

BISC208-081

Lab Project – Skin Temperature's Effect on Two Point Discrimination

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Introduction

- I. Background
 - a. Hot/cold objects known to increase feeling of pressure
 - b. Hot/cold finger known to have more sensitivity to pressure
- II. Scientific Question
 - a. How will soaking the right hand in hot or cold water affect the sensitivity of pressure and thus the ability to two point discriminate?
- III. Justification
 - a. To determine whether it would be advantageous for doctors to chill or warm their hands before performing procedures.
- IV. Hypothesis
 - a. Sensitivity will decrease with a lower skin temperature as affected by external temperature and will increase with an increased skin temperature as affected by external temperature.
- V. Brief Statement
 - a. Increase and decrease of skin temperature as affected by external temperature increased sensitivity.

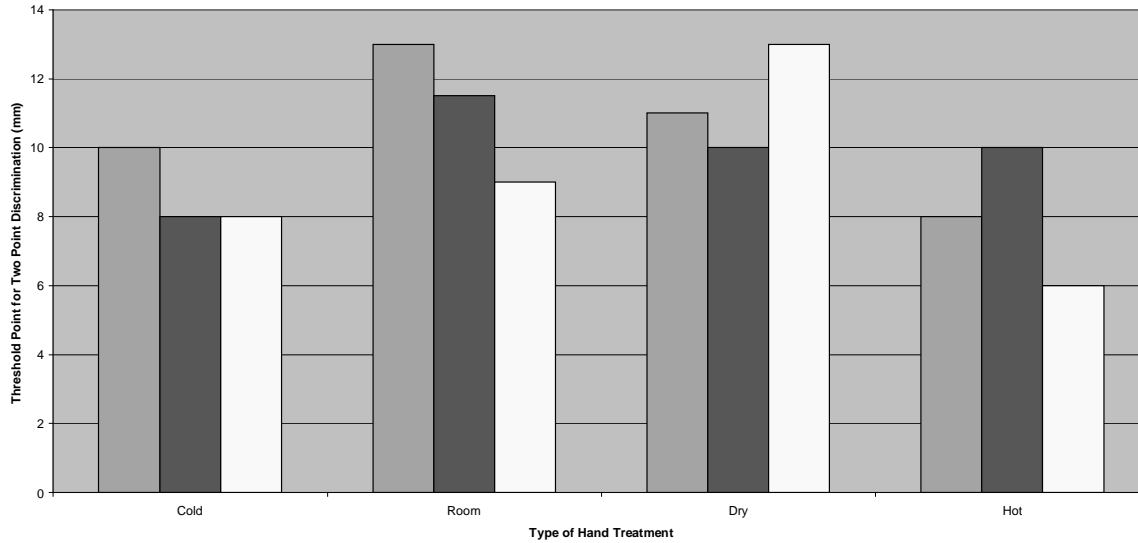
Materials & Methods

- I. Biological Material
 - a. *Homo sapien*
- II. Special Equipment
 - a. Hot water bath
 - b. Ice water bath
 - c. Room temperature water bath
 - d. Caliper with bristles attached
 - e. Thermometers (3)
- III. Procedures
 - a. Heat the hot water bath to 45°C
 - b. Chill the cold water bath to 0°C
 - c. Place right hand in water for 2 minutes
 - d. Remove hand and test two point discrimination
 - e. Continuing testing discrimination until the threshold point is determined
 - i. If test requires more than 2 minutes, place hand back in water for one minute
 - f. Repeat the above for the remaining two tests

Results

The effect of water on room temperature two point discrimination was inconclusive (Fig. 1). For subject one and two, the threshold point increased, but for the third subject, water increased sensitivity (Fig. 1). However, if the average values are compared, it is noted that the room temperature water had little affect, .1663 mm difference, in comparison to the dry hand (Fig.2). It was determined that both the cold and hot water increased the

sensitivity in the *Homo sapien* palm of the hand in respect to both dry and room temperature wet hands (Fig. 1). It can be seen that this trend correlated to the average data set as well (Fig. 2).



Subject One
 Subject Two
 Subject Three

Figure 1: Threshold Point for Two Point Discrimination for Different Trials

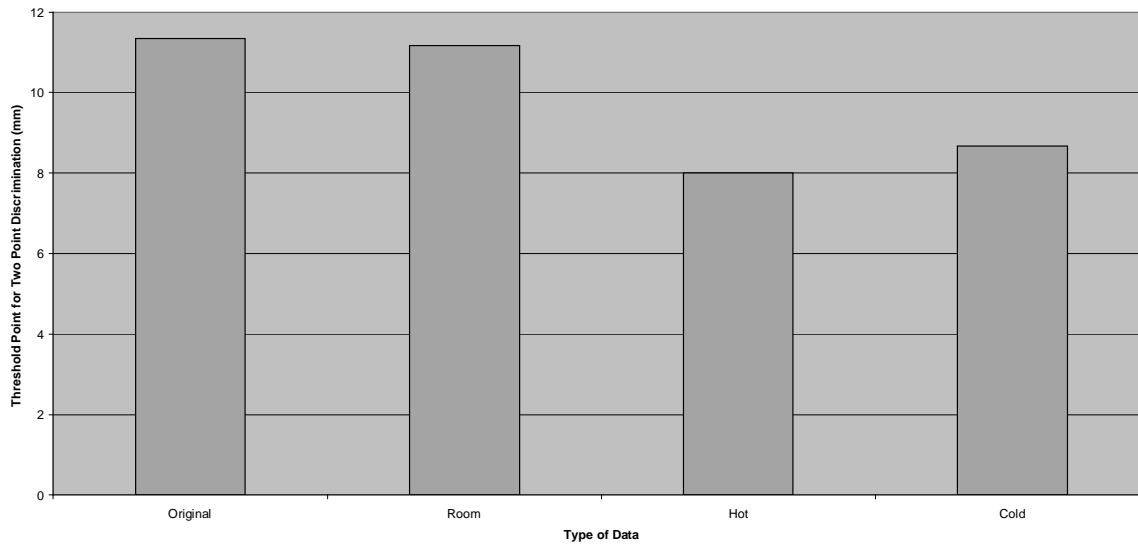


Figure 2: Average Threshold Point for Two Point Discrimination for Different Trials

Discussion

- I. Data Interpretation
 - a. Room temperature had no effect on the two point discrimination as compared to a previous touch sense
 - b. Cold and hot water increased the sensitivity for two point discrimination
- II. Error

- a. Drying/temperature equalizing over time
- b. Gender

Literature Cited

TBD