Skin Deep: The Effect of Skin Temperature on Touch Perception

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How does skin temperature affect the human body's ability to perceive touch? First, I had informed consent forms signed by all my test subjects. I had each student hold ice their arm until their skin temp dropped to 20°C. I used a two pronged probe to touch the iced area while they closed their eyes. Every time they were able to consistently identify the number of touches, I narrowed the gap between the prongs until they could no longer determine how many touches it was. I recorded the distance between the prongs. I repeated this at 30° and 40° using a hot water bottle to raise the temp. I did this again on the finger and cheek. I put my data in charts and graphs. The distance between the probes was greater at 20° than it was at 30°. This means the students were not perceiving touch as well at 20° than at 30°. In addition, the distance between the probes was even smaller at 40° than at 30°. I also noticed that as the temp went up, the distance did not decrease as much on the finger. This is most likely due to the finger having a higher nerve density and being more sensitive. The data suggests that skin temp has an effect on touch perception. As the temp goes up, our ability to perceive touch does too. I believe it will be more of a curve that flattens out then goes down again, as the difference from 30° to 40° was less than from 20° to 30°. I have came to the conclusion that areas with higher nerve density are less affected by skin temp because of their increased sensitivity. This may help explain why we experience increased sensitivity when we get an infection because with an infection comes higher skin temp. This also explains why you use ice immediately after an injury. Heat would increase sensitivity to pain, while icing will numb the nerves and reduce pain.

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