

**Specific Question:**

**In an adult population are eccentric exercises effective in reducing pain and improving function in Achilles tendinopathy?**

**Clinical bottom line**

There is moderate quality evidence for the use of eccentric exercise in the management of Achilles tendinopathy.

The balance of evidence does not support a recommendation of one type of eccentric exercise programme over another.

Clinicians should consider using eccentric loading as part of a rehabilitation programme in the management of Achilles tendinopathy.

There is a need for further research comparing eccentric exercise with other training regimes or as part of a rehabilitation programme.

**What would I Tweet?**

Research shows that exercise improves pain and function in adults with Achilles tendinopathy and that eccentric exercise should be included in the exercise rehabilitation programme.

**Why is this important?**

Achilles tendinopathy is characterised by pain on functional weight bearing and is a common condition in adults with an incidence of 2.35 per 1000 (aged 21-60) (De Jonge 2011). Injury to the Achilles tendon can severely impact upon recreational and everyday activities. The condition often affects athletes and people who participate in sport, although 30% of all patients report sedentary lifestyles (Alfredson 2007). It is commonly referred to as an overuse injury. Eccentric exercise is increasingly being suggested as an appropriate treatment (with Alfredson's protocol often quoted) yet the effectiveness, optimal protocol and definitive dosage of this approach remains unclear.

## Inclusion Criteria

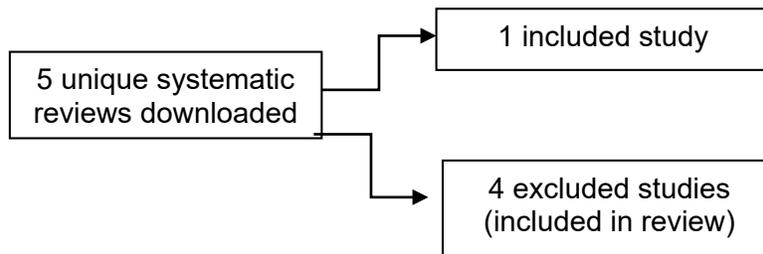
	Description	Search terms
<b>Population and Setting</b>	Adults with Achilles tendinopathy	Adults, >18 years Achilles tendonitis/tendinopathy
<b>Intervention or Exposure (ie what is being tested)</b>	Eccentric exercises, loading or stretching, or strengthening and Alfredson Protocol	Eccentric muscle contraction Therapeutic exercise Exercise Muscle loading stretching, strengthening Alfredson Protocol
<b>Comparison, if any</b>	Usual care Conservative management Other exercise programs	Advice Usual care Conservative management Other exercise programs
<b>Outcomes of interest</b>	Pain, function	Pain Function Recovery
<b>Types of studies</b>	SR & RCTs only	

Database	Date/Issue searched	Searched from	Number of records downloaded before duplicate removal
Cochrane Systematic Reviews		2005- date	
Cochrane Trials	27/02/2015		31
DARE/HTA/NHSEED	27/02/2015		13
Medline			14
CINAHL			20
AMED			10
PsycInfo			
Cochrane (Trials)			31
Web of Science			14
Joanna Briggs Institute			0
TRIP			5
PEDRO			23
REHABDATA			0
SportsDiscuss			30
Embase			66
NHS evidence			0

CAT Lead: Alison Morris  
Email: alisonl.morris@mpft.nhs.uk

Date CAT completed: 26/1/19  
Date CAT to be reviewed: 2022

## Results



First Author, year and type of study	Population and setting	Intervention or exposure tested	Study results	Assessment of quality and comments
<p><b>Wilson et al 2018</b></p>	<p>Systematic review of RCTs or quasi RCTs of exercise, orthoses &amp; splinting in chronic (3 months duration) Achilles Tendinopathy in adults (&gt;18)</p> <p>Search to Oct 2017</p>	<p>Comparison eccentric exercise v no exercise, placebo &amp; rest.</p>	<p>Summary of studies 19 studies examined effect eccentric exercise. 3 studies examined concentric exercise. 1 study examined stretching. 1 study examined heavy slow resistance (HSR) programme. 2 studies examined combined programme eccentric, concentric, stretching &amp; power.</p> <p>4 studies evaluated effect of eccentric exercise on pain. 1 study found eccentric exercise significantly reduced pain during peak exercise compared with control after 12/52 in insertional &amp; mid portion Achilles tendinopathy 1 study found eccentric exercise did not significantly reduce pain compared with control in insertional Achilles tendinopathy. 1 study found eccentric exercise significantly reduced pain on tendon palpation compared with control. 1 study found significant improvement in pain scores at 4/12 with eccentric exercise.</p> <p>2 studies evaluated effect of eccentric exercise on function.</p>	<p>Electronic database search, contacted experts in field for unpublished trials, reference list searching &amp; conference proceedings of 6 organisations. Two authors reviewed literature, used third if unable to achieve consensus. Cochrane risk of bias tool used to assess. GRADE approach used to assess quality of evidence and determine strength of recommendations. <b>Data not pooled due to heterogeneity.</b></p>

CAT Lead: Alison Morris  
Email: alisonl.morris@mpft.nhs.uk

Date CAT completed: 26/1/19  
Date CAT to be reviewed: 2022

		<p>Comparison of exercise protocols.</p>	<p>Both found significant effect favouring eccentric exercise at 12/52 &amp; 4/12. Strength of studies evaluating pain &amp; function was moderate.</p> <p>Authors recommend eccentric exercise over no therapy for improving pain &amp; function in mid portion Achilles tendinopathy. 3 studies compared eccentric exercise as Alfredson described with concentric exercise. 1 found eccentric exercise improved pain with activity 1 found significant improvement in pain with eccentric exercise at 12/52 1 found pain improved significantly more in eccentric group Moderate strength studies</p> <p>1 study compared HSR with eccentric exercise and found both programmes had significant improvement in pain &amp; function at 12 &amp; 52 weeks. No significant differences between groups. Moderate strength study.</p> <p>1 study compared eccentric exercise with stretching both groups had significant improvement in pain &amp; quality of life at 12/52 with no significant difference between groups. Low strength study.</p> <p>3 studies compared Alfredson eccentric exercise programme with eccentric programme of lower frequency &amp; intensity. There was no difference between VISA-A and pain VAS between the groups. Evidence low for function &amp; moderate for pain.</p>	
--	--	--	---	--

CAT Lead: Alison Morris  
Email: alisonl.morris@mpft.nhs.uk

Date CAT completed: 26/1/19  
Date CAT to be reviewed: 2022

			<p>1 study combined eccentric, concentric, power &amp; stretching &amp; compared high dosage programme where pain allowed with lower dosage pain free programme. No difference in function at 12/52 &amp; 6/12. Pain during activity same at 12/52 at 6/12 slight favour for lower dose programme.</p> <p>Authors concluded no support for clear recommendation of one type of exercise protocol over another for Achilles tendinopathy.</p>	
--	--	--	--	--

### Summary

Moderate quality evidence that eccentric exercise improves pain and function in mid portion Achilles tendinopathy compared with no therapy.

Moderate quality evidence that eccentric exercise improves pain during activity and pain rating compared with concentric exercise.

No difference comparing Alfredson protocol with lower frequency and intensity eccentric exercise protocol for improvements in pain and function.

Programmes	Type of exercise	Sets reps	Frequency	Progression /Pain
Alfredson	Eccentric	3 sets 15 reps	Twice daily	Load - enough load to achieve up to moderate pain

### Implications for practice

There is evidence to support the use of eccentric exercise over no therapy in the management of Achilles tendinopathy.

The evidence showed no difference between Alfredsons protocol and lower intensity and frequency eccentric protocols.

There is a lot of research on eccentric exercise in the management of Achilles tendinopathy, other exercise interventions have only been researched in recent years and on balance the evidence does not support the use of one type of exercise programme over another.

Therefore the review recommends the inclusion of eccentric exercise in a rehabilitation exercise programme to improve pain and function in Achilles tendinopathy.

CAT Lead: Alison Morris  
Email: [alisonl.morris@mpft.nhs.uk](mailto:alisonl.morris@mpft.nhs.uk)

Date CAT completed: 26/1/19  
Date CAT to be reviewed: 2022

## References

1. Wilson F, Walshe M, O'Dwyer T, Bennett K, Mockler D, Bleakley C. Exercise, orthoses and splinting for treating Achilles tendinopathy: a systematic review with meta-analysis. *British Journal of Sports Medicine* Epub 2018  
doi: 10.1136/bjsports-2017-098913.
2. Alfredson H, Pietilä T, Jonsson P, Lorentzon R. Heavy-load eccentric calf muscle training for the treatment of chronic Achilles tendinosis. *American Journal of Sports Medicine* 1998; 26: 360–366.
3. Alfredson H, Cook J. A treatment algorithm for managing Achilles tendinopathy: new treatment options. *British Journal of sports Medicine* 2007; 41(4): 211-219.
4. De Jonge S, Van den Berg C, De Vos RJ, Van der Heide HJL, Weir A, Verhaar JAN. Incidence of midportion Achilles tendinopathy in the general population. *British Journal of sports Medicine* 2011; 45(13): 1026-1028.