

## **Dr Kay Crossley**

---

### **Brief CV**

Dr Kay Crossley is a physiotherapist, with many years of experience in clinical practice who obtained her PhD in 2002 in the School of Physiotherapy, the University of Melbourne. Her research career has targeted evaluation of contributing factors and conservative interventions for chronic knee pain in younger and older adults; patellofemoral pain syndrome (overuse knee pain condition encountered by young adults) and knee osteoarthritis (OA). She is now leading a research area focusing on OA affecting the patellofemoral joint (PFJ). This is an important research area, since PFJ OA is common, and associated with considerable personal, societal and financial burden, but it is only investigated by a few research groups world-wide. Furthermore, through her appointment in Mechanical Engineering, she is contributing to inter-disciplinary research projects, combining her clinical research expertise with the internationally-recognised modeling skills available in Prof Marcus Pandy's laboratory.

Kay Crossley is a part-time Principal Research Fellow with National ICT Australia, in the Department of Mechanical Engineering, Melbourne School of Engineering at the University of Melbourne.

### **Primary Research Interests**

---

Chronic knee pain conditions across the lifespan (eg patellofemoral pain, patellofemoral osteoarthritis, knee osteoarthritis, patellar tendinopathy)

- a. Understanding the factors contributing to the knee pain conditions, or the consequences of knee pain conditions (eg movement patterns, muscle strength and activation patterns)
- b. Evaluating the efficacy and mechanisms underpinning physical interventions (eg physiotherapy, taping/bracing/foot orthoses)

### **Peer Review Publications**

---

#### *In press*

1. Collins N, **Crossley KM**, Beller E, Darnell R, McPoil T, and Vicenzino B. (accepted 7-08-08) Foot orthoses and physiotherapy in the treating patellofemoral pain syndrome: a randomized controlled trial. British Medical Journal.
2. **Crossley KM**, Vicenzino B, Pandy MG, Schache AG, Hinman RS. (Accepted 8-07-08) Targeted physiotherapy for patellofemoral joint OA: A protocol for a randomised, single-blind controlled trial. BMC Musculoskeletal Disorders.
3. Cowan SM and **Crossley KM** (accepted Jul 2007). Does gender influence neuromotor control of the knee and hip? Journal of Electromyography and Kinesiology
4. Bryant AL, Clark RA, Bartold S, Murphy A, Bennell KL, Hohmann E, Marshall S, Payne C & **Crossley KM**. (accept June 19) Effects of estrogen on the mechanical behaviour of the human Achilles tendon in vivo. Journal of Applied Physiology
5. Hodges PW, Mellor R, **Crossley K**, Bennell K. (Accept Jul 2007) Pain induced by injection of hypertonic saline into the infra-patellar fat pad changes coordination of the quadriceps muscles. Arthritis Care and Research (Arthritis & Rheumatism).

#### *In print*

6. Schache AG, Fregly BJ, **Crossley KM**, Hinman RS, Pandy MG (2008) The effect of gait modification on the external knee adduction moment is reference frame dependent. Clinical Biomechanics 23: 601-608
7. Vicenzino B, Collins N, **Crossley KM**, Beller E, Darnell R, McPoil T. (2008) Foot orthoses and physiotherapy in the treatment of patellofemoral pain syndrome: A randomised clinical trial BMC Musculoskeletal Disorders 9:47
8. Warden SJ, Metcalf B, Kiss ZS, Cook JL, Purdam C, Bennell KL and **Crossley KM**. (2008) Low-intensity pulsed ultrasound for chronic patellar tendinopathy: a randomised, double-blind, placebo-controlled trial. Rheumatology. 47 467-71
9. Kemp G, **Crossley KM**, Wrigley TV, Metcalf BR, Hinman RS. (2008) Reducing joint loading in medial knee osteoarthritis: Shoes and walking sticks: Arthritis and Rheumatism: Arthritis Care and Research. 59 609-14.

10. Warden SJ, Hinman RS, Watson MA Jr, Avin KG, Bialocerowski AE and Crossley KM (2008): Patellar taping and bracing for the treatment of chronic knee pain: a systematic review and meta-analysis. Arthritis and Rheumatism: Arthritis Care and Research **59**:78-83
11. **Crossley KM**, Thancanamootoo K, Metcalf BR, Cook JL, Purdam CR, Warden SJ (2007) Clinical features of patellar tendinopathy and their implications for rehabilitation Journal of Orthopaedic Research **25**:1164–1175 (60% research design, data quality, management and analysis)
12. Warden, SJ, Creaby, M., Bryant, A and **Crossley, KM** : invited review: (2007). Stress fracture risk in women soccer players and their clinical implications. British Journal of Sports Medicine **41** (Suppl 1) 38- 44
13. Hinman RS and **Crossley KM** (2007) Patellofemoral osteoarthritis: a distinct clinical entity Rheumatology; **46** (7):1057-62.
14. Warden SJ, Kiss ZS, Malara F, Ooi ABT, Metcalf BR, Cook JL, **Crossley KM** (2007). Comparative accuracy of magnetic resonance imaging and ultrasonography in confirming clinically diagnosed patellar tendinopathy American Journal of Sports Medicine **35**: 427 - 436.
15. Bennett AN, **Crossley KM**, Brukner PD, and Hinman RS. (2007) Predictors of symptomatic response to glucosamine in knee osteoarthritis: an exploratory study British Journal of Sports Medicine **41**(7):415-9.
16. Brukner PD, **Crossley KM**, Morris HG, Bartold SJ, Elliott B (2006). Recent advances in sports medicine. Medical Journal of Australia **184** (4): 188-193
17. Cowan SM, PW Hodges, **Crossley. K** and Bennell K (2006). Patellar taping does not change the amplitude of electromyographic activity of the vasti in a stair stepping task. British Journal of Sports Medicine **40**: 30 - 34
18. Hinman RS, May RL and **Crossley KM** (2006). Is there an alternative to the full-leg radiograph for determining knee joint alignment in osteoarthritis? Arthritis Care and Research **55** (2): 306 - 313
19. Potter NJ, Brukner PD, Makdissi M, **Crossley K**, Kiss ZS.(2006) Navicular stress fractures: Outcomes of surgical and conservative management. British Journal of Sports Medicine **40** (8): 692 – 695
20. **Crossley KM**, Cowan SM, Bennell KL, Green S and McConnell J (2005). Physical therapy restores altered gait patterns in individuals with patellofemoral pain. Medicine & Science in Sports & Exercise.**37** (2): 176-183.
21. Bennell KL, Hinman RS, Metcalf B, Buchbinder R, McConnell J, McColl G, Green S and **Crossley KM** (2005). Efficacy of physiotherapy management of knee joint osteoarthritis: a randomised, double-blind, placebo-controlled trial. Annals of Rheumatic Diseases. **64** (6): 906-912
22. Hinman RS, Cowan SM, **Crossley KM** and KL Bennell (2005). Age-related changes in electromyographic quadriceps activity during stair descent. Journal of Orthopaedic Research **23** (2) 322-326
23. Bennell K, Wee E, **Crossley KM**, Stillman B and P. Hodges (2005). Effects of experimentally-induced anterior knee pain on knee joint position sense in healthy individuals. Journal of Orthopaedic Research **23**: 46-53
24. Warden SJ, Morris HG, **Crossley KM**, Brukner PD and Bennell KL (2005). Delayed and non-union following opening wedge high tibial osteotomy: surgeons' results from 182 cases Knee Surgery Traumatology and Arthroscopy.**13**: 34-37
25. **Crossley KM**, Bennell KL, Green S and Cowan SM (2004). Analysis of outcome measures for persons with patellofemoral pain: Which are reliable and valid? Archives of Physical Medicine and Rehabilitation**85**(5): 815-822
26. **Crossley KM**, Cowan SM, Bennell KL and McConnell J (2004). Knee flexion during stair ambulation is altered in individuals with patellofemoral pain. Journal of Orthopaedic Research **22**(2): 267-274.
27. Cowan SM, A. Schache, P. Brukner, K. **Crossley, K**. Bennell, P. W. Hodges and Coburn. P (2004). Delayed activation of transversus abdominus in individuals with chronic groin pain. Medicine & Science in Sport & Exercise **36** (12): 2040 – 2045
28. Bennell K, Hinman R, **Crossley K**, Metcalf B, Buchbinder R, Green S and McColl G (2004). Is the Human Activity Profile a useful measure in people with knee osteoarthritis? Journal of Rehabilitation Research and Development. **41** (4): 621-30.
29. Hinman R, **Crossley K**, McConnell J and Bennell K (2004). Does the application of tape influence quadriceps sensorimotor function in knee osteoarthritis? Rheumatology **43**: 331-336

30. Bennell K, **Crossley K**, Jayarajan J, Walton E, Warden S, Kiss ZS and T. Wrigley (2004). Ground reaction forces and bone parameters in females with tibial stress fracture. Medicine and Science in Sports and Exercise. **36** (3): 397-404
31. Hinman R, **Crossley KM**, McConnell J and Bennell K (2003). Efficacy of knee tape in the management of knee osteoarthritis: blinded, randomised controlled trial. British Medical Journal **327**: 135 - 138. **abstracted in a large number of publications**
32. Cowan SM, Bennell KL, Hodges PW, **Crossley KM** and McConnell J (2003). Simultaneous feedforward recruitment of the vastii in untrained postural tasks can be restored by specific training. Journal of Orthopaedic Research **21**: 553-558.
33. Hinman RS, Bennell KL, **Crossley KM** and McConnell J (2003). Immediate effects of adhesive tape on pain and disability in individuals with knee osteoarthritis. Rheumatology **42**: 865-869. (5%, co-supervision of PhD candidate)
34. Bennell KL, Hinman R, Metcalf BR, **Crossley KM**, Buchbinder R, Smith M and McColl G (2003). Relationship of knee joint proprioception to pain and disability in individuals with knee arthritis. Journal of Orthopaedic Research **21**: 792-797.
35. **Crossley K**, Bennell K, Green S, Cowan S and McConnell J (2002). Physical therapy for patellofemoral pain: A randomised, double-blind, placebo controlled trial. American Journal of Sports Medicine **30**(6): 857-865.
36. Cowan SM, Hodges PW, Bennell KL and **Crossley KM** (2002). Altered vasti recruitment when people with patellofemoral pain syndrome complete a postural task. Archives of Physical Medicine and Rehabilitation **83**(7): 989-995.
37. Baker V, Bennell K, Stillman B, Cowan S and **Crossley K** (2002). Abnormal knee joint position sense in individuals with patellofemoral pain syndrome. Journal of Orthopaedic Research **20**: 208-214. (2%, assisted with project design)
38. Hinman RS, Bennell KL, Metcalf BR and **Crossley KM** (2002). Delayed onset of quadriceps activity and altered knee joint kinematics during stair-stepping in individuals with knee osteoarthritis. Archives of Physical Medicine and Rehabilitation **83**: 1080-1086.
39. Cowan SM, Bennell KL, **Crossley KM**, Hodges PW and McConnell J (2002). Physiotherapy treatment alters the recruitment of the vasti in patellofemoral pain syndrome. Medicine and Science in Sports and Exercise **34**(12): 1879-1885.
40. Hinman RS, Bennell KL, Metcalf BR and **Crossley KM** (2002). Balance impairments in individuals with symptomatic knee osteoarthritis: A comparison with matched controls using clinical tests. Rheumatology **41**: 1388-1394.
41. Hinman RS, Bennell KL, Metcalf BR and **Crossley KM** (2002). Temporal activity of Vastus Medialis Obliquus and Vastus Lateralis in symptomatic knee osteoarthritis. American Journal of Physical Medicine and Rehabilitation **81**(9): 684-690.
42. Slimmon D, Bennell K, Brukner P and **Crossley K** (2002). Long term outcome of fasciotomy with partial fasciectomy for chronic exertional compartment syndrome of the lower leg. American Journal of Sports Medicine **30**(4): 581-588.
43. Warden SJ, Gutschlag FR, Wajswelner H and **Crossley K** (2002). Aetiology of rib stress fractures in rowers. Sports Medicine **32**(13): 819-836.
44. **Crossley K**, Bennell K, Green S and McConnell J (2001). A systematic review of physical interventions for patellofemoral pain syndrome. Clinical Journal of Sports Medicine **11**(2): 103-110.
45. Cowan SM, Bennell KL, Hodges PW, **Crossley KM** and McConnell J (2001). Delayed onset of electromyographic activity of vastus medialis obliquus relative to vastus lateralis in subjects with patellofemoral pain syndrome. Archives of Physical Medicine and Rehabilitation **82**(2): 183-189.
46. **Crossley KM**, Cowan SM, Bennell KL and McConnell J (2000). Patellar taping: Is clinical success supported by scientific evidence? Manual Therapy **5**(3): 142-150.
47. Bennell K, Bartram S, **Crossley K** and Green S (2000). Outcome measures in patellofemoral pain syndrome: test retest reliability and inter-relationships. Physical Therapy in Sport **1**: 32-34
48. **Crossley K**, Bennell KL, Wrigley T and Oakes BW (1999). Ground reaction forces, bone characteristics, and tibial stress fracture in male runners. Medicine and Science in Sports and Exercise **31**(8): 1088-1093.
49. Bennell K, **Crossley K**, Wrigley T and Nitschke J (1999). Test retest reliability of selected ground reaction force parameters and their symmetry during running. Journal of Applied Biomechanics **15**(3): 330-336.

50. Bennell K, White S and **Crossley K** (1999). The oral contraceptive pill: a revolution for sportswomen. British Journal of Sports Medicine **33**: 231-238.(invited review)
51. Blackman PG, Simmons LR and **Crossley KM** (1998). Treatment of chronic exertional anterior compartment syndrome with massage: A pilot study. Clinical Journal of Sports Medicine **8**(1): 14-17.
52. Deacon A, Bennell K, Kiss ZS, **Crossley K** and Brukner P (1997). Osteoarthritis of the knee in retired, elite Australian Rules footballers. Medical Journal of Australia **166**: 187-190.
53. Bennell KL and **Crossley K** (1996). Musculoskeletal injuries in track and field: incidence, distribution and risk factors. Australian Journal of Science and Medicine in Sport **28**: 69-75.
54. Brukner P, Bradshaw C, Khan KM, White S and **Crossley K** (1996). Stress fractures: A review of 180 cases. Clinical Journal of Sports Medicine **6**: 85-89.

*Invited commentaries*

55. Hinman RS and **Crossley KM**. (2007) Enhanced pharmacy review and community physiotherapy for knee pain in elderly patients. Invited commentary. Nature Clinical Practice Rheumatology .3(6):326-7 (Impact Factor: not available)
56. **Crossley K** (2004) Commentary on "A negative result on the Ottawa knee rules excludes fracture in patients with acute knee injury" in Australian Journal of Physiotherapy **50**: 116

## Grant support

---

*Current*

**2008 - 2010**

**Health and Medical Research Council (3 years) - \$592,100**

arthritis: Efficacy of physiotherapy and understanding the role of joint stress

RS Hinman, MG Pandy, AG Schache, B Vicenzino

**National**

Patellofemoral

**KM Crossley,**