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## Eccentric and Isometric Exercises in Achilles Tendinopathy Evaluated by the VISA-A Score and Shear Wave Elastography

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### Setting the scene:

Apart from eccentric exercises (EE), isometric exercises (ISO) might be a treatment option for Achilles tendinopathy. Shear wave elastography (SWE) provides information for diagnosis and for monitoring tissue elasticity, which is altered in symptomatic tendons. This study hypothesized that Isometric exercises will have a beneficial effect on patients' outcome scores. Based on SWE, insertional and midportion tendon parts will differ in their elastic properties according to current symptoms.

### What did they do?

Group 1 (12 males, 8 females) performed EE twice per day, with 3 sets of 15 repetitions on a step for 3 months. Participants started by standing on tiptoe on the affected leg while lowering the heel with an extended knee slowly under the level of the step and holding this position for 2 seconds. Then all the weight was loaded on the other leg so that the patient got back into the initial position without performing concentric calf muscle contractions of the symptomatic foot. Patients with insertional AT were instructed to not lower the heel under the level of the step to prevent impingement of the calcaneus and the insertional Achilles tendon. Participants were informed that exercises might be painful and that initial symptoms might increase and group 2 (15 males, 7 females) performed EE the same way as group 1. Additionally, they performed ISOs once per day, with 5 sets of 45 seconds each. There were 3 levels of loads that built on one another. Patients were briefed to do the exercises cautiously and pain-free, going to the next level if they were not feeling pain or exhaustion at maximum load. At load level 1, patients were standing 45 seconds on the tip of toes of both legs, whereas at load level 2 they were standing with all their body weight just on the symptomatic leg. At level 3, individuals further increased the load by pushing themselves down while standing under a door frame. Patients were advised to choose the amount of plantar flexion themselves, depending

were they felt the maximum load. Both groups improved significantly, but there were no significant differences between groups

### **Takeaway message:**

Isometric exercises do not have additional benefit when combined with eccentric exercises, as assessed over a 3-month intervention period. This study showed no additional effect of ISO when added to baseline EE in treating Achilles tendinopathy.