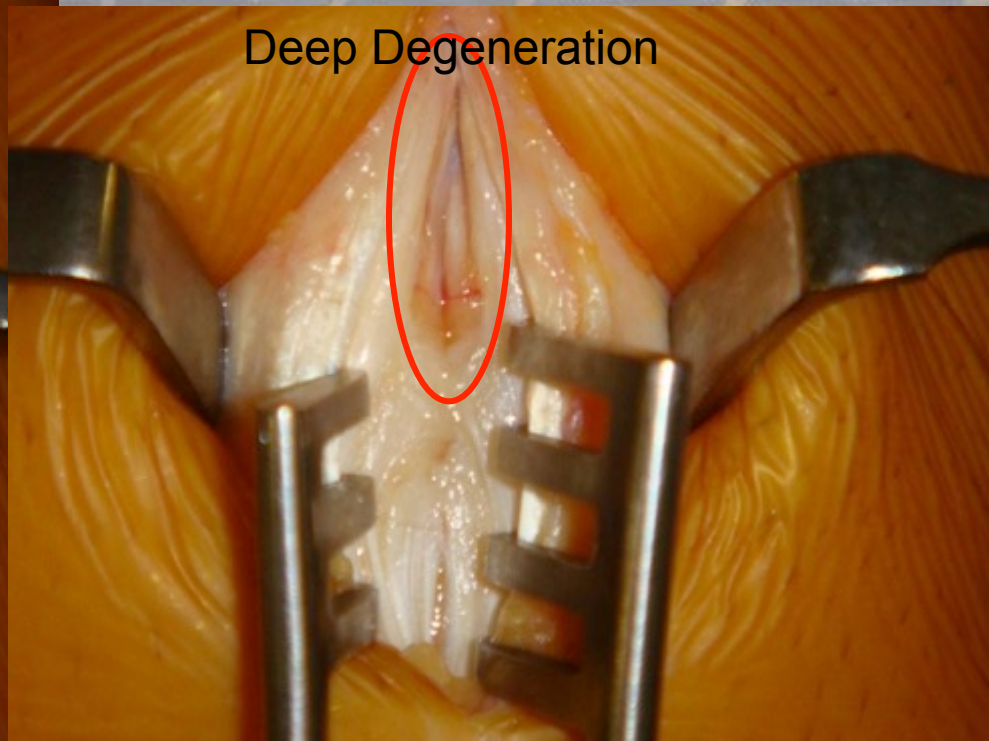

A
Patellar tendon
Neovascularization
B
Patella
Hypoecchoic area


ID: 2020640
DOB: 26-Jul-1982 31
#11 02-Jan-2014 13:22
Sag PD FSE
Series: 3
L
GENESIS_SIGNA GEMSOW
FFS
MRI-Knee w/o Cont LEFT
A
P
80 mm
2D
Echo: 1
TR: 2,600.00
TE: 12.80
Slice:3.00 Loc:-52.03
I
Acquired Matrix: 0 256 224 0
Recon Diameter: 140.00
%FOV 100.00 140.00
Flip: 90.00
W:3481 L:1740

Patella Tendinopathy





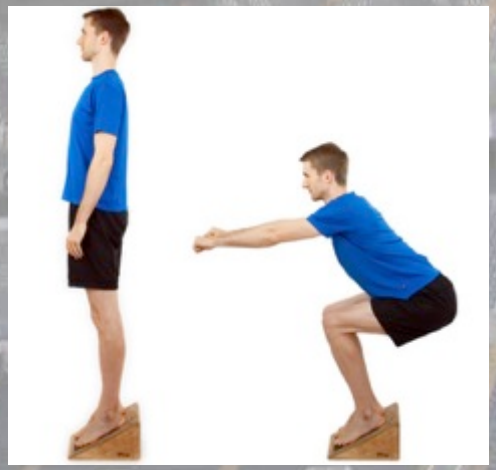


Multiple Treatment Options

- Relative rest
- Exercise ‘eccentrics’
- Polypill
- GTN patches
- High volume injection
- Steroid injection
- PRP
- ESWT
- NSAIDs
- Laser treatment
- EPI
- Surgery

Acute Tendon Pain

- Isometric holds



- Polypill
  - Ibuprofen 400mg po tds
  - Doxycycline 100mg po od
  - Green tea
  - Omega 3 fish oils

Journal of Science and Medicine in Sport
Volume 11, Issue 3, June 2008, Pages 235–238

Opinion piece

A "polypill" for acute tendon pain in athletes with tendinopathy?

K. Fallon[a], C. Purdam[b], J. Cook[c], G. Lovell[a]

Voluntary Muscle Contraction

- Isometric
  - No change in length during increased tension
- Concentric
  - Muscle shortens during increased tension
  - Origin and insertion move towards each other
- Eccentric
  - Muscle lengthens during increased tension
  - Origin and insertion move away from each other

Exercise

Scand J Med Sci Sports. 2009 Dec;19(6):790-802. doi: 10.1111/j.1600-0838.2009.00949.x. Epub 2009 May 28.

Corticosteroid injections, eccentric decline squat training and heavy slow resistance training in patellar tendinopathy.

Kongsgaard M[1], Kovanen V, Aagaard P, Doessing S, Hansen P, Laursen AH, Kaldau NC, Kjaer M, Magnusson SP.

Am J Sports Med. 2015 Jul;43(7):1704-11. doi: 10.1177/0363546515584760. Epub 2015 May 27.

Heavy Slow Resistance Versus Eccentric Training as Treatment for Achilles Tendinopathy: A Randomized Controlled Trial.

Beyer R[1], Kongsgaard M[2], Hougs Kjær B[3], Øhlenschlæger T[2], Kjær M[2], Magnusson SP[4].

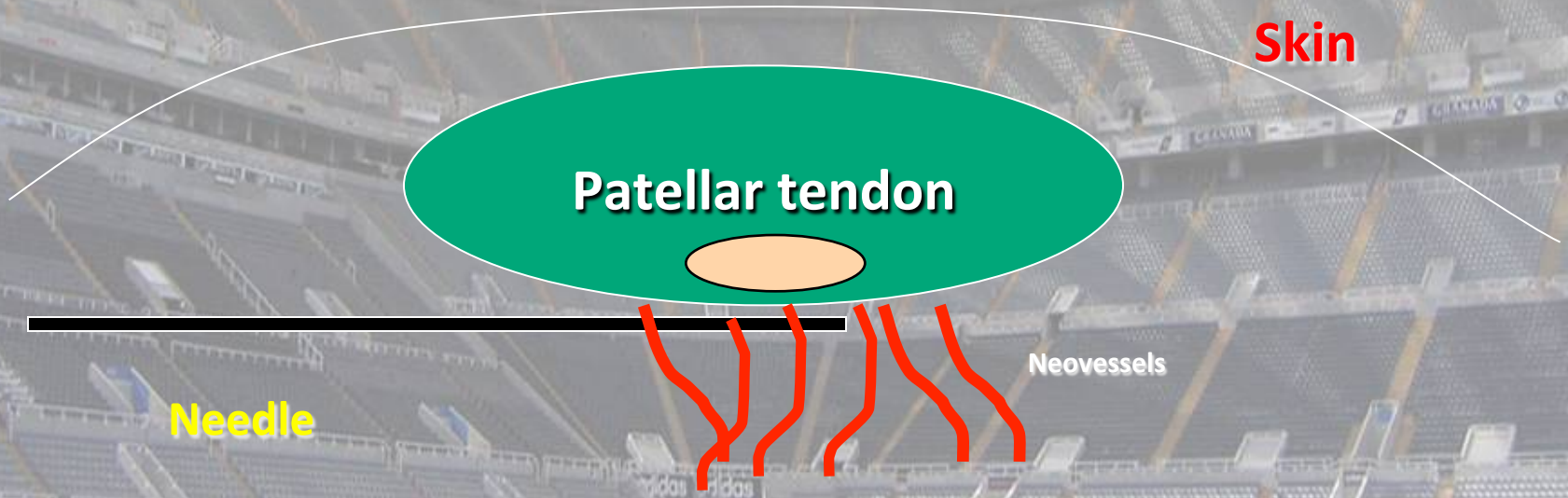
- Eccentric
  - 7 days a week
  - 2 x per day
  - 3 sets of 15 reps

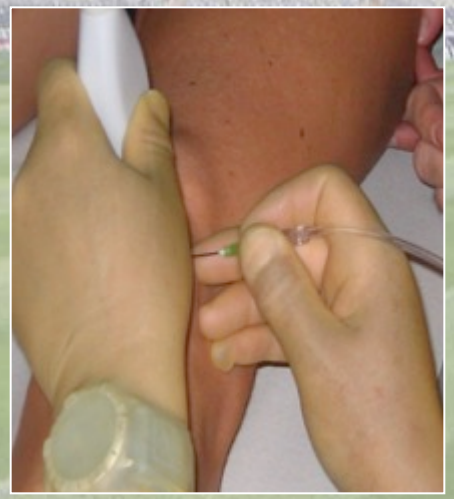
- Heavy Slow Resistance
  - Conc + ecc
  - 3 days per week
  - 1 x per day
  - 3 sets of 15 reps

Extracorporeal Shockwave Therapy (ESWT)

- Radial
- VISA P scoring
- NICE guidance
- ASSERT trial

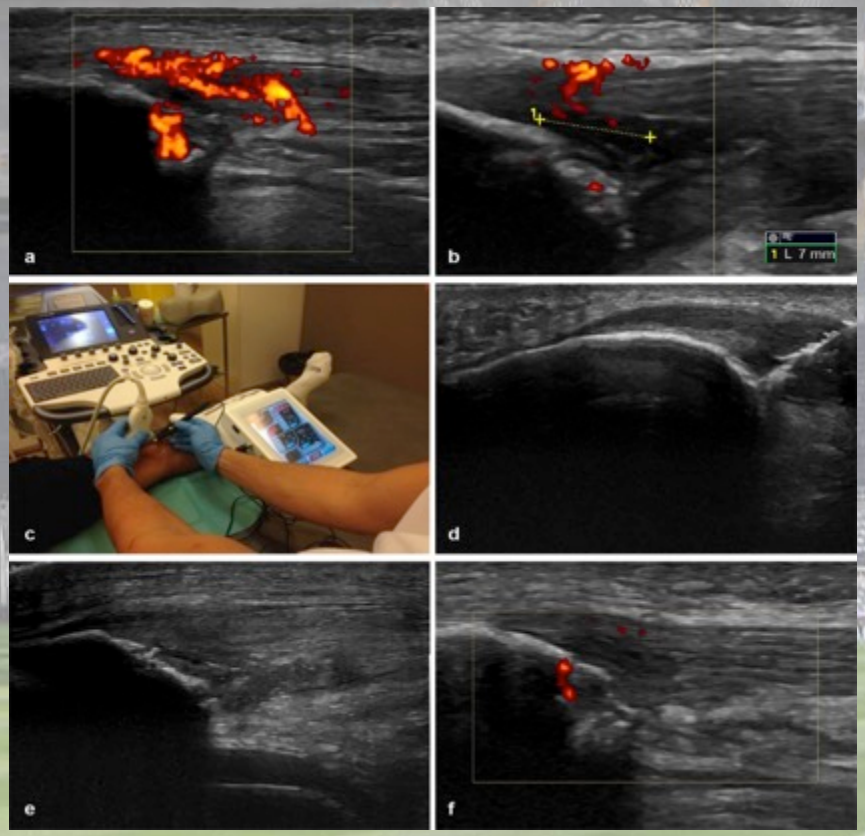
High Volume Image Guided Injection (HVIGI)





Electrolysis Percutaneous Intratissue (EPI)

- Ultrasound guided
- Electrochemical ablation
- Inflammatory response
- Activates cell phagocytosis



Knee Surg Sports Traumatol Arthrosc. 2015 Apr;23(4):1046-52. doi: 10.1007/s00167-014-2855-2. Epub 2014 Jan 30.

Clinical results after ultrasound-guided intratissue percutaneous electrolysis (EPI®) and eccentric exercise in the treatment of patellar tendinopathy.

Abat F[1], Gelber PE, Polidori F, Monllau JC, Sanchez-Ibañez JM.


Questions?