Objective. To determine inter-hand TDC ratio thresholds in healthy persons as a first step in developing reference values for detecting edema or lymphedema that manifest at hand sites.

Background. TDC measurements, which are strongly dependent on tissue water, have been used for early detection of breast cancer treatment-related lymphedema and for tracking changes associated with treatment. The best indicator is the ratio of the at-risk limb to the non-affected limb. Forearm data exists in the literature but there are no reference values of hands.

Methods. A total of 70 healthy women (35 YOUNG and 35 MATURE) were evaluated after signing an IRB approved consent. TDC was measured on the hand dorsum bilaterally with a device that contacts the skin for about 7 seconds and measures to a depth of 2-3 mm.

Results. Compared to the YOUNG group, TDC values of the hand dorsum of the MATURE group were statistically significantly less (p< 0.008-0.002 ). However, the dominant to non-dominant TDC ratio was similar for YOUNG and MATURE (1.017 ± 0.109 VS. 1.035 ± 0.090, p= 0.452). The distribution of all TDC ratios were demonstrated a Gaussian distribution and a plausible conservative reference threshold TDC ratio for the distribution was determined by the mean value, 1.026, plus 2.0 SD which equals 1.226 and rounded to 1.23.

Conclusion. An age-independent inter-hand TDC threshold ratio of 1.23 can be potentially useful for hand edema or lymphedema detection and is a good initial starting threshold to apply as a clinical indicator.