

# Tendinopathy

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## Achilles Tendinopathy - Recent History of Research

Two famous research papers have laid the platform for a vast improvement in the way tendon disease is managed. Both studies examined the value of exercise in treating chronic Achilles tendinopathy:

*Stanish et al* in 1986 were the first authors to introduce the concept of eccentric exercise to promote tendon healing. They recognized that physiologically, eccentric (lengthening) muscle contraction forces may exceed concentric (shortening) and isometric (static) contraction forces up to threefold. They theorized that such forces would more successfully stimulate adaptation. The same authors also discussed the negative effects of rest and immobilization on bone, muscle, tendon and ligamentous tissues. For instance, it was found that normal primate ligaments when immobilized for 8 weeks, took 12 months to regain normal strength. Immobilization had long been advocated for painful tendons, and even today this is frequently prescribed. However immobilization is almost certainly counter-productive and most likely harmful to the tendon.

Other important strengthening concepts discussed by these authors included progressive load, and the speed of muscle contraction. Increasing speed greatly increases force development, and is one of the important late stage (e.g. prior to return to sport) training considerations.

The authors proposed that not only was pain allowed during exercise rehabilitation for tendon disease - it was considered to be essential. In their study, 200 patients with chronic tendinopathy (mean duration 18 months) were placed on an eccentric strengthening programme, performed over 6 weeks. 87% of

subjects had complete or near complete reduction in pain and return to normal function. The mean follow-up was 16 months.

*Alfredson et al* in 1998 published their study on heavy load eccentric training for chronic Achilles tendinopathy. They acknowledged the work of Stanish et al, but reported that prior to 1998 there had been no prospective studies on this training method. 15 recreational athletes (12 males) with symptoms of mid-substance Achilles tendinopathy present a minimum of 3 (and up to 100) months (mean 18 months) had been placed on a surgical waiting list. They were given twice daily eccentric exercises consisting of both straight and bent-knee calf raises. The load was progressively increased using a weighted back pack.

At 3 months all patients had full or significant relief of symptoms, and return of full strength and function. None required surgery. They were compared to 15 matched patients who underwent surgery. The surgical group took twice as long for symptoms to abate, and still had significant strength deficits at 6 months.

For over a decade following the Alfredson paper, eccentric loading became the standard management for all forms of tendinopathy. However equivocal results led to a re-think, and a tremendous amount of further research. Recent work by Cook and Purdam has been at the forefront of this research. It became apparent that not only were there different stages and types of tendon disease within each tendon, such as the Achilles, but also different responses dependent

to the anatomical location in the body. There has been a dramatic change in the way exercises are prescribed, and a recognition that purely eccentric training is sometimes harmful, and only part of the training load stimulus necessary for optimal functional recovery. A complete training regime will include isometric, concentric and eccentric loading, as well as dynamic and kinetic chain (the body as a whole) functional strengthening.

**References:**

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