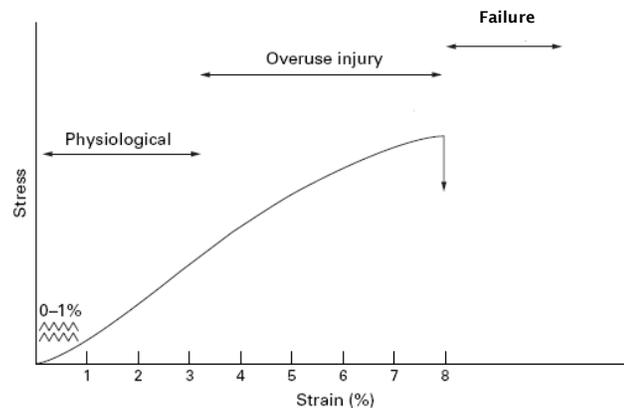


## The tissue homeostasis theory



### Risk Factors/Aetiology

- Witwrouw et al (2000): Reduced quads flexibility, VM reflex response time, explosive strength and vertical jump ability
- Robinson and Nee (2007); Ireland et al (2003): Weakness of hip lateral rotators and abductors
- A small scale study has demonstrated PFPS subjects shows a sig difference in ITB length in symptomatic and asymptomatic sides (Hudson and Darthuy, In Press)
- A small scale study suggests that symptomatic PFPS subjects had significantly shorter hamstrings than asymptomatic controls (White et al, In Press)

### Special Tests

**Critical Testing/Resisted testing:** Described by McConnell – resisted inner range quads and repeated through various degrees of knee extension, to establish symptom reproduction. Can be repeated with medial patella glide/taping to differentiate.

**Clarks test:** Press down on patella with knee extended and get the patient to contract the quadriceps. Positive test increases symptoms.

**These tests are not considered to be particularly specific or sensitive but they are in fairly common use, therefore, have included them.**

## Management

- Role of stretching alone is unknown
- No conclusive evidence of acupuncture (Jensen et al, 1999, Naslund et al, 2002)
- Methodologically weak studies have found improvements with joint mobilisations (Rowlands and Brantingham, 2003; Taylor and Brantingham, 2003)
- Inconclusive evidence for ultrasound (Brosseau et al, 2001) and orthotics (D'Hondt et al, 2002)
- Taping significantly reduces pain in PFPS (Ng and Cheng, 2002; Aminaka and Gribble, 2005; Whittingham and Palmer, 2004)
- Taping increases quads torque, gait cadence and improves function (Powers et al, 1997; Salsich et al, 2002; Handfield and Kramer, 2000)
- Interestingly all studies use different methods of taping, and even placebo taping methods have been shown to have a beneficial effect on pain and function
- 3 High quality studies report 5 weeks of quads strengthening exercises are effective in reducing pain and improving function.
- Open Kinetic Chain and Closed Kinetic Chain exercises are equally as effective (Heintjes et al, 2003; Witvrouw et al, 2000, 2004).
- Rx programmes may be more effective if less intense and spread over long time periods (Selfe, 2002).
  - CKC = seated leg presses, SKB on one leg and on both legs, stationary bicycling, rowing-machine exercises, step-up and step-down exercises, progressive jumping exercises.
  - OKC = maximal static quadriceps muscle contractions (full extension), supine SLR, short arc movements from 10° of knee flexion to terminal extension, leg adduction exercises
- 8/52 of selective "VMO" training Vs generalised quads strengthening demonstrated significant mod to large improvement on subjective measures of pain, function and quality of life. No difference between groups (Syme et al, 2009)
- A combination of patella mobilisation, quadriceps and gluteal strengthening, general stretching and taping significantly improve pain and function (Crossley et al, 2002; Crossley et al, 2005)
- A combination of VMO specific training, taping, stretching and advice, or a combination of general quadriceps strengthening, taping, stretching and advice for 8/52 were significantly effective in reducing pain and improving function compared to no treatment (Syme et al, In Press). There was a "trivial" difference between experimental groups.