

# Heat Therapy Study

---

**Title: Passive heat therapy for lowering systolic blood pressure and improving vascular function in mid-life and older adults**

Principal Investigator: Douglas Seals, PhD

Location: Main CU Boulder Campus



## Contact Us:

[ipalab@colorado.edu](mailto:ipalab@colorado.edu)

303-735-6410

[sealslaboratory.com/heat](http://sealslaboratory.com/heat)

## Goals of this Clinical Trial:

- Determine if **12 weeks** of sitting in a hot tub **three times per week** will:
  - Reduce systolic blood pressure (top number in blood pressure reading)
  - Improve blood vessel function (how well they expand and contract to deliver blood to important organs)
  - Improve brain and motor function

# Why is this research important?

Many adults have high systolic blood pressure (SBP; the top number in a blood pressure measurement), which can increase the risk of having a heart attack and other heart problems. Heat therapy, or using hot baths and saunas, is one proposed treatment for high blood pressure. It may improve blood vessel function and blood pressure by raising body core temperature and heart rate, providing effects similar to exercise. We have shown that heat therapy improves blood pressure and blood vessel function in a small study, and we are now conducting a larger study to confirm those initial results.

# Who is eligible to participate?

We are looking for individuals:

- 40 years or older
- Who have a systolic blood pressure (top number) between 115-159 mmHg
- Who are willing to come to CU Boulder to sit in a hot tub or thermoneutral (same temperature as your body) tub three times per week for 3 months
- Who are NOT currently taking: anticholinergics, alpha-blockers, or beta-blockers (please reach out if you are not sure if you are taking these)

*We will further assess your eligibility once you complete this [screening form](#).*

# What do I receive for participating?

- Payment for your time (up to \$905 USD)
- Reimbursement for travel (current federal rate)
- Results from the tests we perform: blood work, blood pressure, artery stiffness, etc.

# What happens at the screening visits?

Once we review your screening form, you will be invited to partake in screening visit #1 where we will explain the study to you and perform some tests to see if you qualify for the study. This can either be done completely in-person or on two separate days, one over Zoom and one in-person at our facility on the main CU Boulder Campus. The entire visit takes ~3.5 hours. If it seems like you may qualify after screening visit #1, you'll be invited in for screening visit #2.

The screening process entails:

## Visit 1

- Informed consent (review of the study and the risks/benefits)
- Paperwork
- Height and weight measurement
- Bloodwork
- Blood pressure and heart rate measurement
- Blood vessel function
- Bone density and body composition measurement

## Visit 2

- Blood pressure and heart rate measurement
- Physical exam by physician
- Heart health (assessed with exercise stress test)

You'll need to fast (no food or drink except water) for 12 hours prior to visit 1.

# What happens during the study?

This study requires ~75-80 hours of your time over the course of ~7-8 months.

If you qualify for the study, you will be invited to take part in baseline testing, which entails the following measurements:

- Blood vessel function, artery stiffness, and brain artery function measures (performed with a sensor placed on the surface of your skin)
- Blood work (i.e., cholesterol, blood sugar, inflammation)
- At-home blood pressure monitoring
- Cognitive function measures (assessed on a lab-provided iPad)
- Questionnaires about your activity, sleep, etc.

You'll then be randomly assigned to one of two tub groups: hot or thermoneutral (same temperature as your body). You will visit our facility 3 times/week for 3 months and sit in the tub for ~60 minutes.

After completing 3 months of heat therapy, we will invite you in for post-testing, where we will repeat the same measures performed at baseline so we can see if anything changed.

At each tub session, we will measure your blood pressure and monitor you to ensure safety. We will monitor your temperature via a small pill that you ingest prior to 5 of the 36 tub sessions (see image and FAQs for more info).

4 weeks and 12 weeks after post-testing (2 visits total): You will be invited in for follow-up testing where we will assess your blood pressure, blood vessel function, and artery stiffness so we can see if any of the changes we observed from baseline to post-testing were sustained even after you finish your tub sessions.



# FAQs

**Q: Where are you located?**

A: Our facility is located on the main CU Boulder Campus in the Ramaley West Extension. We are directly south of the Student Rec Center. You can click [here](#) for an exact location.

**Q: Where can I park?**

A: We offer parking close to our facility in Lot 380 and Lot 386. Parking is free for the duration of your visits to our facility. If you require assistance getting from your car to our facility, we have golf carts we can use to help transport you.

**Q: I have some vacations coming up. Can I still be in the study?**

A: We are flexible and can accommodate most vacation schedules, so long as you aren't gone for over three weeks during a 15-week period. Please communicate any upcoming vacations to us early on.

**Q: How long are you taking participants for?**

A: We are enrolling participants on an ongoing basis. If you have an extended trip coming up, we can schedule you to undergo screening after your trip.

**Q: Should I stop taking my medications or change my diet/exercise routine for this study?**

A: Unless instructed by your provider, you should continue taking all medications as prescribed. We may ask you to refrain from consuming over-the-counter supplements before your visits, but this is only for non-prescribed supplements. ***We ask that you inform us of any lifestyle changes during the course of the study, including changes in medications/supplements (doses included!), exercise routine, and diet, as these could potentially impact our measurements.***

**Q: How is payment received?**

A: You will be paid at the end of the study in the form of a check mailed to you ~1 month after you complete it. If you would prefer, we are happy to pay you throughout the study.

**Q: I'm uncomfortable with having an individual of the opposite sex perform certain measurements on me. Can you still accommodate me?**

A: Your comfort and safety is our first priority. We can make adjustments in our staffing to ensure you feel comfortable. The same thing goes for any measurement--if you are uncomfortable with us performing any measurement, we can adjust to ensure your comfortability. Before each visit, we will send you in-depth details of the measurements and verbally obtain your consent to perform each measurement. You can opt out at any point in time.

**Q: What is this temperature-sensing pill?**

A: The temperature-sensing pill is about ~0.5 inches long and is manufactured by BodyCAP USA. It is FDA-approved for clinical and research applications. You'll be asked to swallow this pill before five of your 36 tub sessions, and the study team will be able to measure your core temperature. You should not undergo an MRI until you visually confirm the pill has passed in your stool.

**Q: Are other study participants in the tub at the same time as me?**

A: No, you will be the only one in the tub, which is located in a private room in our facility. A research assistant (of the same sex, if requested) will be with you for the duration of the session to monitor you for safety reasons. You're welcome to bring a book during the session. Your comfort, safety, and privacy is our priority!

**Q: What if I don't own a swimsuit?**

A: You are welcome to wear a t-shirt/sports bra and shorts if you do not own or are not comfortable in a swimsuit. If this is a barrier for you, please reach out to the study team. We are happy to work with you to accommodate you!

**Q: Can I use my own hot tub instead? Or what about my own sauna?**

A: Unfortunately, you will need to come to our facility to undergo the tub sessions since we need to monitor you. You will become good friends with our staff because of this! :) If you would like to use your own hot tub or sauna in addition to the tub sessions you complete with us, please reach out to discuss with our team.

**Q: How often do you clean the tub? Is it chlorine or saltwater?**

A: Our tubs are chlorine-based. Routine maintenance is performed every two days, and the tubs are deep-cleaned once a month.