



@physicaltherapyresearch

# RAPID RESEARCH

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December 2023

## Inside This Week: Tendon Loading Protocols

- ✓ 12-Week High-Loading Tendon Exercises
- ✓ Alfredson vs. Silbernagel Loading Protocols
- ✓ Achilles Protocols With v. Without Passive Treatments



# 12-WEEK HIGH-LOADING TENDON EXERCISES

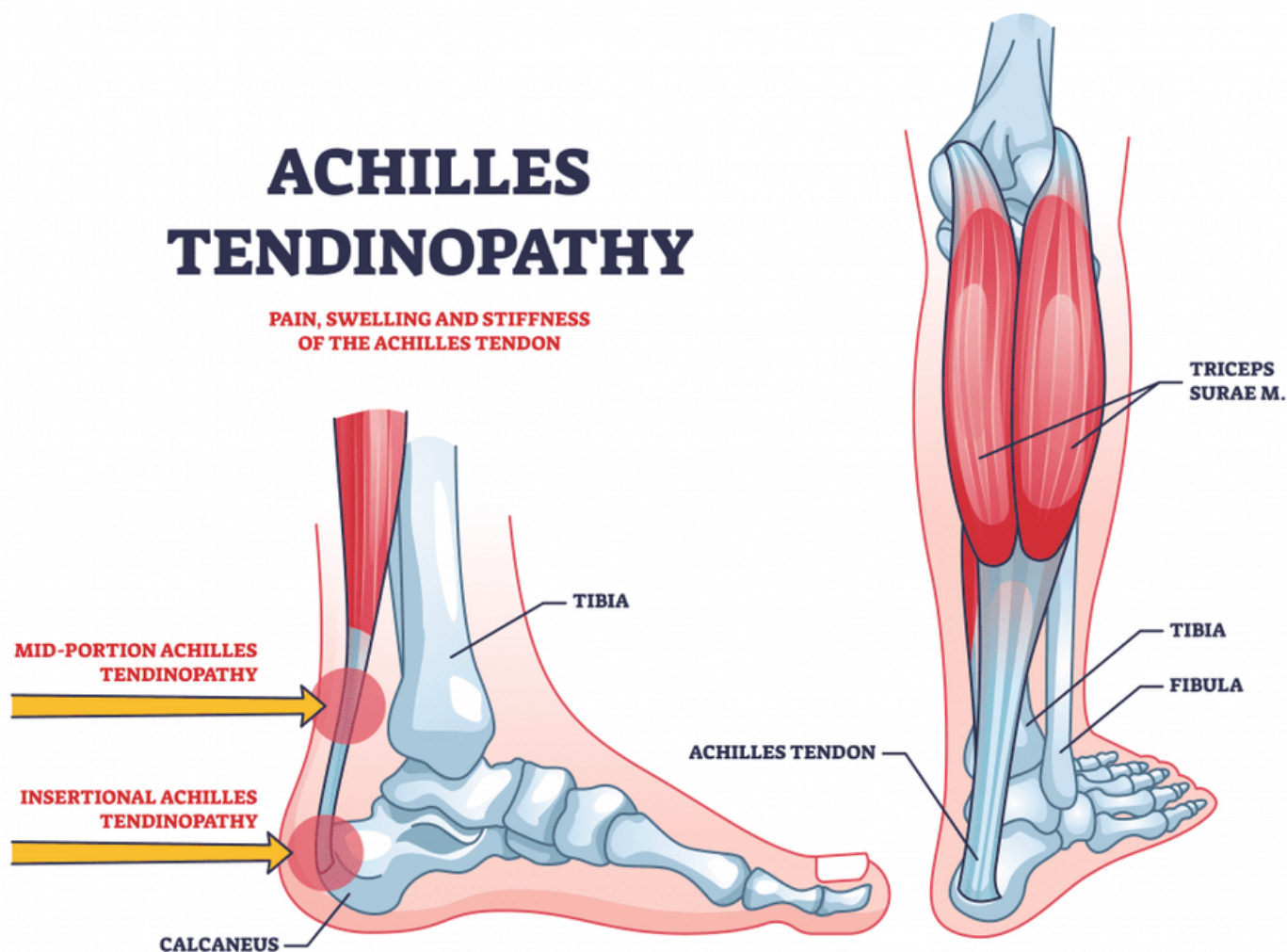
DECEMBER 2023

[Click for Full Text  
\(Radovanović et al.  
2022\)](#)

This study investigated the effectiveness of high-loading exercise in Achilles tendinopathy.

## ACHILLES TENDINOPATHY

PAIN, SWELLING AND STIFFNESS  
OF THE ACHILLES TENDON



# KEY FINDINGS

**39 patients included, controlled clinical trial with 3-mo intervention.**

## **High Loading Outcomes:**

Plantar flexor MVC [ $7.2 \pm 9.9\%$ ]

Tendon stiffness [ $20.1 \pm 20.5\%$ ]

Average CSA [ $8.98 \pm 5.8\%$ ]

Maximum Tendon Strain [ $-12.4 \pm 10.3\%$ ]

## **Passive Therapy Outcomes:**

Stiffness decreased [ $-7.7 \pm 21.2\%$ ]

## **Other Outcomes:**

No change in Young's modulus in either group.

No change in DJ height and vascularity in either group.

VISA-A score increased in all groups on average by [ $19.8 \pm 15.3$ ]

Pain (NRS) dropped by [ $-0.55 \pm 0.9$  points]

CMJ height decreased for all groups [ $-0.63 \pm 4.07$  cm]

# MAIN TAKEAWAYS

High-loading intervention in Achilles tendinopathy in males induced superior adaptations in tendon stiffness, maximum tendon strain and cross-sectional area as well as similar clinical improvements when compared to standard eccentric exercise or passive therapy.

High-loading exercise-induced adaptations may further lead to prolonged benefits as improved mechanical and morphological tendon properties might protect the tendon from strain-induced micro-damage and pain.

We recommend the high-loading intervention as an effective (alternative) therapeutic protocol in Achilles tendinopathy rehabilitation management.

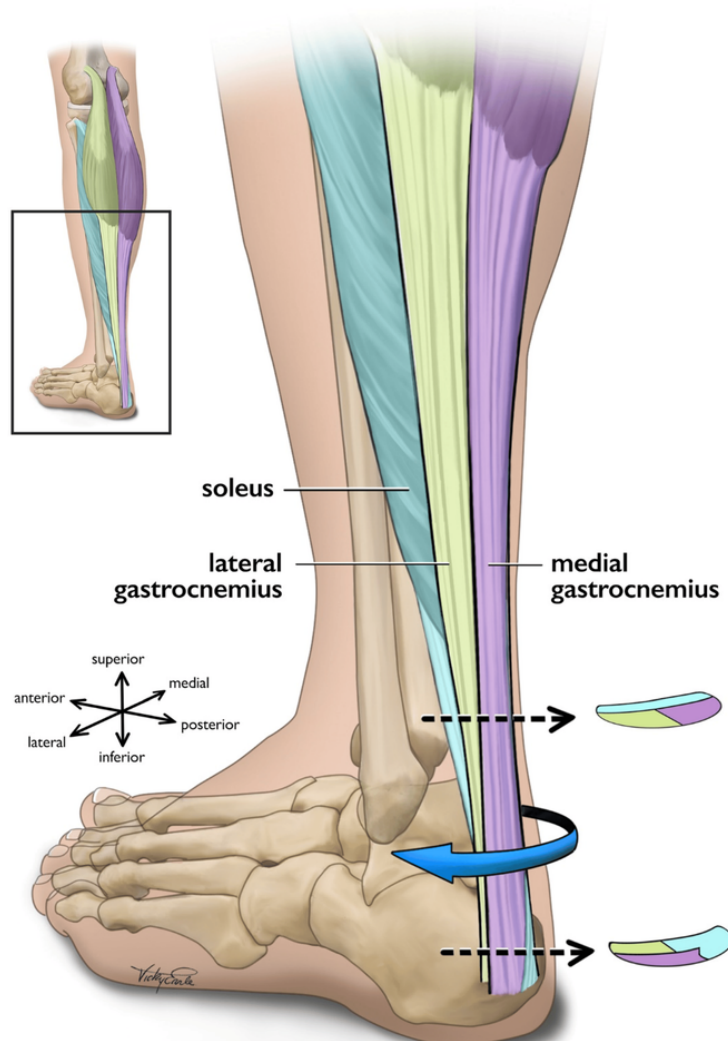


# ALFREDSON VS. SILBERNAGEL LOADING PROTOCOLS

DECEMBER 2023

[Click for Full Text  
\(Habets et al. 2021\)](#)

This study tested for differences in clinical effects at 1-year follow-up between Alfredson and Silbernagel loading in midportion Achilles Tendinopathy (AT).



**40 athletes allocated to Alfredson group (AG) or the Silbernagel group (SG).**

Primary Outcome: Victorian Institute of Sports Assessment-Achilles (VISA-A) at 1yr

## **VISA-A Score:**

AG Improved [ 60.7 to 89.4]

SG Improved [59.8 to 83.2]

Correction for baseline VISA-A and confounders revealed a nonsignificant treatment effect.

Nonsignificant treatment effects were found for the VAS-ADL and VAS-sports.

The EQ-5D sub-scales improved in both groups.

After 1 year, significantly more SG participants considered themselves improved

**77.3% [SG] vs 50.0% [AG]**

# MAIN TAKEAWAYS

No differences in clinical effects were found between Alfredson and Silbernagel loading at up to 1-year follow-up.

Both programs significantly improved clinical symptoms.

Both programs have high adherence rates, so offering either of them as a home-based program with limited supervision appears to be an effective treatment strategy for mid-portion AT.

# ACHILLES PROTOCOLS WITH V. WITHOUT PASSIVE TREATMENTS

[Click for Full Text  
\(Maetz et al. 2023\)](#)

This systematic review compared exercise loading protocols with passive treatment modalities for the management of midportion AT and compared different exercise loading protocols.



# KEY FINDINGS

**12 RCTs, 543 participants included.**

## **Passive Interventions:**

Greater pain reduction in short term vs eccentric loading protocols.

Function improved in short and medium term favoring eccentric loading.

Meta-analyses of RCTs comparing different types of exercise loading protocols showed no significant differences in the short, mid-, and long term with regard to pain and function.

# MAIN TAKEAWAYS

**Our meta-analyses did not highlight the superiority of one treatment over another for mid-portion AT.**

**Those results should not stop clinicians from prescribing progressive loading exercises, either in the form of eccentric or a heavy-load, slow-speed (concentric/eccentric) exercise program.**

**Further research could investigate the different components of loading exercise protocols to identify which parameters have the most influence on pain and function (eg, the load, the speed, the time under tension, or the number of repetitions).**

# GIVE US YOUR FEEDBACK!

## MEMBERS

We are on a mission to make research more accessible, easier to interpret, and quicker to implement.

Help us by giving 1 minute of your time to leave feedback for us.

We would greatly appreciate any feedback you have, as it helps us continually improve!

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