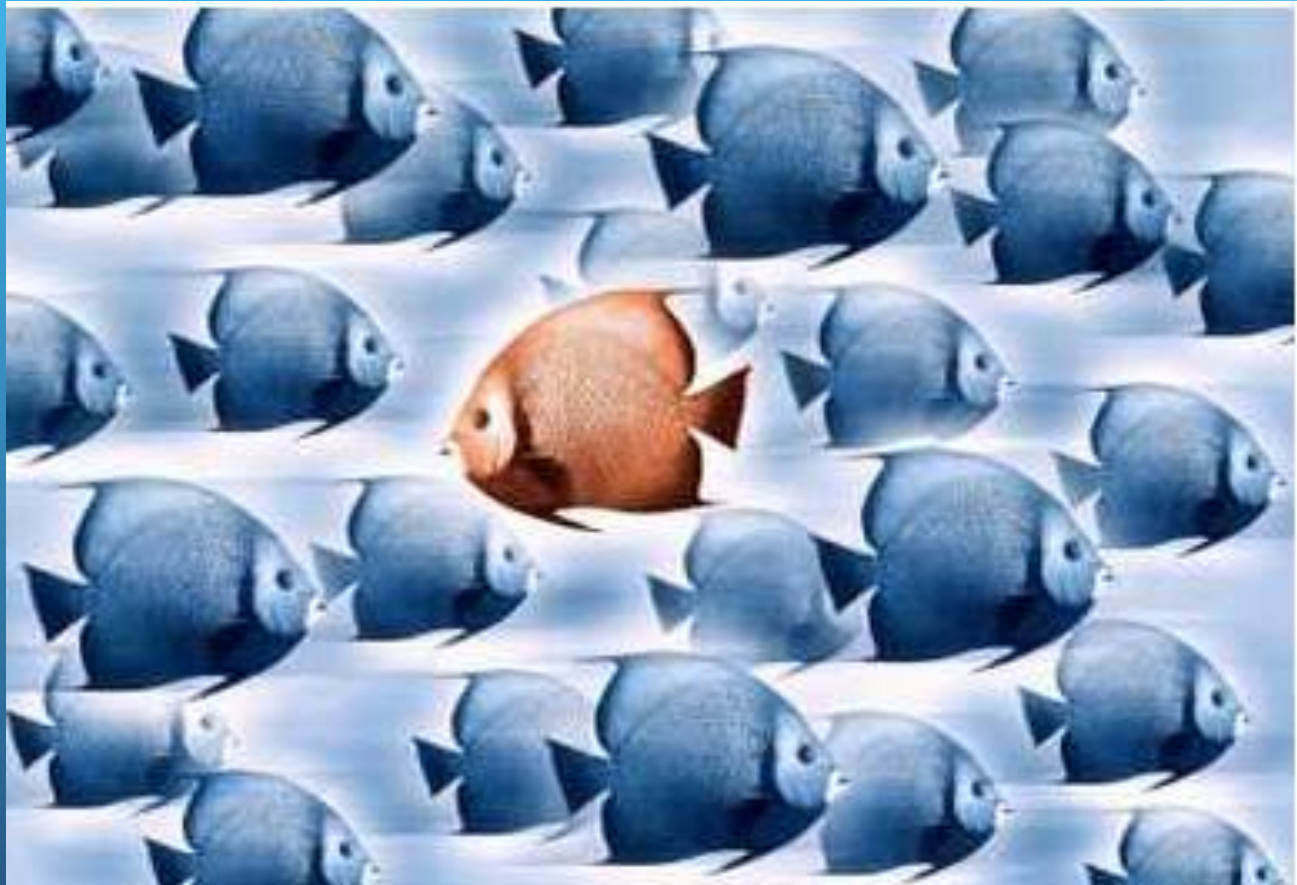


# Patellofemoral pain and treatment of PF chondral lesions

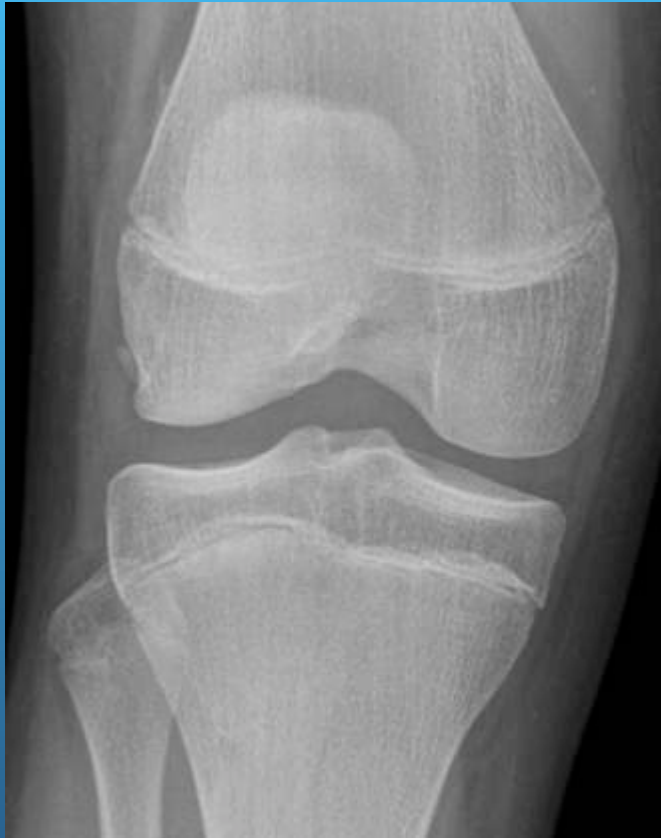
A C W Hui

James Cook University Hospital

2015



# Case 1



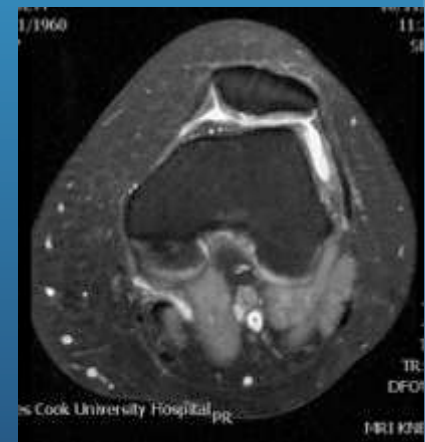
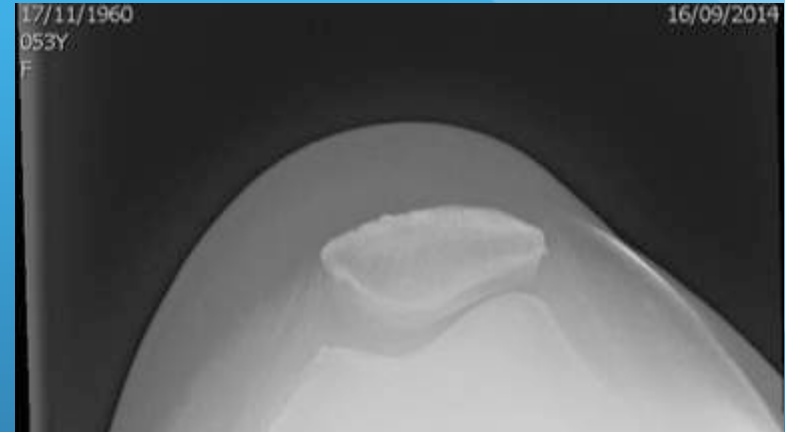
- 14 yrs old girl
- Patella dislocation
- Sent for physio
- MRI after 1 month

# Case 2

52 yrs old female

Previous lateral  
release

Persistent pain and  
instability



# Case 3

44 yrs old female

Down's syndrome

Obese

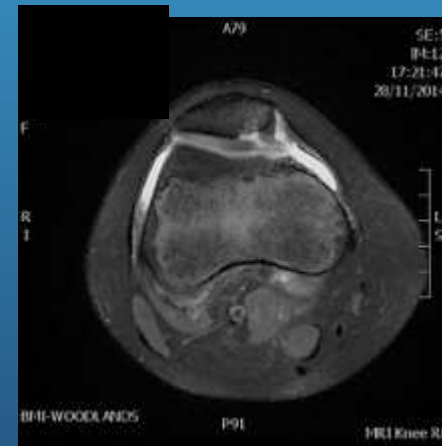
Recurrent dislocation of patella since her teens

Constant pain



# Case 4

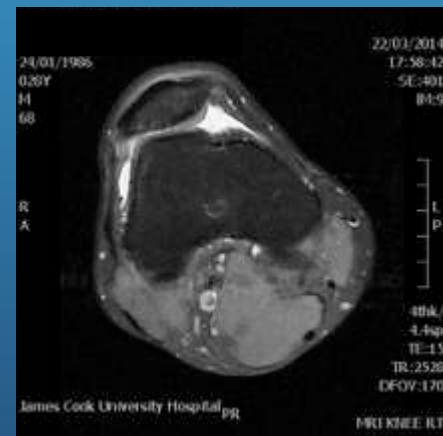
- 12 yrs old
- No trauma, no instability
- Anterior knee pain for 2 years
- Plays hockey to high standard





# Case 6

- 28 yrs old ground worker
- “Crack” in the knee after crawling on all fours
- No instability



# THE NATURAL HISTORY OF ANTERIOR KNEE PAIN IN ADOLESCENTS

M. J. SANDOW, J. W. GOODFELLOW

*From the Nuffield Orthopaedic Centre, Oxford*

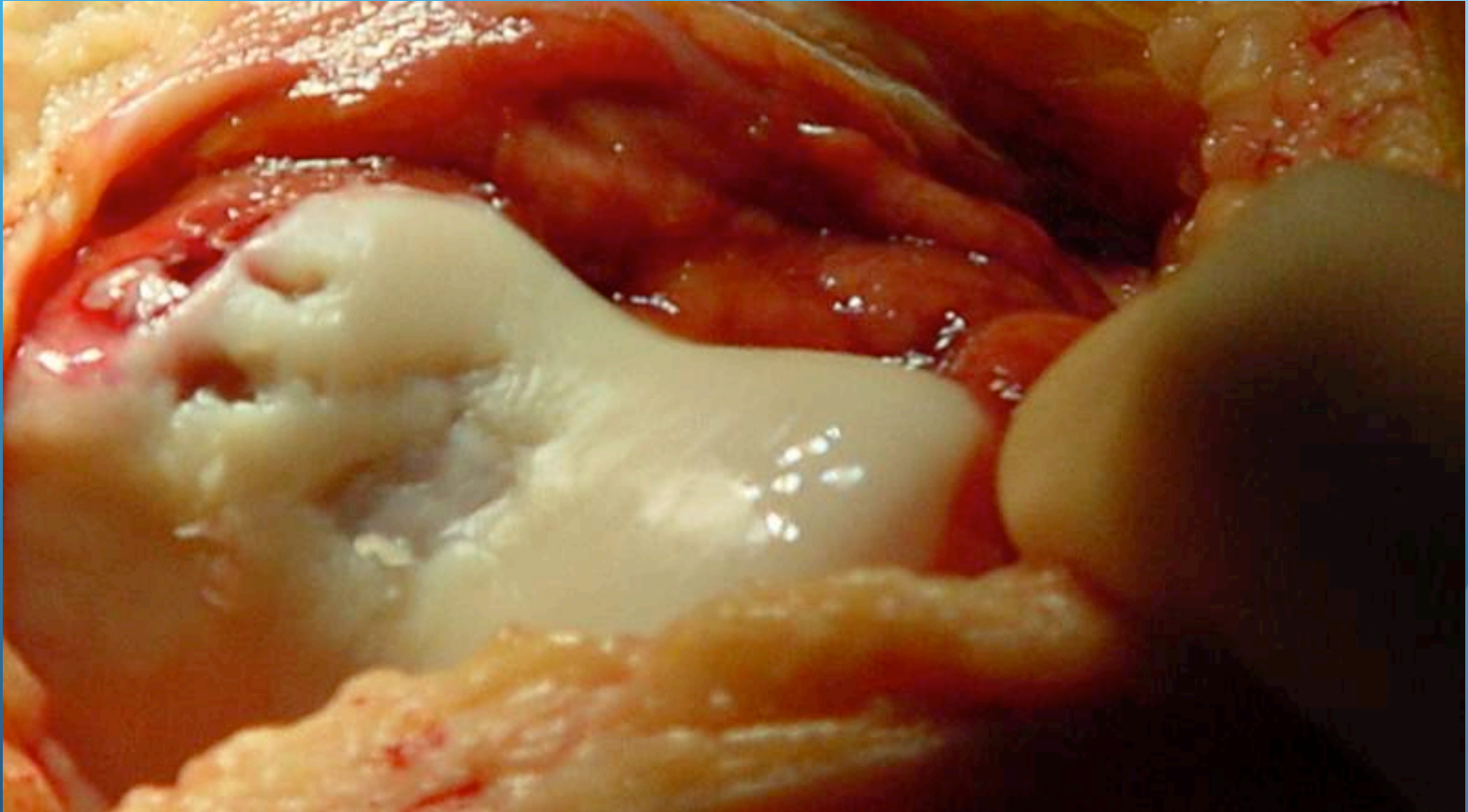
**Table II.** Responses to questionnaires

	<b>Number</b>	<b>Per cent</b>
<i>Presence of pain</i>		
Yes	51	94.4
No	3	5.6
<i>Side affected</i>		
Bilateral	26	48.1
Left	16	29.6
Right	12	22.3
<i>Severity of pain*</i>		
Better	25	46.3
Worse	7	13.0
Same	22	40.7

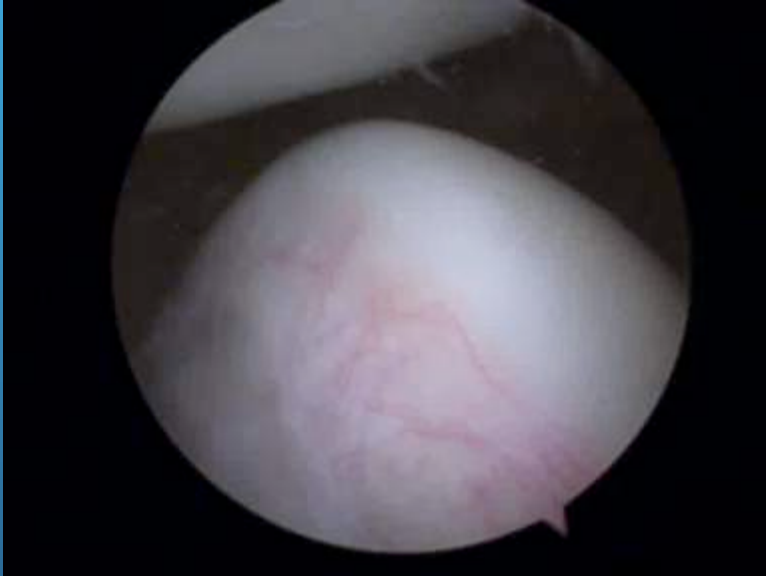
# Chondral lesions in PFJ

- Degenerate, genetic, familial
- Traumatic, sports, occupational
- Maltracking, subluxation, dislocation
- Idiopathic
- Iatrogenic

# Primary degeneration



# Concept of instability and maltracking



# Does it lead to OA?

RESEARCH ARTICLE

Open Access

## Anterior knee pain in younger adults as a precursor to subsequent patellofemoral osteoarthritis: a systematic review

Martin J Thomas<sup>1\*</sup>, Laurence Wood<sup>1</sup>, James Selfe<sup>2</sup>, George Peat<sup>1</sup>

**Conclusions:** There is a paucity of high-quality evidence reporting a link between AKP and PFOA. Further, well-designed cohort studies may be able to fill this evidence gap.

# Clinical assessment

- Alignment - genu valgum, hindfoot valgus
- Rotational alignment - hip rotation, Q-angle
- Hypermobility - Beighton scores
- Hamstring tightness
- Patella tracking - reverse J
- Patella height

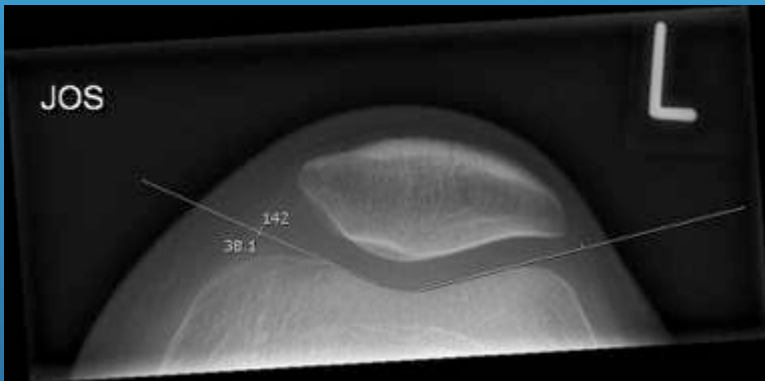
# Radiological assessment



- Trochlear dysplasia
  - Cross over sign
  - Medial bone boss
  - Sulcus angle
- Patella alta
  - Insall-Salvati index
  - Blackburn-Peel

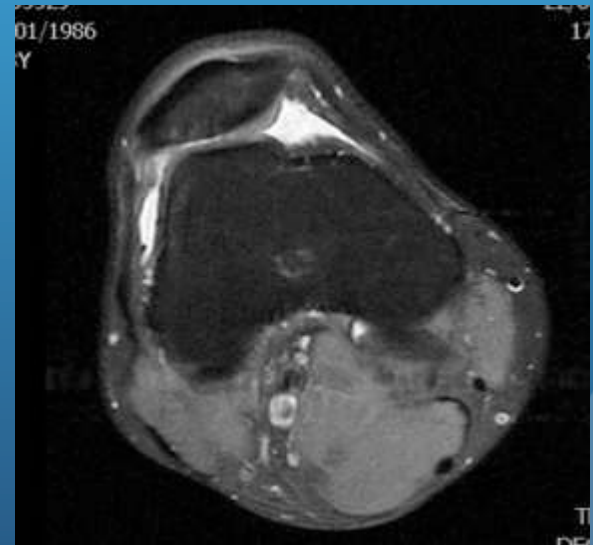
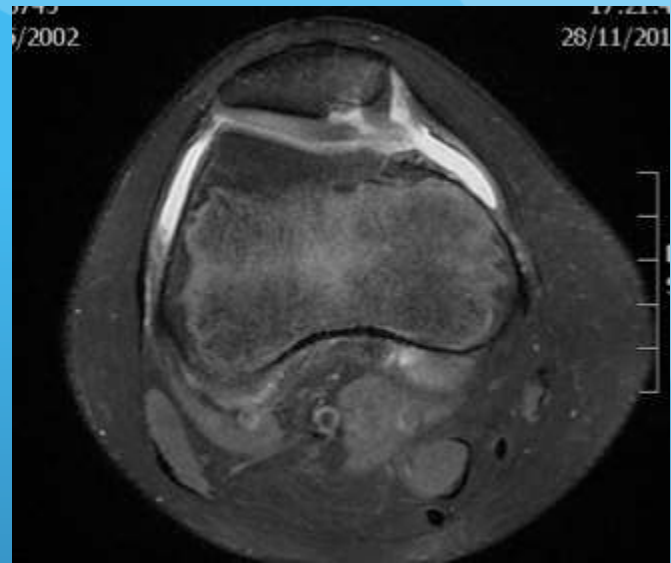
# Skyloine view

- Sulcus angle
- Merchant's angle
- Tilt angle

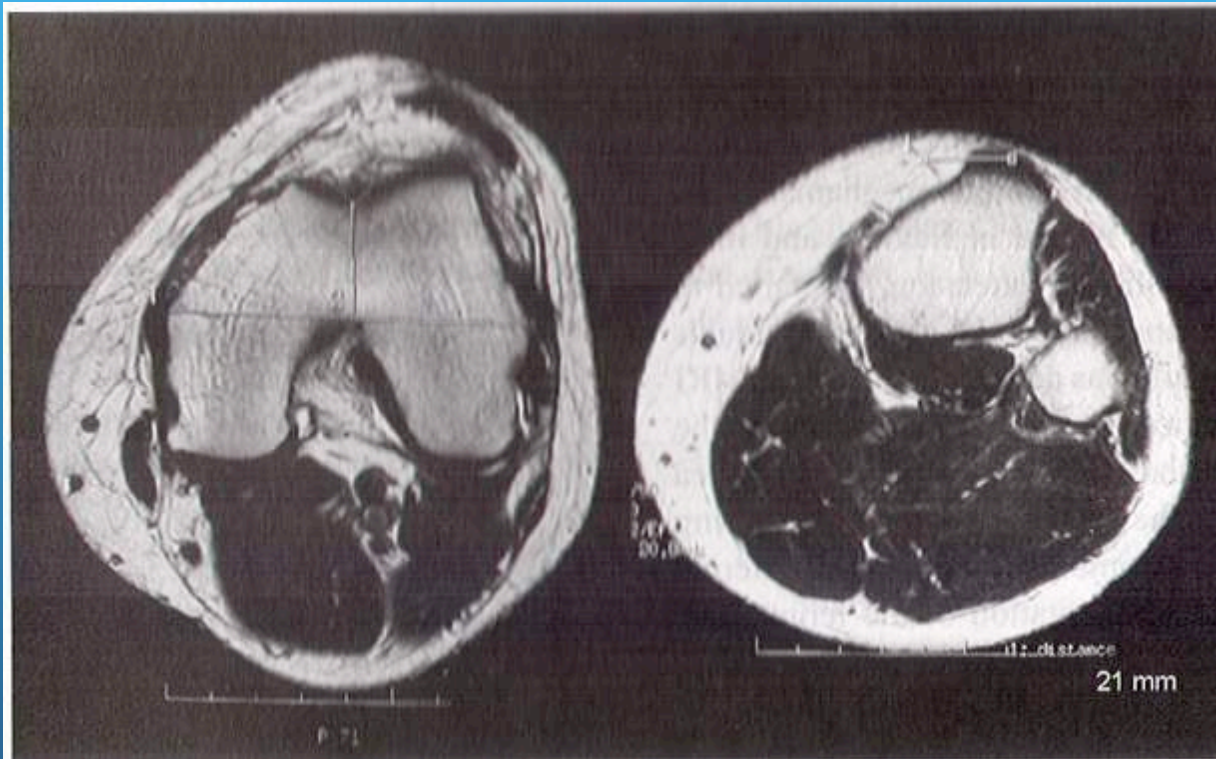


# MRI

- Site of lesion
- Trochlear anatomy
- Subluxation
- Engagement
- ? mPFL



# TT - TG distance



> 20mm = abnormal (Dejour)

# Principles of Treatment

- Establish aetiology of pain
- Conservative management if no structural abnormality
- Can chondral lesion/s be offloaded by stabilisation/re-alignment
- If biomechanical environment cannot be improved, is chondral repair procedures appropriate
- PFJ replacement in >40
- Obesity and psycho-somatic pain cannot be treated by T&O

# Conservative management



Acta Orthop. Belg., 2010, 76, 356-359

ORIGINAL STUDY

## Idiopathic anterior knee pain in the young A prospective controlled trial

Sunit PATIL, Lisa WHITE, Alex JONES, Anthony C. W. HUI

From James Cook University Hospital, Middlesbrough, United Kingdom

### A comparative study of biometric parameters in patients with idiopathic anterior knee pain

S. Patil, V. Kumar, V. Kanethi, L. White, J. Dixon, A. Hui  
James Cook University Hospital, Middlesbrough

**Introduction:** Idiopathic anterior knee pain (IAKP) is a common condition affecting young adults. It is characterized by anterior knee pain, which is exacerbated by activities such as running, jumping, and kneeling. The pathogenesis is unclear, but it is thought to be related to overuse and biomechanical factors. This study aims to compare biometric parameters between patients with IAKP and a control group.

**Aim:** To compare the knee joint angles and muscle activation patterns in patients with IAKP and a control group.

**Methods:** Patients with IAKP and a control group were recruited. Biometric parameters such as knee joint angles and muscle activation patterns were measured during a series of activities.

**Results:** Patients with IAKP showed significantly different knee joint angles and muscle activation patterns compared to the control group. Specifically, patients with IAKP had a greater range of motion in the knee joint and a higher level of muscle activation during activities.

**Conclusion:** The study found that patients with IAKP have different biometric parameters compared to a control group. These findings suggest that IAKP may be related to biomechanical factors and overuse.

**Keywords:** Idiopathic anterior knee pain, biometric parameters, knee joint angles, muscle activation patterns.

**344 (12)**

Number of patients	40
Mean	28
Female	20
Age (years)	20
Mean duration of symptoms	10
Mean duration of follow-up	10
Number of patients with	10
recurrence of symptoms	10

**Conclusion:** The study found that patients with IAKP have different biometric parameters compared to a control group. These findings suggest that IAKP may be related to biomechanical factors and overuse.

**The Knee**  
Volume 18, Issue 5, October 2011, Pages 329–332

**An electromyographic exploratory study comparing the difference in the onset of hamstring and quadriceps contraction in patients with anterior knee pain**

Sunit Patil<sup>a</sup>, John Dixon<sup>b</sup>, Lisa C. White<sup>c</sup>, Alex P. Jones<sup>a</sup>, Anthony C.W. Hui<sup>a</sup>

# My arch enemy

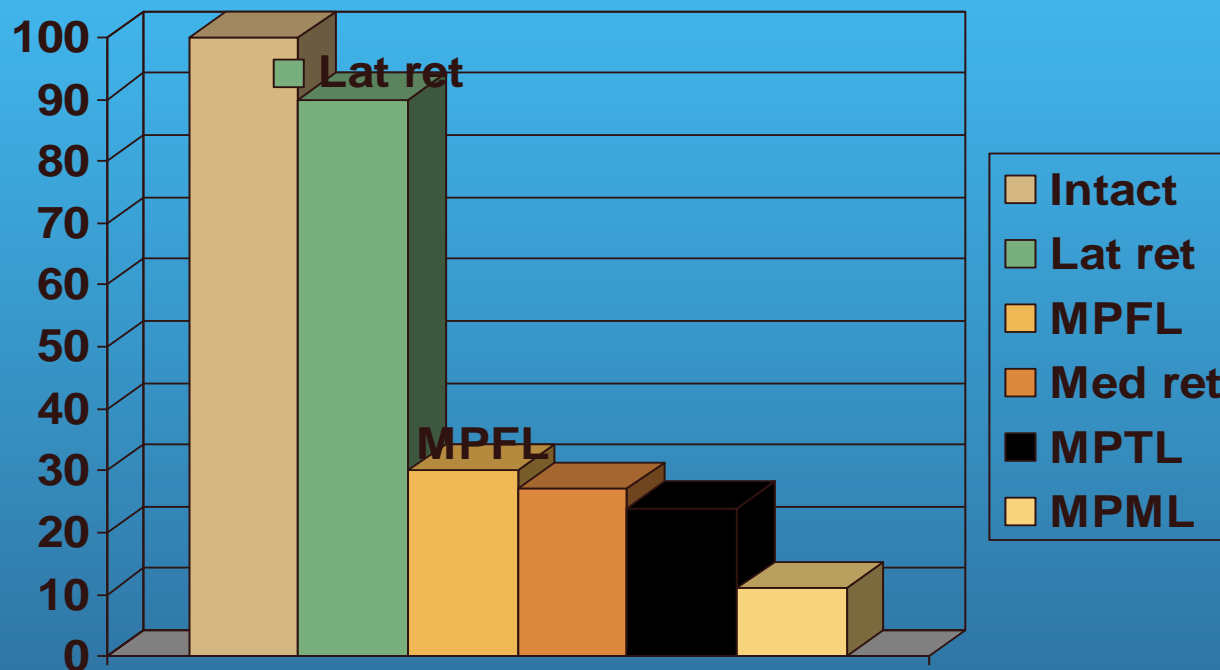


# What is the role of lateral retinacular release?

R. Clifton, MSc(Orth Eng), FRCS(Trauma & Orth), Locum Consultant Orthopaedic Surgeon<sup>1</sup>; C. Y. Ng, MRCS Ed, Specialist Registrar<sup>2</sup>; and R. W. Nutton, MD, FRCS, Consultant Orthopaedic Surgeon<sup>2</sup>

- Over release destabilizes patella
- Lateral retinaculum contributes 10% of lateral stabilizing force
- 14 -100% good results for anterior knee pain
- 30-100% good results for instability
- Poor results for Grade III and IV chondromalacia
- Poor for OA

# Significance of lateral retinacular ligaments

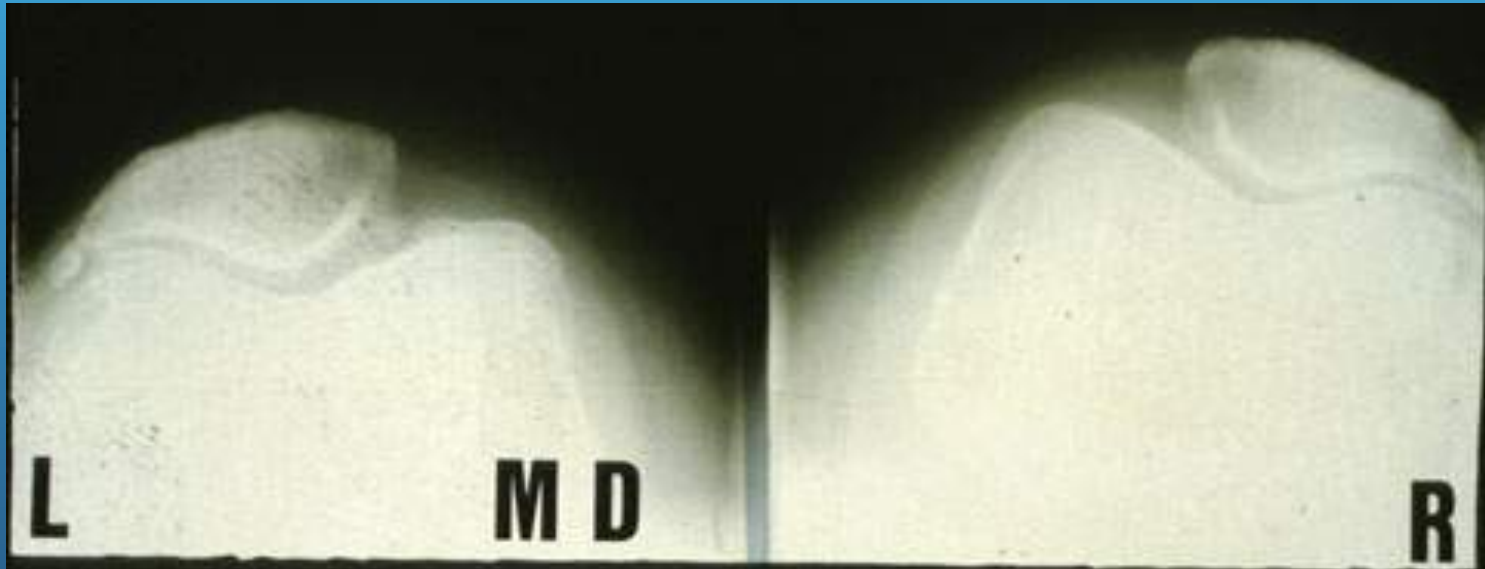


Desio SM, Burks RT, Bachus KN. "Soft tissue restraints to lateral patellar translation in the human knee" *Am J Sports Med* Vol 26(1);59-65

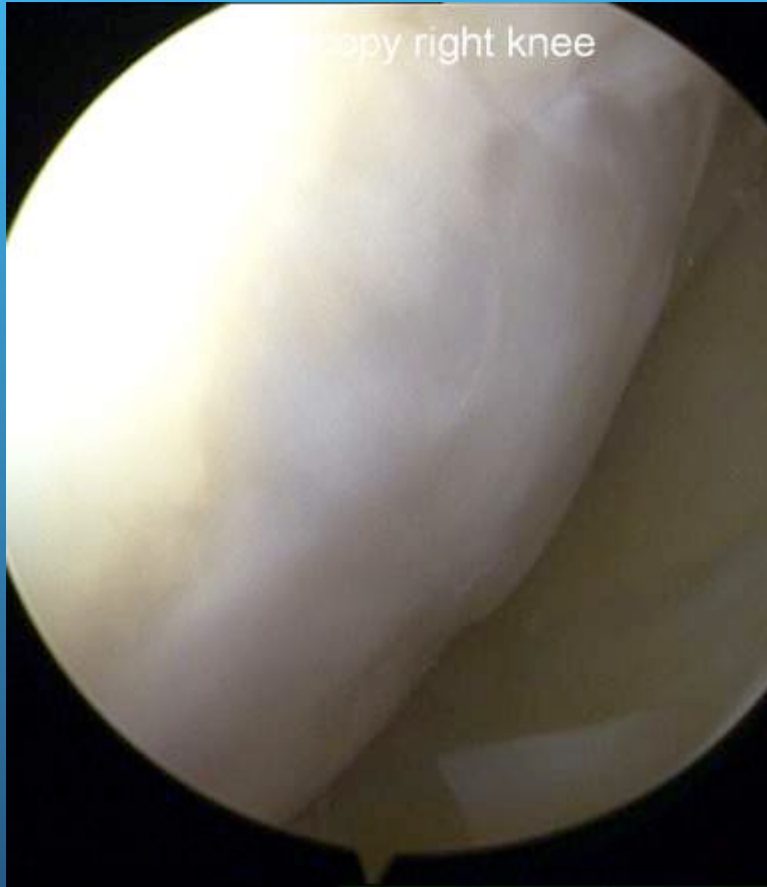
# Lateral release

- Don't for instability
- Don't for hypermobility
- Don't for OA
- ? Lateral excessive pressure syndrome

# Subluxation or excessive lateral pressure?



# Cartilage repair?



# Results of mosaicplasty

<b>Site of lesion</b>	<b>% excellent to good</b>
<b>Femoral condyles</b>	<b>91%</b>
<b>Tibial condyles</b>	<b>89%</b>
<b>Patella</b>	<b>84%</b>

Hangody 1997

# Autologous Chondrocytes Implantation

## Reported results

Good to excellent

- Isolated femoral condylar lesions 95%
- Trochlea lesions 80%
- Patella lesions 50%
- Multiple lesions 70%

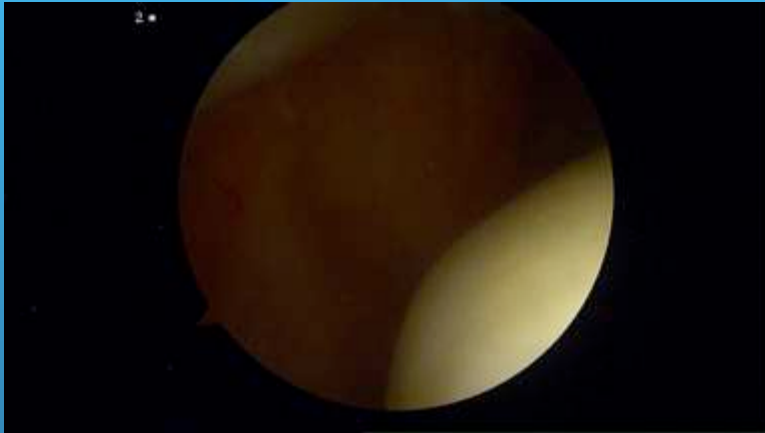
Brittberg et al

# Case 1



- 14 yrs old girl
- Patella dislocation
- Sent for physio
- MRI after 1 month

# Case 1 - osteochondral fixation + MPFL

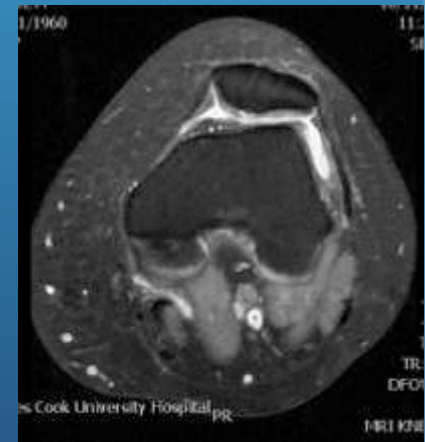
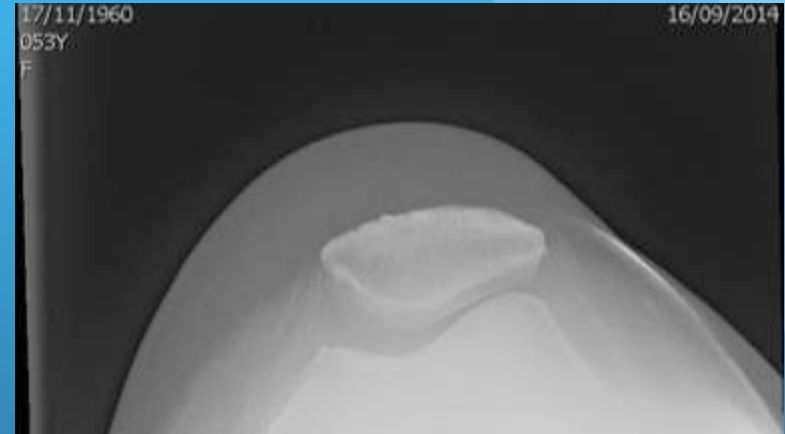


# Case 2

52 yrs old female

Previous lateral  
release

Persistent pain and  
instability



# Case 2 - PFJ replacement



# Case 3

44 yrs old female

Down's syndrome

Recurrent dislocation of patella since her teens

Constant pain

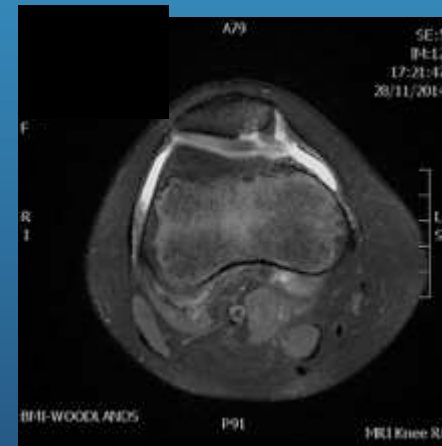


# Case 3 - PFJ replacement + MPFL

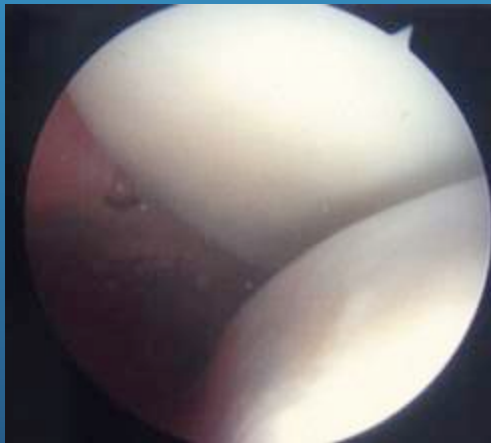
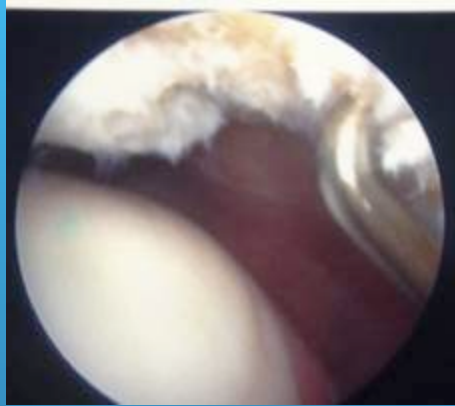


# Case 4

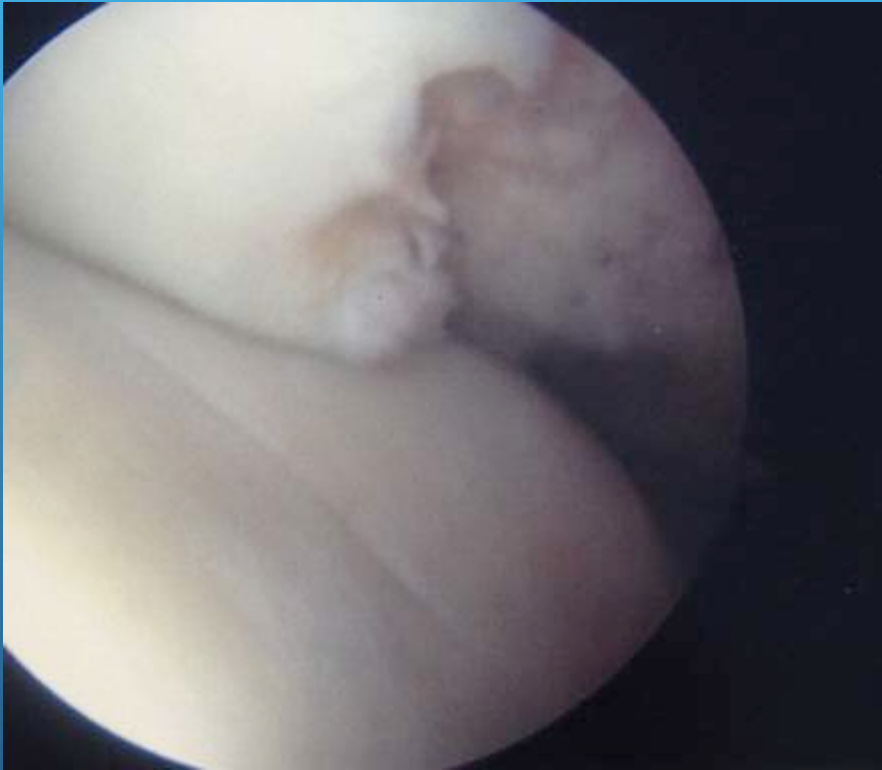
- 12 yrs old
- No trauma, no instability
- Anterior knee pain for 2 years
- Plays hockey to high standard



# Case 4



# Case 4 - chondral debridement + MPFL

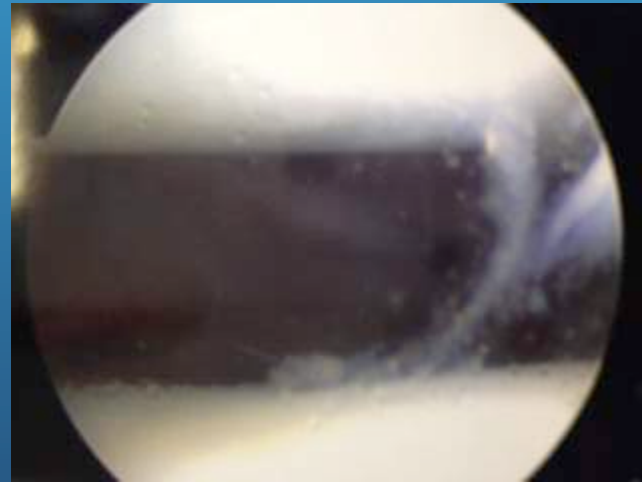
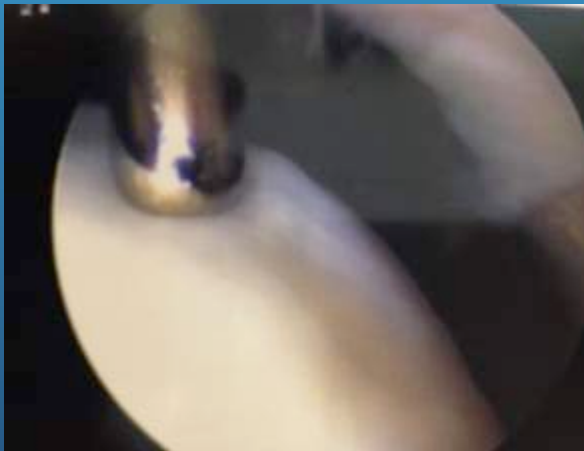
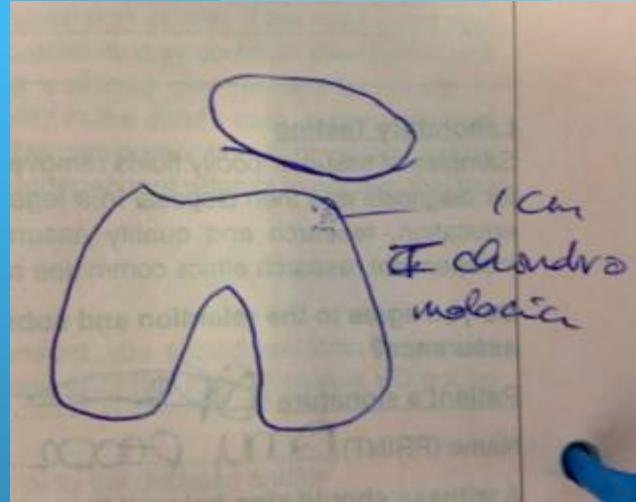
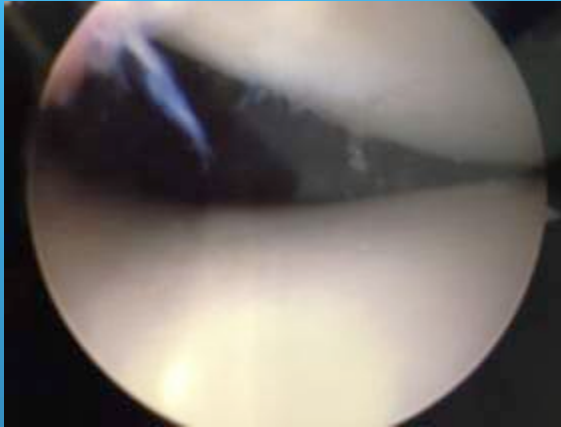


# Case 5

- 36 yrs old female
- Paramedic
- Forced valgus injury
- Pain ++
- Subjective instability
- Failed physio 6 months

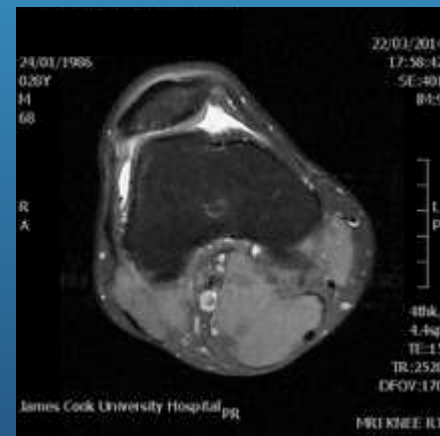


# Case 5 - MPFL



# Case 6

- 28 yrs old ground worker
- “Crack” in the knee after crawling on all fours
- No instability



# Case 6 - Lateral facetectomy + MPFL

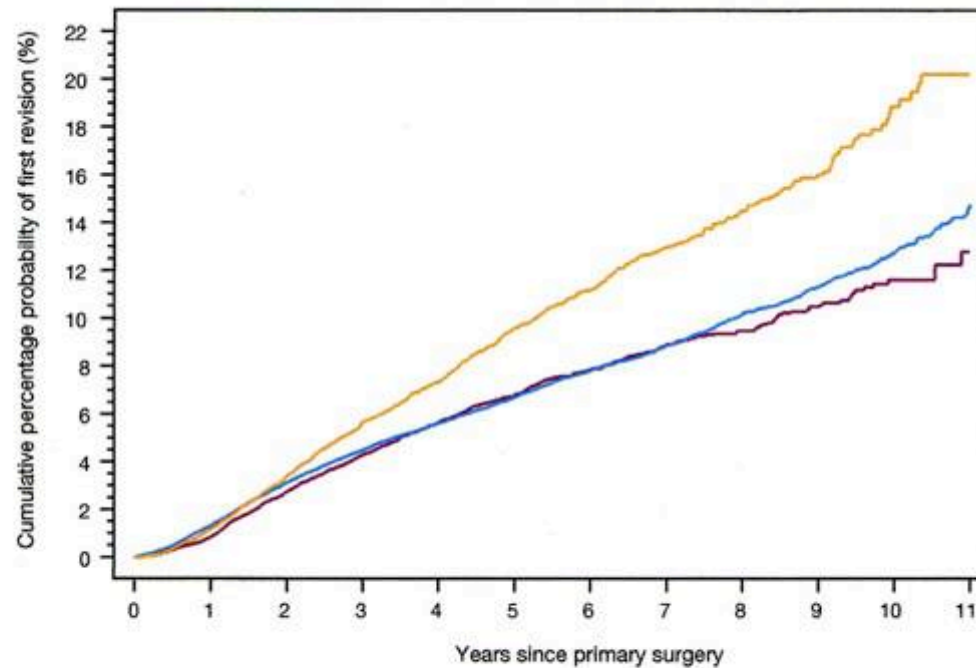


# PFJ replacement



# PFJ replacement - NJR data

c) Unicondylar and patellofemoral partial knee replacements



Number at risk

Unicondylar, fixed	19,926	16,555	13,486	10,746	8,480	6,376	4,730	3,307	2,136	1,169	494	129
Unicondylar, mobile	46,048	40,742	35,619	30,784	25,733	20,669	15,698	10,982	6,980	4,136	1,979	602
Patellofemoral	9,945	8,825	7,596	6,284	5,050	3,895	2,858	1,867	1,107	657	297	90

# PFJ replacement - technical tips

- Extra 5 degrees of external rotation to femoral component
- Slight notching
- Accurate sagittal alignment
- Add MPFL if significant patella alta or laxity
- Secure repair of medial parapatellar arthrotomy
- Zimmer or Avon PFJ

# Failure of LCS PFJ replacement

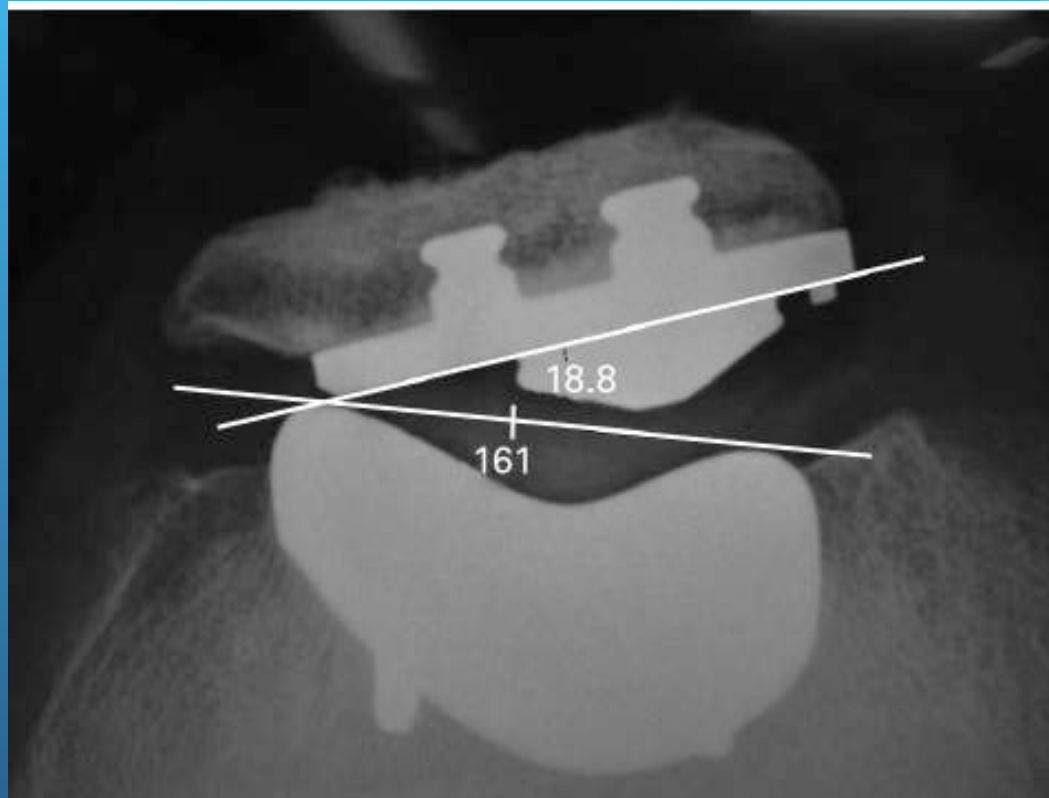
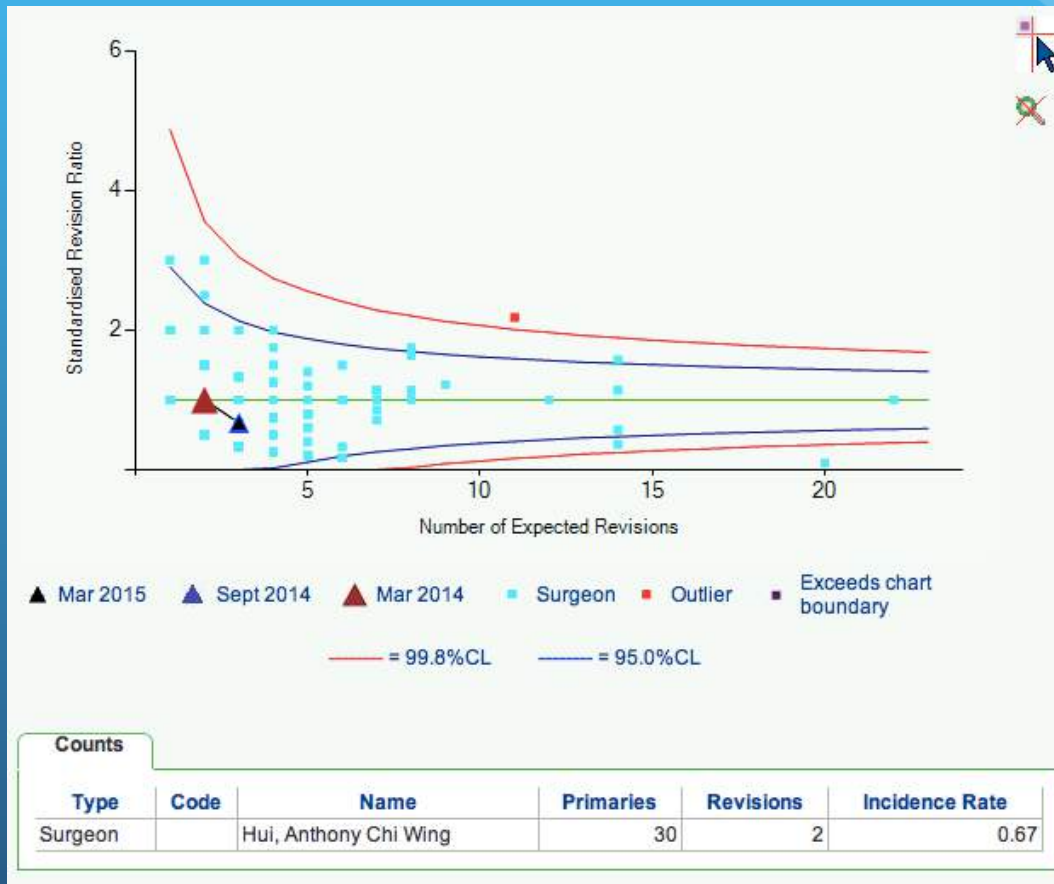


Fig. 1

# My NJR



# Summary



# Instability and anterior knee pain

Idiopathic Pain

Instability

Dislocation



Idiopathic  
Obesity  
Psychosomatic  
Degenerate/genetic

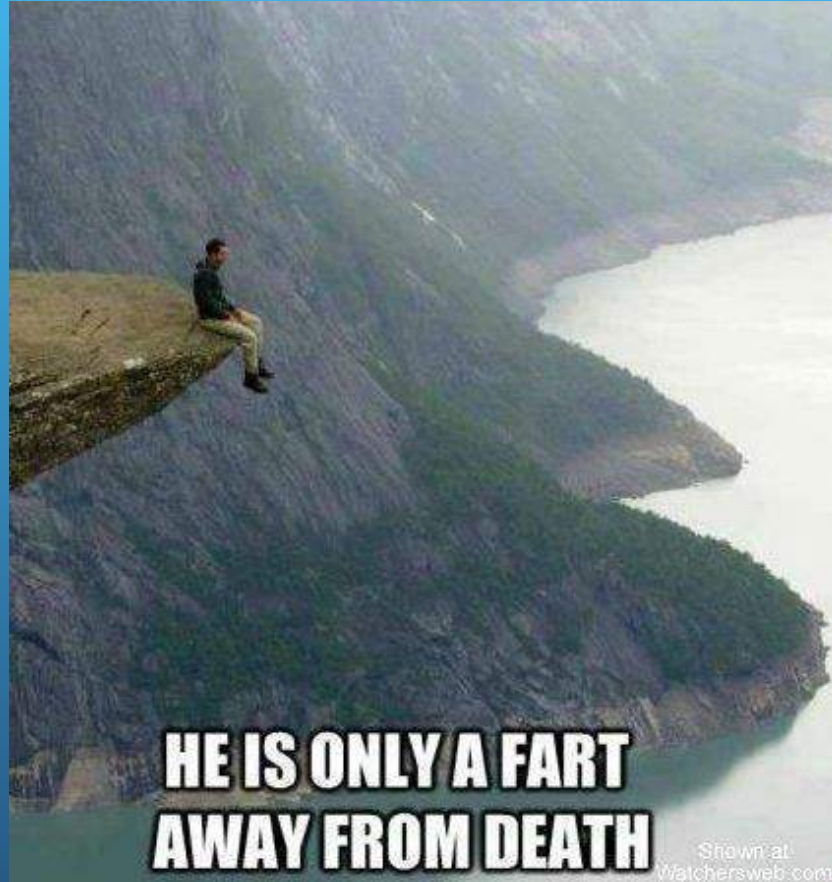
Quads/hamstrings imbalance  
Hypermobility/laxity

Known trauma

Conservative

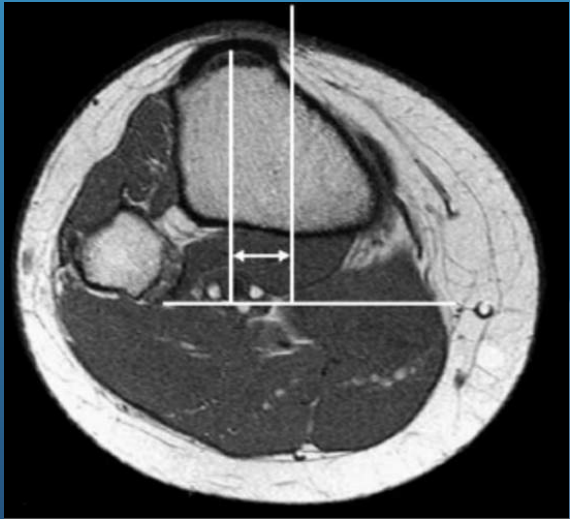
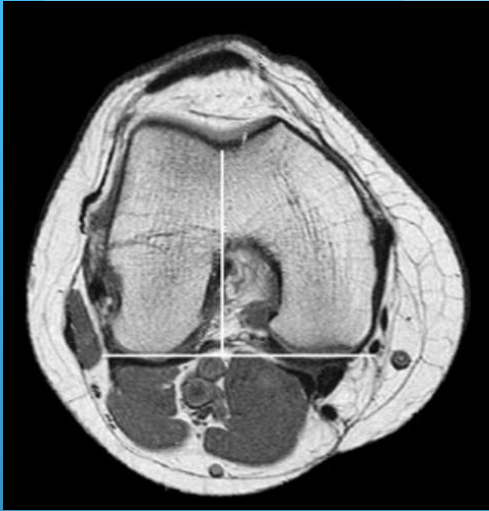
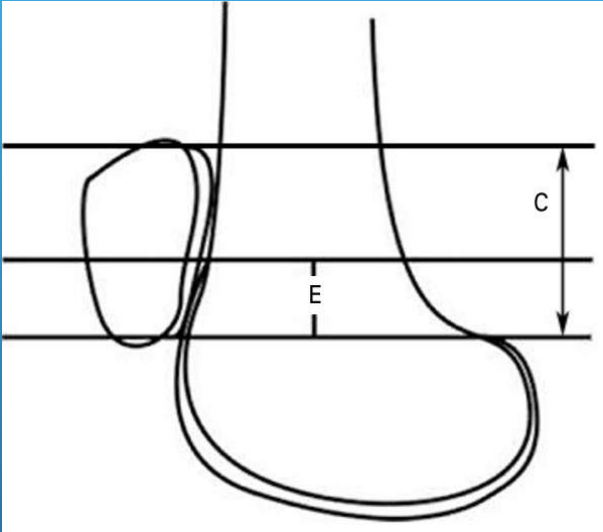
Surgery

# Warning!



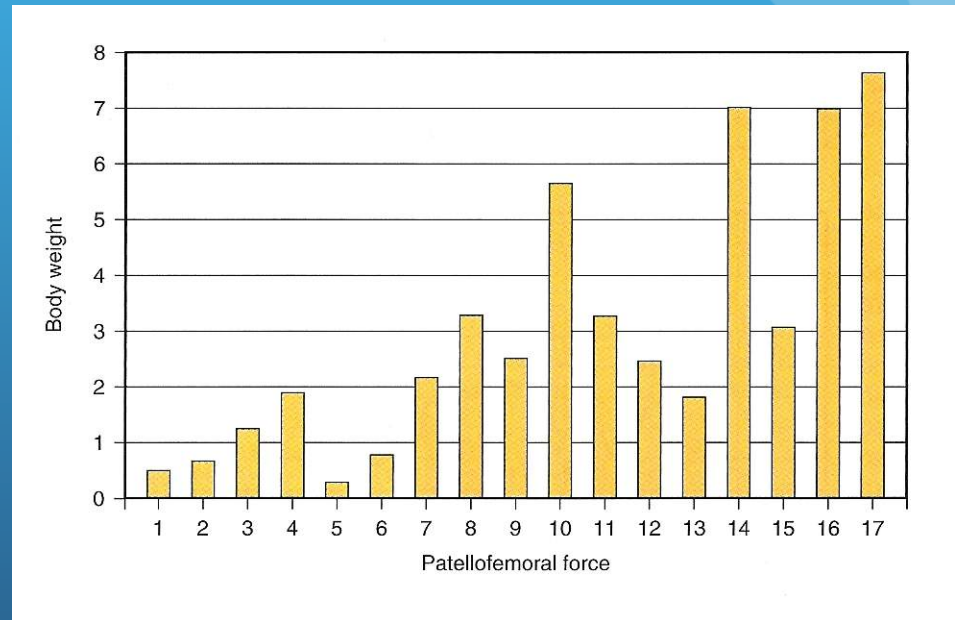






# Patello-femoral joint forces

1. Level walking
4. Level walking
10. Descending stairs
14. Jogging
16. Rising from chair
17. Squat descent



# Significance of MPFL in extension

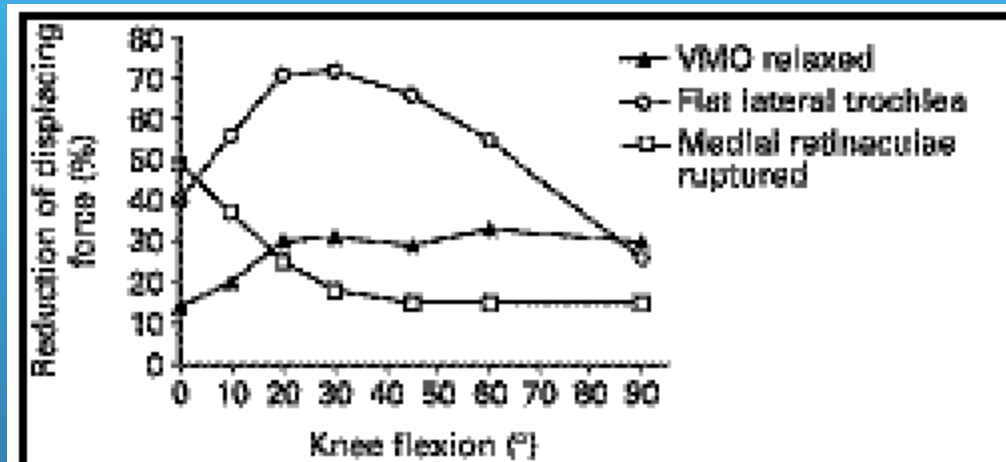


Fig. 6. Percentage loss of resistance to 10 mm lateral patellar displacement caused by each of the three simulated pathologies in isolation.

*J Bone Joint Surg [Br] 2005; 87-B; 577-82*

# Patella anatomy

