

## **TENDINOPATHY RESEARCH UPDATE - MARCH 2013**

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### **NORMAL TENDON & PATHOLOGY**

Br J Sports Med. 2013 Mar 9. [Epub ahead of print]

#### **Tendons - time to revisit inflammation.**

Rees JD, Stride M, Scott A.

##### **Abstract**

It is currently widely accepted among clinicians that chronic tendinopathy is caused by a degenerative process devoid of inflammation. Current treatment strategies are focused on physical treatments, peritendinous or intratendinous injections of blood or blood products and interruption of painful stimuli. Results have been at best, moderately good and at worst a failure. The evidence for non-inflammatory degenerative processes alone as the cause of tendinopathy is surprisingly weak. There is convincing evidence that the inflammatory response is a key component of chronic tendinopathy. Newer anti-inflammatory modalities may provide alternative potential opportunities in treating chronic tendinopathies and should be explored further.

### **AETIOLOGY**

#### **DIAGNOSIS, ASSESSMENT**

Br J Sports Med. 2013 Mar 7. [Epub ahead of print]

#### **Development and validation of a new visa questionnaire (VISA-H) for patients with proximal hamstring tendinopathy.**

Cacchio A, De Paulis F, Maffulli N.

##### **Abstract**

##### **BACKGROUND:**

There is a need for a patient-reported outcome (PRO) questionnaire to evaluate patients with proximal hamstring tendinopathy (PHT).

##### **OBJECTIVE:**

To develop a PRO questionnaire based on VISA questionnaire forms for patients with PHT.

##### **METHODS:**

Item generation, item reduction, item scaling and evaluation of the psychometric properties were used to develop a questionnaire to assess the severity of symptoms, function and ability to play sports in patients with PHT and healthy subjects. The final version, named Victorian Institute of Sport Assessment-Proximal Hamstring Tendons (VISA-H), consisted of eight questions that measured the domains of pain, function and sporting activity. The psychometric properties of a questionnaire were estimated in a population of non-surgical (n=20) and surgical (n=10) patients, as well as in healthy subjects (n=30).

##### **RESULTS:**

The VISA-H questionnaire displayed a high degree of internal consistency, with a Cronbach  $\alpha$  of 0.84. (The test-retest reliability was high for all groups of participants with an intraclass correlation coefficient ranging from 0.90 to 0.95.) The VISA-H exhibited a high correlation with the Nirschl phase rating scale (r ranging from -0.75 to -0.89) and a generic tendon grading system proposed by Curwin

and Stanish ( $r$  ranging from -0.70 to -0.88). Also, the responsiveness was higher for the VISA-H questionnaire with an area under the curve of 0.90 and a minimum clinically important difference of 22 points.

#### **CONCLUSIONS:**

The VISA-H is a PRO questionnaire with high psychometric properties for measuring pain, function and sporting activity in patients with PHT.

BMJ Case Rep. 2013 Jan 28;2013. pii: bcr2012007370. doi: 10.1136/bcr-2012-007370.

#### **Running biomechanics in a long-term monitored recreational athlete with a history of Achilles tendon rupture.**

Jandacka D, Zahradnik D, Foldyna K, Hamill J.

##### **Abstract**

This study represented a unique opportunity to understand changes in the human motion biomechanics during basic locomotion within a time interval of 4 years, when the monitored individual regained his original aerobic fitness, running performance and body mass index as prior to the injury. The participant visited the laboratory a month prior to the injury and during 4 years after the surgery. The surgery, subsequent rehabilitation and a 4-year running training programme in the studied recreational athlete did not completely eliminate the consequences of the Achilles tendon rupture. The function muscle deficit is namely manifested by a lower net plantar flexion moment and a lower net-generated ankle joint power during the take-off in the stance phase. The greater dorsal flexion in the affected ankle joint at the first contact with the ground and consequently higher peaks of ground reaction forces during running are consequences of the longer Achilles tendon in the affected lower extremity and weakened calf muscles.

#### **IMAGING**

#### **MANAGEMENT**

Shld & Elbow. 2013 Mar, published online

#### **A review of systematic reviews of the effectiveness of conservative interventions for rotator cuff tendinopathy**

Littlewood C, May S, Twalters S.

##### **Abstract**

##### **Background**

Rotator cuff tendinopathy is common and a wide range of conservative interventions are currently used to treat this problem. The purpose of this review is to systematically review the systematic reviews that evaluate the effectiveness of conservative interventions for rotator cuff tendinopathy.

##### **Methods**

An electronic search of PEDro, MEDLINE and the Cochrane Library was undertaken and supplemented by hand and citation searching. The AMSTAR checklist was adopted for quality appraisal and a narrative synthesis was undertaken.

##### **Results**

Twenty-six systematic reviews were retrieved. Methodological quality was variable. Exercise and multimodal physiotherapy appear to confer superior outcomes over no treatment or placebo, although the clinical significance of these results remains unclear. Surgery does not confer an additional benefit over exercise alone or multimodal physiotherapy. Combining manual therapy with exercise is not currently supported, neither is the use of corticosteroid injections or acupuncture. Other commonly prescribed interventions lack evidence of effectiveness.

##### **Conclusions**

Exercise and multimodal physiotherapy might be effective interventions for rotator cuff tendinopathy, although the clinical significance of this effect is unclear. This interpretation is drawn

from systematic reviews comprising mainly small randomized controlled trials that frequently measure outcome in a heterogeneous manner, limiting the strength of any conclusions.

Semin Musculoskelet Radiol. 2013 Feb;17(1):43-8. doi: 10.1055/s-0033-1333913. Epub 2013 Mar 13.

### **Greater trochanteric pain syndrome.**

Klauser AS, Martinoli C, Tagliafico A, Bellmann-Weiler R, Feuchtner GM, Wick M, Jaschke WR.

#### **Abstract**

Pain around the greater trochanter is still a common clinical problem that may be secondary to a variety of either intra-articular or periarticular pathologies. Gluteal tendon pathologies are one of the primary causes of greater trochanteric pain, with attrition of the fasciae latae against the gluteus medius and minimus tendons, and the trochanteric bursa being possible causes. Key sonographic findings of gluteal tendinopathy, bursitis, and differential diagnosis are described in this overview. Clinical diagnosis and treatment of greater trochanteric pain syndrome is still challenging; therefore ultrasound is helpful to localize the origin of pain, determine underlying pathology, and, based on these findings, to guide local aspiration and/or injection in cases of tendinopathy and/or bursitis.

### **REHABILITATION & LOADING**

Sports Med. 2013 Mar 15. [Epub ahead of print]

### **Achilles and Patellar Tendinopathy Loading Programmes : A Systematic Review Comparing Clinical Outcomes and Identifying Potential Mechanisms for Effectiveness.**

Malliaras P, Barton CJ, Reeves ND, Langberg H.

#### **Abstract**

#### **INTRODUCTION:**

Achilles and patellar tendinopathy are overuse injuries that are common among athletes. Isolated eccentric muscle training has become the dominant conservative management strategy for Achilles and patellar tendinopathy but, in some cases, up to 45 % of patients may not respond. Eccentric-concentric progressing to eccentric (Silbernagel combined) and eccentric-concentric isotonic (heavy-slow resistance; HSR) loading have also been investigated. In order for clinicians to make informed decisions, they need to be aware of the loading options and comparative evidence. The mechanisms of loading also need to be elucidated in order to focus treatment to patient deficits and refine loading programmes in future studies.

#### **OBJECTIVES:**

The objectives of this review are to evaluate the evidence in studies that compare two or more loading programmes in Achilles and patellar tendinopathy, and to review the non-clinical outcomes (potential mechanisms), such as improved imaging outcomes, associated with clinical outcomes.

#### **METHODS:**

Comprehensive searching (MEDLINE, EMBASE, CINAHL, Current Contents and SPORTDiscus™) identified 403 studies. Two authors independently reviewed studies for inclusion and quality. The final yield included 32 studies; ten compared loading programmes and 28 investigated at least one potential mechanism (six studies compared loading programmes and investigated potential mechanisms).

#### **RESULTS:**

This review has identified limited (Achilles) and conflicting (patellar) evidence that clinical outcomes are superior with eccentric loading compared with other loading programmes, questioning the currently entrenched clinical approach to these injuries. There is equivalent evidence for Silbernagel combined (Achilles) and greater evidence for HSR loading (patellar). The only potential mechanism that was consistently associated with improved clinical outcomes in both Achilles and patellar tendon rehabilitation was improved neuromuscular performance (e.g. torque, work, endurance), and Silbernagel-combined (Achilles) HSR loading (patellar) had an equivalent or higher level of evidence than isolated eccentric loading. In the Achilles tendon, a majority of studies did not find an association between improved imaging (e.g. reduced anteroposterior diameter, proportion of

tendons with Doppler signal) and clinical outcomes, including all high-quality studies. In contrast, HSR loading in the patellar tendon was associated with reduced Doppler area and anteroposterior diameter, as well as greater evidence of collagen turnover, and this was not seen following eccentric loading. HSR seems more likely to lead to tendon adaptation and warrants further investigation. Improved jump performance was associated with Achilles but not patellar tendon clinical outcomes. The mechanisms associated with clinical benefit may vary between loading interventions and tendons.

#### **CONCLUSION:**

There is little clinical or mechanistic evidence for isolating the eccentric component, although it should be made clear that there is a paucity of good quality evidence and several potential mechanisms have not been investigated, such as neural adaptation and central nervous system changes (e.g. cortical reorganization). Clinicians should consider eccentric-concentric loading alongside or instead of eccentric loading in Achilles and patellar tendinopathy. Good-quality studies comparing loading programmes and evaluating clinical and mechanistic outcomes are needed in both Achilles and patellar tendinopathy rehabilitation.

Physiotherapy. 2013 Mar 4. pii: S0031-9406(12)00137-X. doi: 10.1016/j.physio.2012.12.002. [Epub ahead of print]

#### **Development of a self-managed loaded exercise programme for rotator cuff tendinopathy.**

Littlewood C, Malliaras P, Mawson S, May S, Walters S.

#### **Source**

School of Health & Related Research, University of Sheffield, Regent Court, 30 Regent Street, Sheffield S1 4DA, UK. Electronic address: c.littlewood@sheffield.ac.uk.

#### **Abstract**

This paper describes a self-managed loaded exercise programme which has been designed to address the pain and disability associated with rotator cuff tendinopathy. The intervention has been developed with reference to current self-management theory and with reference to the emerging benefit of loaded exercise for tendinopathy. This self-managed loaded exercise programme is being evaluated within the mixed methods SELF study (ISRCTN 84709751) which includes a pragmatic randomised controlled trial conducted within the UK National Health Service.

#### **PHYSICAL THERAPIES**

#### **MEDICINES AND INJECTIONS**