

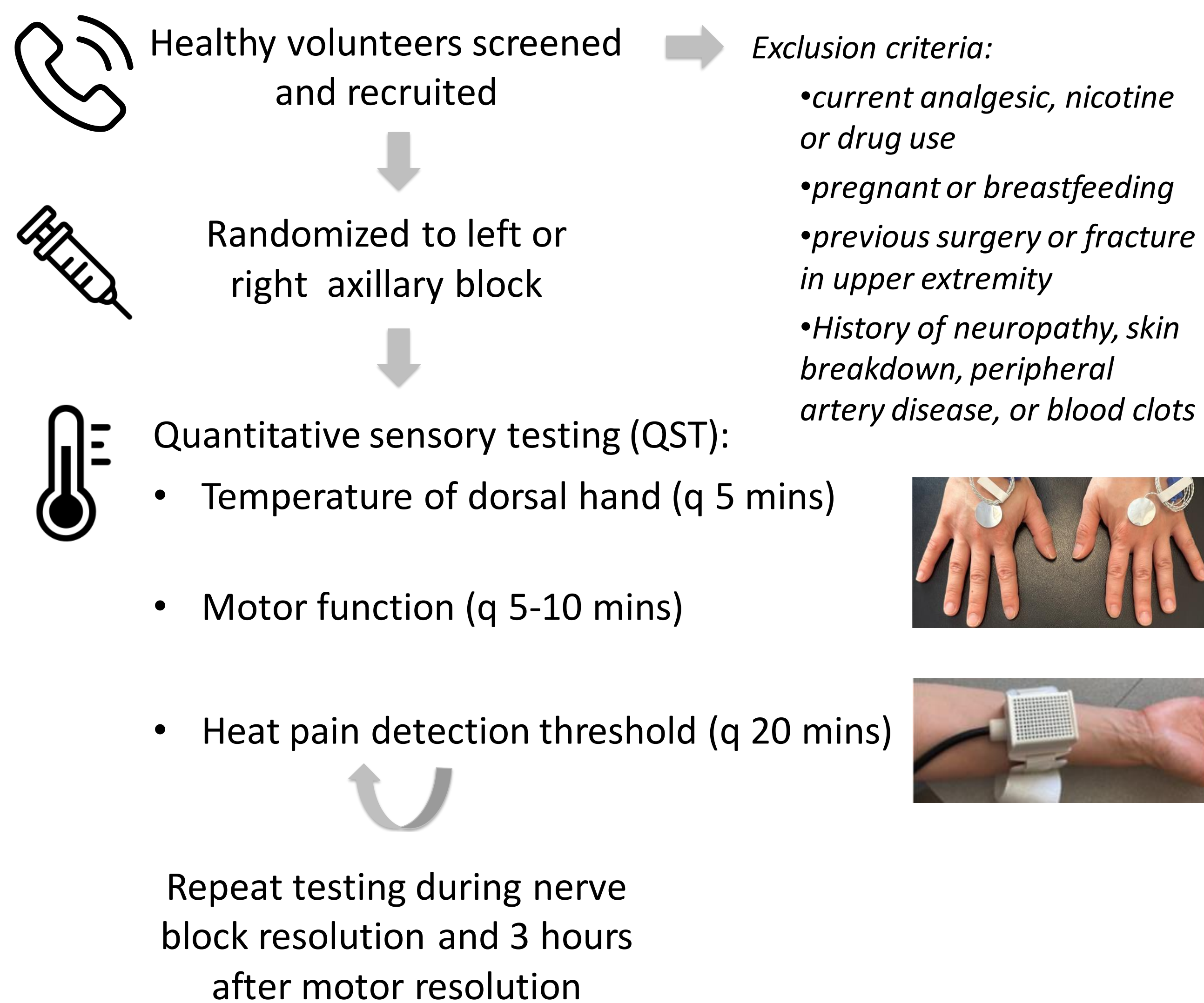
Background

- Temperature changes in the upper or lower extremity have been used as markers for successful sympathetic blockade from stellate ganglion and lumbar sympathetic blocks, respectively.^{1,2}
- Peripheral nerve blockade, which blocks sympathetic autonomic nerves along with sensory and motor nerves, results in vasodilation and subsequent increase in temperature,³ which may be an important benefit of regional anesthesia in plastic and vascular surgery.⁴

Aim

- To characterize the trajectory temperature changes after an axillary nerve block and its relationship to motor and sensory onset and resolution

Methods



Figures

Figure 1. Difference in temperature between arms

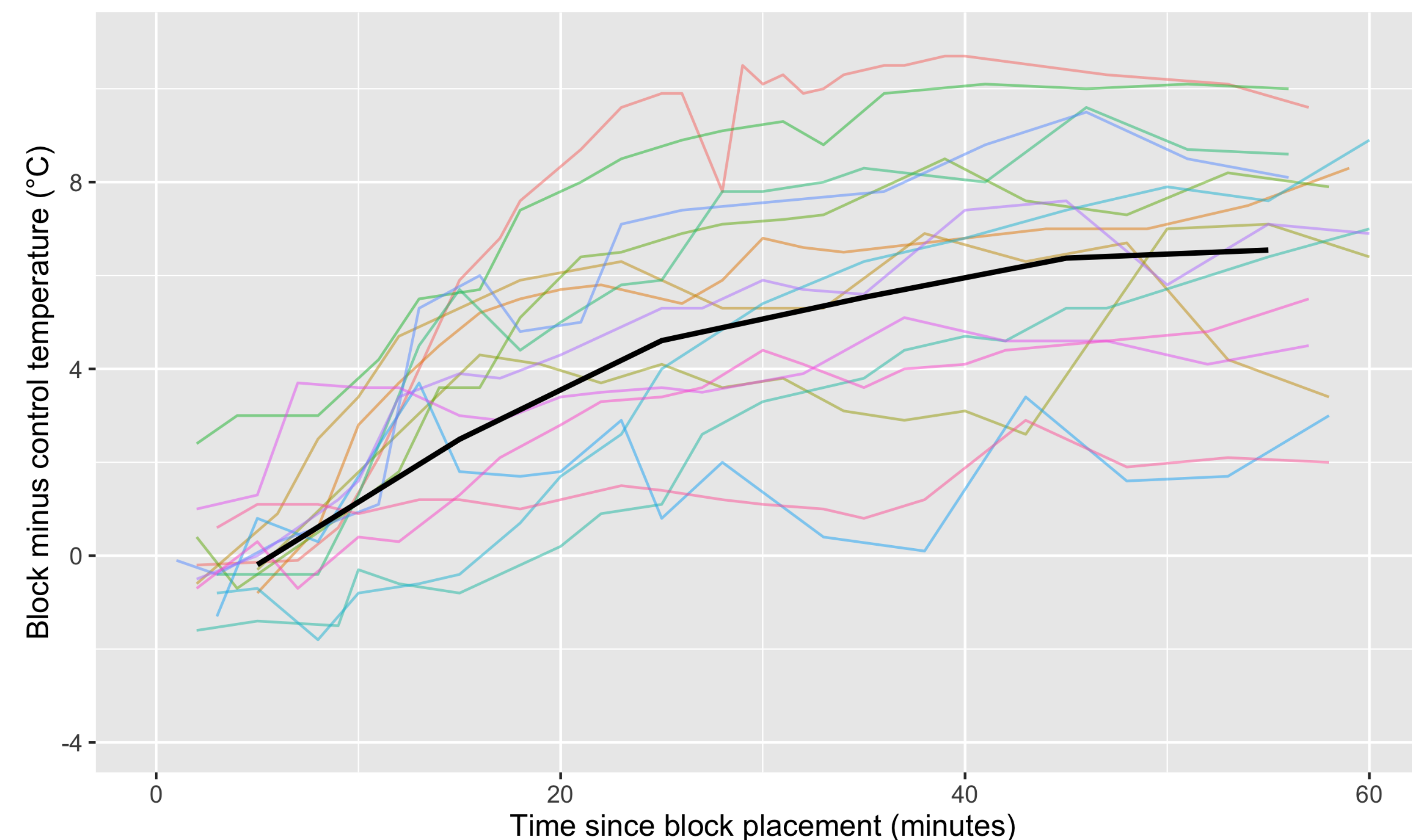
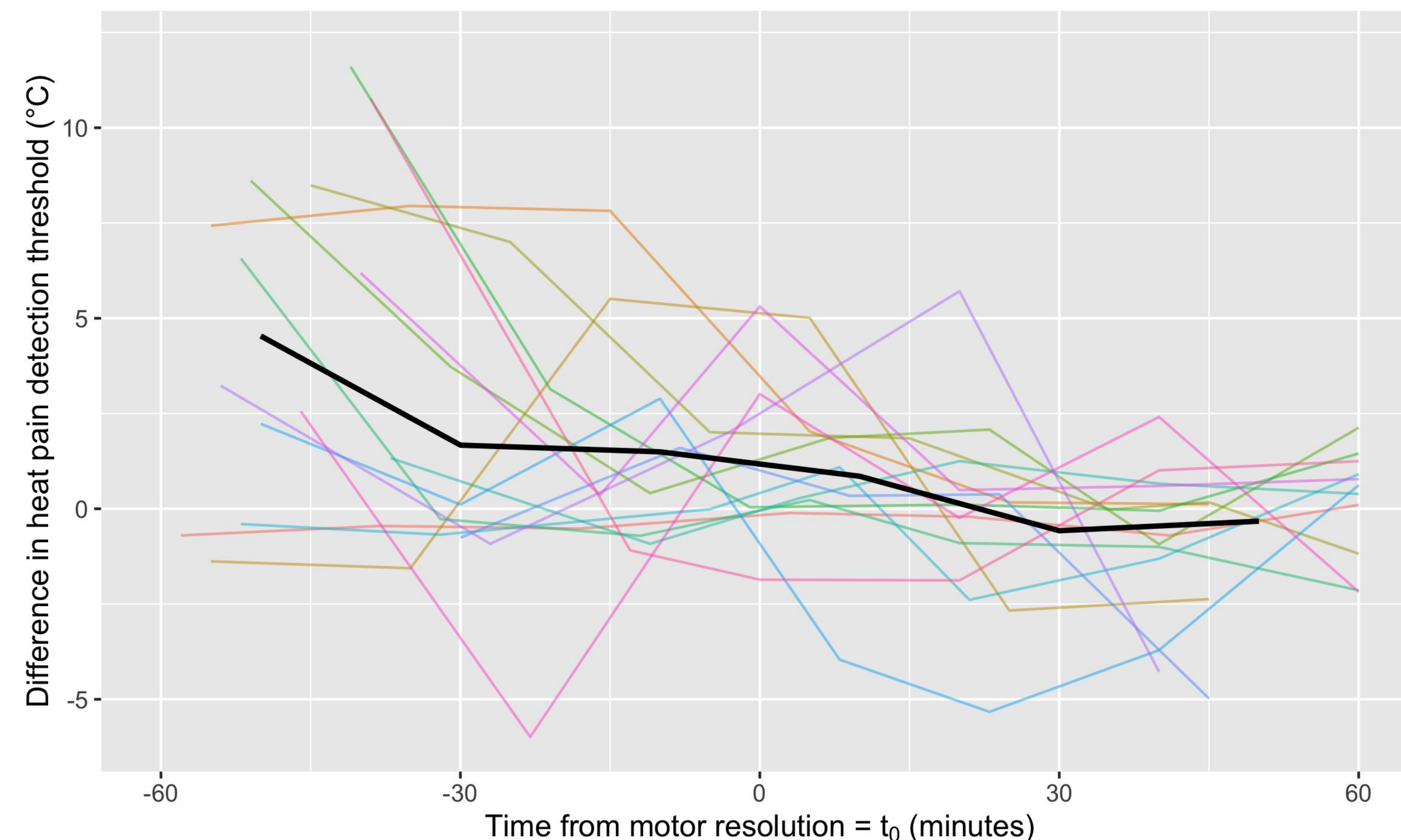


Figure 2. Difference in heat pain detection threshold (block minus control arm)



Results

Table 1. Demographics

Age	Mean ± SD = 42.1 ± 15.7		
Gender	Female: 7	Male: 7	Did not identify: 1
BMI	Mean ± SD = 23.8 ± 3.1		
Ethnicity	Caucasian: 12	Asian: 1	Other or did not specify: 2

Table 2. Temperature difference (°C block-control)

Timepoint	Mean difference [95% CI]	SD	p-value
Baseline	-0.38 [-1.11, 0.35]	1.31	0.28
30 mins after nerve-block	5.59 [4.17, 7.02]	2.58	<0.01
60 mins prior to motor resolution	5.87 [4.26, 7.49]	2.91	<0.01
At time of motor resolution	4.68 [3.29, 6.07]	2.52	<0.01
60 mins after motor resolution	1.26 [0.43, 2.09]	1.50	<0.01

Table 3. Heat pain detection threshold difference (°C block-control)

Timepoint	Mean difference [95% CI]	SD	p-value
Baseline	-0.91 [-1.86-0.05]	1.72	0.06
At first QST post nerve-block	9.36 [7.62-11.11]	3.15	<0.01
60 mins prior to motor resolution	4.74 [2.20-7.29]	4.60	<0.01
At time of motor resolution	1.16 [-0.16-2.48]	2.38	0.08
60 mins after motor resolution	0.41 [-0.60-1.42]	1.82	0.40

Conclusion

- After an axillary block, significant skin temperature differences compared to control arm persisted longer than 60 minutes after return of motor function
- Skin temperature may serve as a noninvasive proxy for sympathetic blockade
- Prolonged vasodilation may lead to changes in core temperature and hypothermia in at risk patients

References

- Park SY, Nahm FS, Kim YC, Lee SC, Sim SE, Lee SJ. The cut-off rate of skin temperature change to confirm successful lumbar sympathetic block. *J Int Med Res.* 2010;38(1):266-275. doi:10.1177/147323001003800131
- Stevens RA, Stotz A, Kao TC, Powar M, Burgess S, Kleinman B. The relative increase in skin temperature after stellate ganglion block is predictive of a complete sympathectomy of the hand. *Reg Anesth Pain Med.* 1998;23(3):266-270. doi:10.1016/s1098-7339(98)90053-0
- Minville V, Gendre A, Hirsch J, et al. The Efficacy of Skin Temperature for Block Assessment After Infraclavicular Brachial Plexus Block. *Anesth Analg.* 2009;108(3):1034. doi:10.1213/ane.0b013e318195bf94
- Jorgensen MS, Farres H, James BLW, et al. The Role of Regional versus General Anesthesia on Arteriovenous Fistula and Graft Outcomes: A Single-Institution Experience and Literature Review. *Ann Vasc Surg.* 2020;62:287-294. doi:10.1016/j.avsg.2019.05.016