

# Reference Values for Quantitative Sensory Testing in Healthy African American Adults

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## Problem

- The lack of normative quantitative sensory testing (QST) values for African Americans older than college age is problematic.
- This gap interferes with interpretation of QST findings from African Americans with chronic pain conditions, such as cancer or sickle cell disease
- Reference values with an expanded range are necessary to contextualize and better understand pain experiences across the lifespan

## Purpose

The study aim was to obtain QST reference values in healthy African American adults and to compare mean thermal and mechanical values for differences by sex, age group (young adults [YA], older adults [OA]) and testing site location (upper/lower body).

## Methods

### Design

- Cross-sectional comparative study of pain-free adults

### Sample

- 124 healthy African American adults
- Age Categories
  - Young adult 19-39 (n=64)
  - Older adult 40-69 (n=60)
- Gender: Female (n=61, 49%)

### Measures: Quantitative Sensory Testing

Thermal (Medoc TSA-II, Limits Protocol)  
Cool Detection (CD)  
Warm Detection (WD)  
Cold Pain Threshold (CPTH)  
Heat Pain Threshold (HPTH)



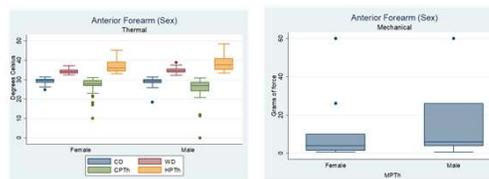
Mechanical (von Frey Filaments)  
Mechanical Detection  
Mechanical Pain Threshold (MPTh)

### Test Sites:

- Anterior Forearm (n=64, n=60)
- Posterior Forearm (n=23, n=25)
- Lateral Upper Arm (n=30, n=23)
- Lateral Leg (n=25, n=23)
- Medial Leg (n=25, n=25)
- Posterior Leg (n=25, n=24)

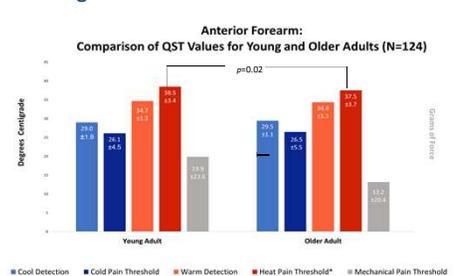
## Results

**Figure 1. Mean Thermal and Mechanical Threshold by sex.**



- Anterior Forearm is significant for WD, CPTH and HPTH, females were more sensitive than males.

**Figure 2. Mean Thermal and Mechanical Thresholds for Young and Older Adults**



- Older adults displayed statistically significant greater sensitivity for HPTH at the Anterior Forearm than young adults.

**Table 3. Mean Difference by body test site (paired t-test)**

Modality	Site	Mean (SD)	p (.05)
CD	Upper body	29.2 (1.3)	<0.001
	Lower body	28.6 (1.7)	
WD	Upper body	34.6 (1.5)	<0.001
	Lower body	35.2 (1.7)	
CPTH	Upper body	25.9 (5.4)	<0.001
	Lower body	24.8 (6.1)	
HPTH	Upper body	38.1 (3.7)	<0.001
	Lower body	39.0 (3.8)	
MPTh	Upper body	18.4 (22.4)	0.121
	Lower body	20.3 (22.5)	

- Difference in the QST values were significant across all thermal modalities but was not significant for the mechanical modality.
- Thermal detection (CD, WD) and pain threshold (CPTH, HPTH) occurred earlier in the upper body sites compared to the lower body sites.

## Conclusions

In this relatively large sample of healthy African American adults, there were few statistically significant age differences in thermal and mechanical responses between older and younger age groups. Adjusting for multiplicity, none would be statistically significant.

Results of this study show that the participants in this sample have QST values closer to 32°C, than those found in previous studies. The participants were trained to see pain on a continuum. To verify that the participants understood what was meant by "pain", we examined their reports of worst toothache, headache and stomachache. Their reports did not differ from findings in previous studies.

## Implications

- The normative values have implications for practice because QST may be used to aid in assessing chronic pain syndromes in African American adults.
- Replication of findings and delineation of sensitivity mechanisms are opportunities for further research.

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