

# Simple, at-home toe yoga exercises can help ease pain of shin splints

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Unfortunately, most runners will experience shin splints at some point, and though questions remain about what causes this lower leg pain and how to fix it, one thing's clear: At their worst, shin splints can be

debilitating and excruciating.

A new University of Michigan study found that shin splints impact more muscles than previously thought, including small, often overlooked muscles in the calves and [feet](#), and these findings support the idea that simple, at-home toe yoga exercises targeting foot muscles could really help speed healing.

## What are shin splints?

Shin splints, one of many [muscle](#)-related lower leg pain injuries, are the most common form of running injury for all ages, says Alexandra DeJong Lempke, clinical assistant professor of applied [exercise science](#) at the U-M School of Kinesiology. This pain in the shins during walking or running ranges from mildly uncomfortable to debilitating, and different theories exist about what causes them—heavy footfalls, longer foot-time on the ground during stride, lack of flexibility or too much flexibility are a few. And because there's no consensus, this pesky condition is harder to prevent and treat.

## Key findings from studying shin splints in adolescents

Using ultrasound, DeJong Lempke and her team imaged the legs and feet of adolescents who did and did not experience shin splints. It's the first study to use ultrasound in adolescents to evaluate muscles and tendons for lower leg injuries like shin splints, and this enabled researchers to see these compromised smaller, overlooked muscles.

Key findings:

- Compared to healthy runners, injured runners had decreased foot and calf muscle and tendon size. Also, the angle of certain

muscle fibers in the calves and feet decreased, which indicates reduced strength and quality of muscle.

- More muscles in the feet and calves of injured runners were compromised than previously thought. Knee tendon quality changes suggest that an [injury](#) lower in the leg or foot may cause abnormalities higher up. Assessing the whole person is important when developing a therapy plan.
- Musculoskeletal ultrasound is a good tool in formulating rehabilitation plans for these injuries. Standard practice for non-acute lower leg injuries like shin splints is to manually test strength and flexibility, but does not include images.
- Toe yoga exercises to strengthen foot core muscles could be very helpful in rehabilitation programs for adolescent runners.

Most lower limb injuries like shin splints are repeat injuries, DeJong Lempke says, and the hope is that these interventions could help derail that cycle.

### **Toe yoga or short foot exercises**

"This is a pretty simple, brief intervention that has good long-term effects, and is harder than it looks, especially for people who are injured," DeJong Lempke said.

The exercises have gained popularity in recent years for lower leg and foot conditions, such as [plantar fasciitis](#) and flat feet:

- Start with feet flat on the floor.
- Focus on bringing the ball of the foot closer to the heel by contracting the muscles in the arch, causing it to rise.
- Don't curl the toes under. Keep them on the floor and shorten the foot.
- Variations include raising the toes or just the big toe, standing on

one foot, etc.

DeJong Lemke says these are high repetition exercises because they target endurance muscles. Recommendations range from 50 to 300 repetitions several times a day. Start slow.

The research appears in the journal *Physical Medicine & Rehabilitation (PM&R)*. It provides the foundation for further studies to determine if strengthening exercises heals muscles and tendons and also alleviates pain in adolescents, and to determine the root cause of [shin splints](#).

**More information:** Alexandra F. DeJong Lempke et al, Adolescent exercise-related lower leg pain musculotendinous characteristics, *PM&R* (2023). [DOI: 10.1002/pmrj.12960](https://doi.org/10.1002/pmrj.12960)

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