

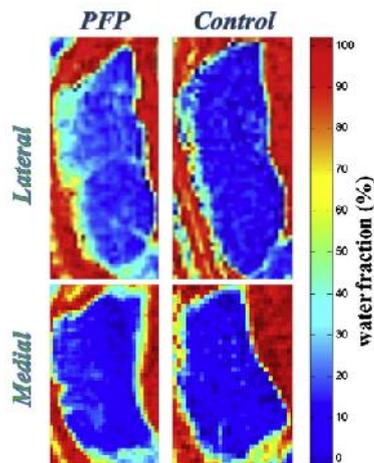
# Ten surprising facts about the patellofemoral joint. Could chronic anterior knee pain in some cases be caused by increased pressure in the PF joint based on trochlear dysplasia?

By Lars Blønd 2016

## Fact nr 1

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Ho et al. found elevated water content in patients having AKP

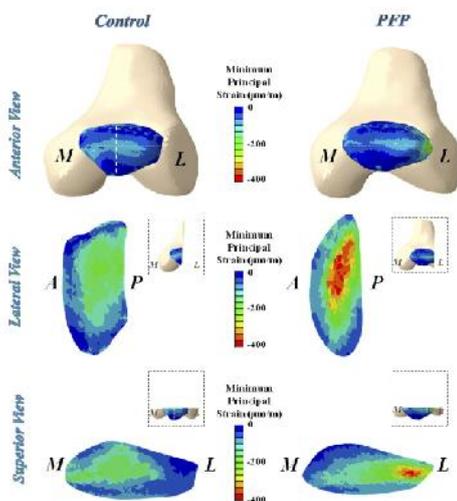


Ho KY, Hu HH, Colletti PM, Powers CM. Recreational runners with patellofemoral pain exhibit elevated patella water content. *Magn. Reson. Imaging* 2014;32(7):965-968. doi:10.1016/j.mri.2014.04.018.

## Fact nr 2

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Ho et al. also found increased patella bone strain in patients having AKP

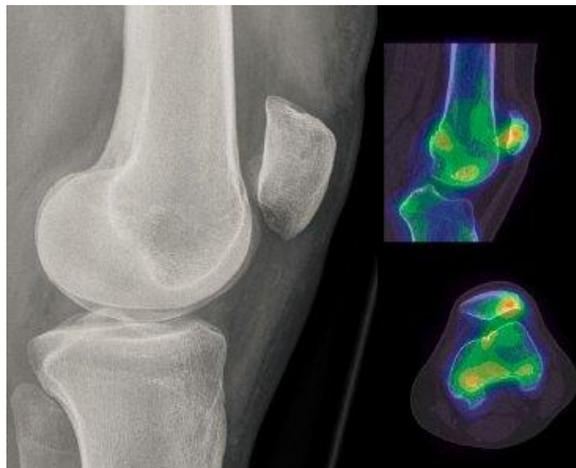


Ho KY, Keyak JH, Powers CM. Comparison of patella bone strain between females with and without patellofemoral pain: A finite element analysis study. *J. Biomech.* 2014;47(1):230-236. doi:10.1016/j.jbiomech.2013.09.010.

## Fact nr 3

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There is increased tracer uptake in the PF joint by Spect/CT scan in patient having PF malalignment and/or anterior knee pain.



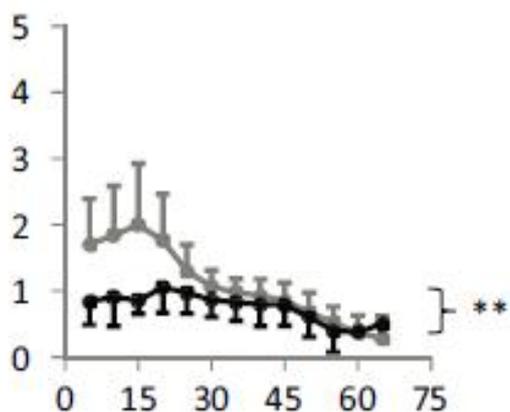
Schön SN, Afifi FK, Rasch H et al. Assessment of in vivo loading history of the patellofemoral joint: a study combining patellar position, tilt, alignment and bone SPECT/CT. *Knee Surg Sports Traumatol Arthrosc* 2014 ; 22 : 3039–3046.

Draper CE, Fredericson M, Gold GE et al. Metabolic Activity At the Patellofemoral Joint. *J Orthop Res* 2012 ; 30 : 209–213.

## Fact nr 4

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Van Haver et al. found that simulated trochlear dysplasia caused increased pressure in the PF joint

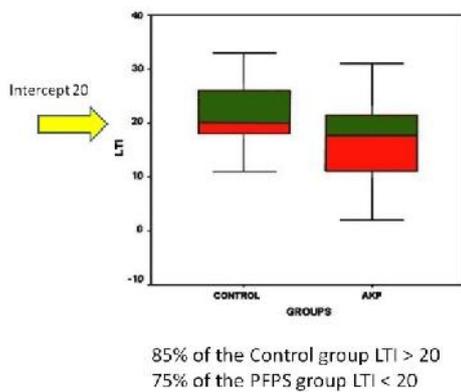


Van Haver A, De Roo K, De Beule M et al. The Effect of Trochlear Dysplasia on Patellofemoral Biomechanics: A Cadaveric Study With Simulated Trochlear Deformities. *Am J Sports Med* 2015 ; 43 : 1354–1361.

## Fact nr 5

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Keser et al found reduced lateral trochlear inclination angle (trochlear dysplasi) in patient having anterior knee pain.



*Keser S, Savranlar A, Bayar A et al. Is there a relationship between anterior knee pain and femoral trochlear dysplasia? Assessment of lateral trochlear inclination by magnetic resonance imaging. Knee Surg Sports Traumatol Arthrosc 2008 ; 16 : 911–915.*

## Fact nr 6

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Conchie et al found 7,5 times more risk of PF arthritis if they had AKP in adolescence

*Conchie H, Clark D, Metcalfe A et al. Adolescent knee pain and patellar dislocations are associated with patellofemoral osteoarthritis in adulthood: A case control study. Knee 2016 ; 23 : 708–711.*

## Fact nr 7

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Strong association between trochlear dysplasia and development of PF arthritis.



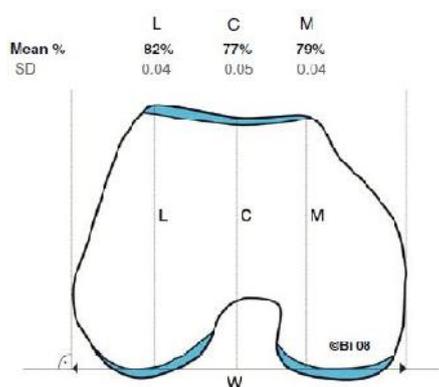
*Stefanik JJ, Roemer FW, Zumwalt AC et al. Association between measures of trochlear morphology and structural features of patellofemoral joint osteoarthritis on MRI: the MOST study. J Orthop Res 2012 ; 30 : 1–8*

*Teichtahl AJ, Hanna F, Wluka AE et al. A flatter proximal trochlear groove is associated with patella cartilage loss. Med Sci Sports Exerc 2012 ; 44 : 496–500.*

## Fact nr 8

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Biedert et al have found that one of the characteristics for the dysplasia is that the trochlea height is significantly higher compared to normal knees, and basically this means there is too much bone in the trochlea area



Biedert RM, Bachmann M. Anterior-posterior trochlear measurements of normal and dysplastic trochlea by axial magnetic resonance imaging. *Knee Surg Sports Traumatol Arthrosc* 2009 ; 17 : 1225–1230.

## Fact nr 9

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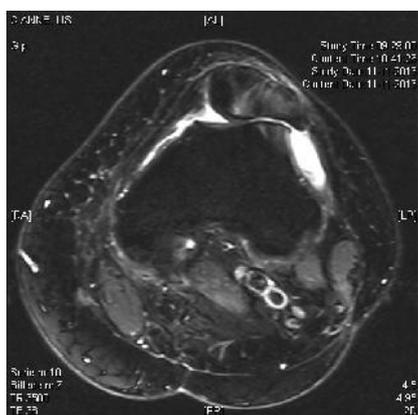
Goutallier et al demonstrated that anterior knee pain could be reduced by trochleoplasty

Goutallier D, Raou D, Van Driessche S. [Retro-trochlear wedge reduction trochleoplasty for the treatment of painful patella syndrome with protruding trochleae. Technical note and early results]. *Rev Chir Orthop Reparatrice Appar Mot* 2002 ; 88 : 678–685.

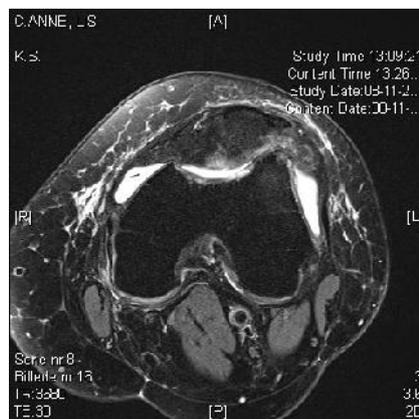
## Fact nr 10

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Prof Simon Donell and signed has observed that anterior knee pain can be reduced significantly in patient having severe trochlear dysplasia and PF arthritis, simply by doing a resection arthroplasty as demonstrated below. A new and deeper trochlear is made with a burr and a bleeding bone bed is left behind.



Before



After

Blønd L, Donell S. Does the patellofemoral joint need articular cartilage? *Knee Surg Sports Traumatol Arthrosc* 2015 ; 23 : 3461–3463.