

# 2024-08-06th Ankle Heating or Cooling Brace random idea

Author: Michael Kubler

Date: 2024-08-06th

## Idea

I'd love a shoe or **leg brace which I can plug into a wall socket and it could use some smarts to heat up or cool down my Achilles tendons and ideally even massage it.**

The aim is to be **decreasing injury healing time.**

Maybe it could also be used for other things as well.

## Implementation Possibilities

I assume you'd have a power cord connected to the device as heating and cooling can take a decent bit of power.

You could use a graphite rod for providing the heat (putting power through it). Then switch to a peltier effect chip for the cooling. To extract the heat away. Or maybe you could even a heat pump system which would be more energy efficient and wouldn't cause it to radiate nearly as much heat.

The big thing missing from the images is that you'd probably need a fan and cooling fins to extract the heat away.

Another option is to use an ice pack or ice cubes for the cooling.

That's not going to be as convenient and will mean you've got to empty the device of water and have to make it very water proof.

Ideally it will have a bunch of temperature sensors, especially skin contact temperature sensors and the point is that it can regulate the skin temperature to optimal levels to bring blood flow to the region.

Maybe a deluxe version of it includes a sensor, like in a smart watch, for tracking blood flow.

If there's a Bluetooth connection then the data can be streamed to a phone as medical historical data. But also, you can set the rhythm, speed, temperature ranges, massage strength and other parameters depending on what's needed.

You could use it to simply cool down a body part that's been partly burned. Or use it to heat someone going to be affected by hypothermia. You could help with body temperature regulation, although you'd probably want a body suit around the chest for that.

There's a bunch of different options and uses. Including just a nice warm massage.

Instead of a physical massager you could use electrodes that zap the muscles to make them spasm. It's not very pleasant, but it might be useful in certain circumstances.

## **Sample images**

This is the closest to my vision and most what I had in mind. A leg brace that could be placed nearly anywhere on someones leg or even arm and

heat/cool as needed.



A decent boot design. By being a boot it would have more capability to massage the back of the ankle by having the whole foot to press up against. But it would be more specific to the foot or ankle and not easily used for other

spots.



Another scifi shoe image from Midjourney.

This looks more like what I'd expect a Mars boot for snow skiing would look

like.



Another boot concept. This is a bit more like a Cyberpunk idea. But I like the way it goes up further on the back of the ankle than others. Although it still goes even more up the front area which isn't useful for me, but makes it look

like a moon boot.



A wrist concept idea

I like this one, it's somewhat wide and looks like it would be somewhat

adjustable in size.



Another wrist concept idea.

This looks scifi futuristic, but not very practical.



## Context

My Achilles tendon has been sore, for many weeks.

Using a hot and cold pack helps increase blood flow.

To do this properly I currently go down stairs and boil some water and grab an ice pack from the freezer.

I then put some of the boiling water in a hot water bottle (bag).

Then I stretch out on the bed and place them with a pillow covering the hot bag or ice pack so I can move my right leg to just the right spot.

I've then got to switch between somewhat burning hot and somewhat freezing cold and try to massage my tendons in between.

This is time consuming and annoying. But also hard to organise. We've got screaming kids running around, Xander isn't even 2yrs old and could hurt himself playing with the hot pack.



Usually it's a fairly long time between boiling the water and being able to get settled down to watch a movie or something and being able to use it. So the hot water is usually more like luke warm. Or it's still too burning hot.

Interestingly the ice pack lasts a pretty long time.