Objective: To clarify the physiological basis of potential eccrine gland impacts on TDC values.

Background: TDC values largely depend on tissue water and are used to assess edema extent and changes. The effect of eccrine glands and their activation on TDC values is unknown.

Methods: Major factors whereby eccrine glands may affect TDC values have been investigated and methods for experimental assessment of the likely dependency have been formulated.

Results: Whole body has approximately $4 \times 10^6$ eccrine sweat glands with the forehead containing $360 \pm 50 / \text{cm}^2$ and forearm $225 \pm 25 / \text{cm}^2$. Eccrine tube length and diameter are on average 5mm and 0.02-0.05mm respectively. Sweat is composed of 99.0-99.5% water with about 75 Mm Na$^+$ and Cl$^-$ thus is likely to affect TDC values in a pore-density and activation state dependent manner. Pilot measurements on forehead and forearm suggest that heat-induced sweating can elevate TDC-measured estimates of tissue water by as much as 30% and possibly more. To relate such changes to pore-density a method to measure pore-density is needed and is being developed along with a mathematical model to assess the possible range of effects

Conclusion: The amount and content of sweat released upon activation appears to have the potential to significantly impact TDC values. The significance of this fact lies in the way such activation may confound TDC measurements aimed at detecting and tracking edema or lymphedema. The future research focus should thus be to characterize TDC value dependency in relation to measured pore-density.