

**The Effects of Eccentric Exercise Vs. Extracorporeal Shockwave Therapy in the Patellar Tendinopathy
Athlete Population: A Meta-Analysis And Systematic Review**

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Abstract:

Purpose: The purpose of this study was to compare the long-term effects of eccentric exercise (EE) on pain and function to those of extracorporeal shockwave therapy (ESWT) in athletes with patellar tendinopathy (PaT). It is hypothesized that EE will result in a greater treatment effect than ESWT for both reducing pain and improving function.

Background: Patellar tendinopathy is a highly prevalent orthopedic condition among both recreational and elite athletes.¹ In elite volleyball and basketball athletes, prevalence rates have been reported as high as 45% and 32% respectively.² It is therefore important to compare the efficacy of new physical therapy interventions for PaT such as ESWT with popular interventions such as EE. Recent systematic reviews have recommended both EE and ESWT for use in this population, however no studies have directly compared the 2 interventions in athletes with PaT.^{3,4,5}

Methods: Search procedures followed Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines using the PubMed, CINAHL, and Cochrane Library databases. Inclusion criteria consisted of: athletes ages 18-50 years, PaT for >3 months, EE, ESWT, Visual Analog Scale (VAS) measuring pain, Victorian Institute of Sport Australia – Patella (VISA-P) measuring function. Means and standard deviations for both the VAS and VISA-P outcome measures were imported into the OpenMeta[Analysis] software program, and a fixed-effects model used to calculate effect sizes based on a 95% confidence interval. A separate systematic review was conducted on athletes with lower extremity tendinopathies, including PaT and Achilles tendinopathy (AT).

Results: The meta-analysis found EE to be superior to ESWT for both decreasing pain [ES (95% CI) = 2.363 (1.075, 3.651); P = 0.692; Q = 0.157] and improving function [ES (95% CI) = 18.790 (8.604, 28.977); P = 18.790; Q = 1.562]. The systematic review found strong evidence to support the use of EE for AT, moderate evidence in support of EE and ESWT individually for PaT, and weak evidence in support of ESWT for AT.

Conclusion: The results confirm the alternative hypothesis and reject the null. Eccentric exercise is more effective than ESWT at addressing PaT symptoms in the athletic population. Both interventions are effective for athletes with PaT or AT.

Clinical Relevance: Physical therapists should prescribe EE, using the Alfredson protocol⁶, first for athletes with PaT. Extracorporeal shockwave therapy is a viable secondary treatment option for patients that fail to respond to eccentrics alone. As more evidence arises in support of its efficacy, the use of ESWT seems to be increasing in US physical therapy clinics.