Changes in Tissue Water and Indentation Resistance of Lymphedematous Limbs Accompanying Low Level Laser Therapy (LLLT)

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Does LLLT acutely affect tissue hardness and/or water content?

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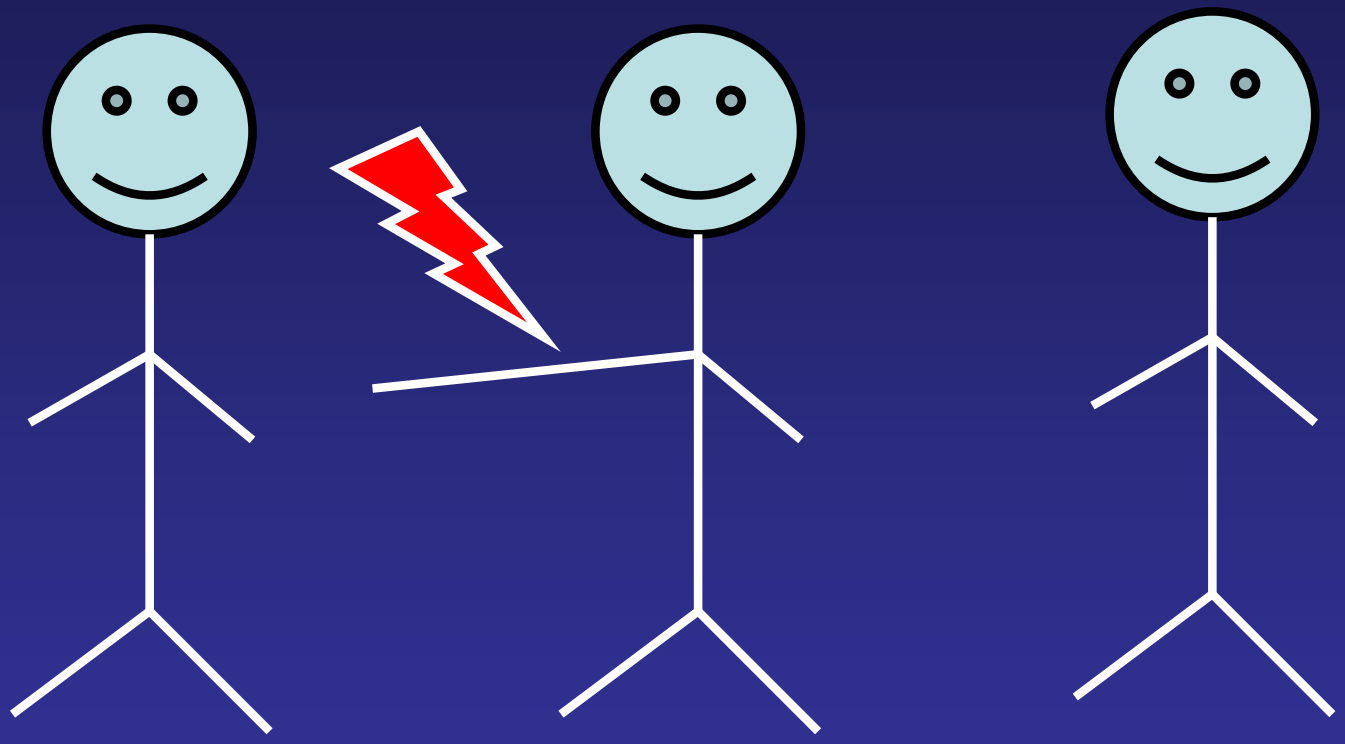
NLN 2008 – San Diego



Ann **Attendee** **Aki**

Australia **?** **Finland**

Does LLLT acutely affect tissue hardness and/or water content?

Patients studied had clinically identified lymphedema and fibrosis (37 Arms 36 Legs)

1 **Pre-LLLT Tx**

5 min LLLT

2 **Post – LLLT Tx**

51.2 ± 1.5 min

MLD

3 **Post – MLD Tx**

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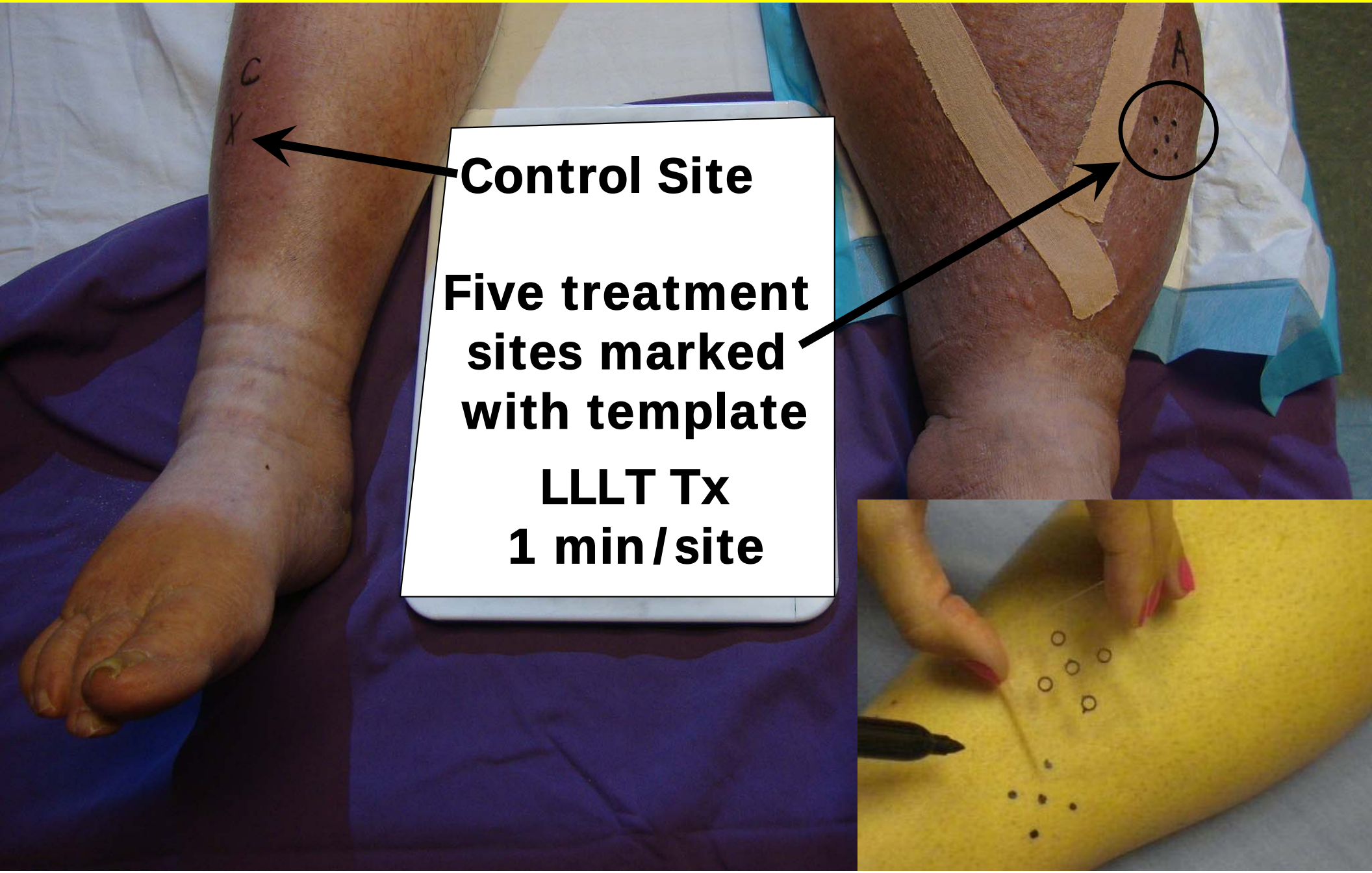
Measurements

- **Girth → Tape measure**
- **Tissue Water → Tissue Dielectric Constant (TDC)**
- **Tissue Indentation Resistance → Force for a fixed indentation**

Legs: Lymphedema due to Varied Etiologies
Males: 18 Females: 18



Arms: All Breast Cancer Treatment-Related Lymphedema All Unilateral N=37

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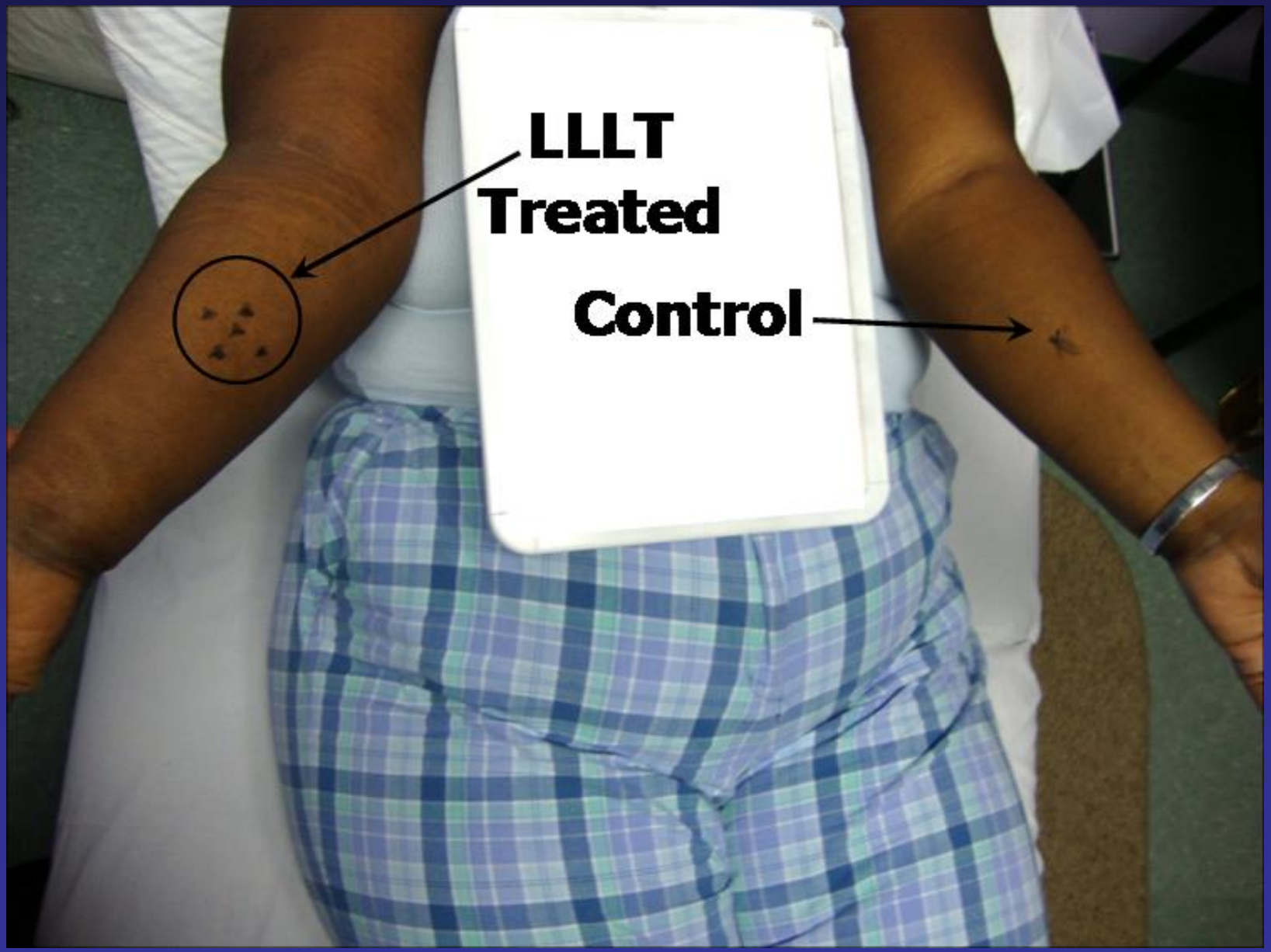
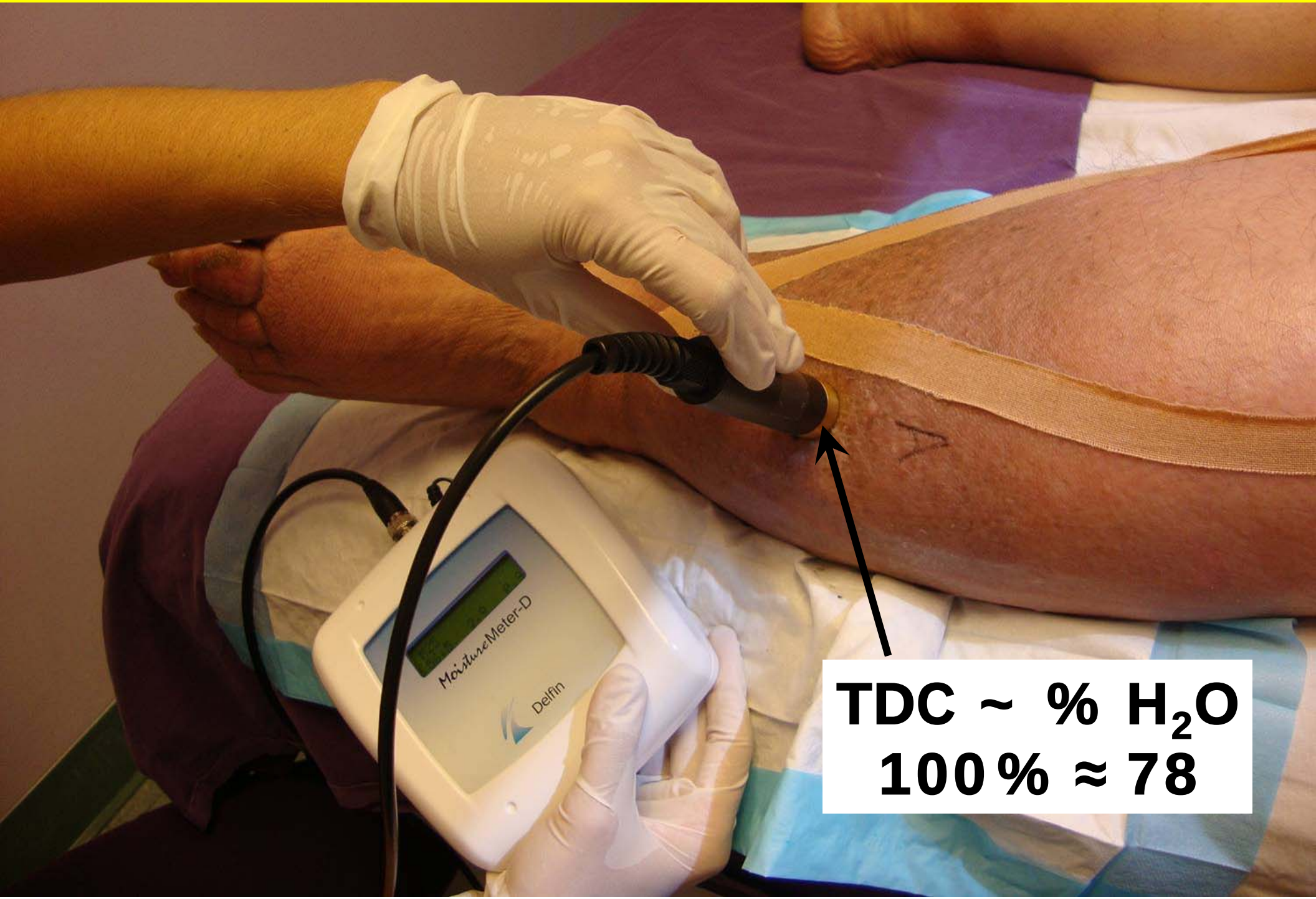
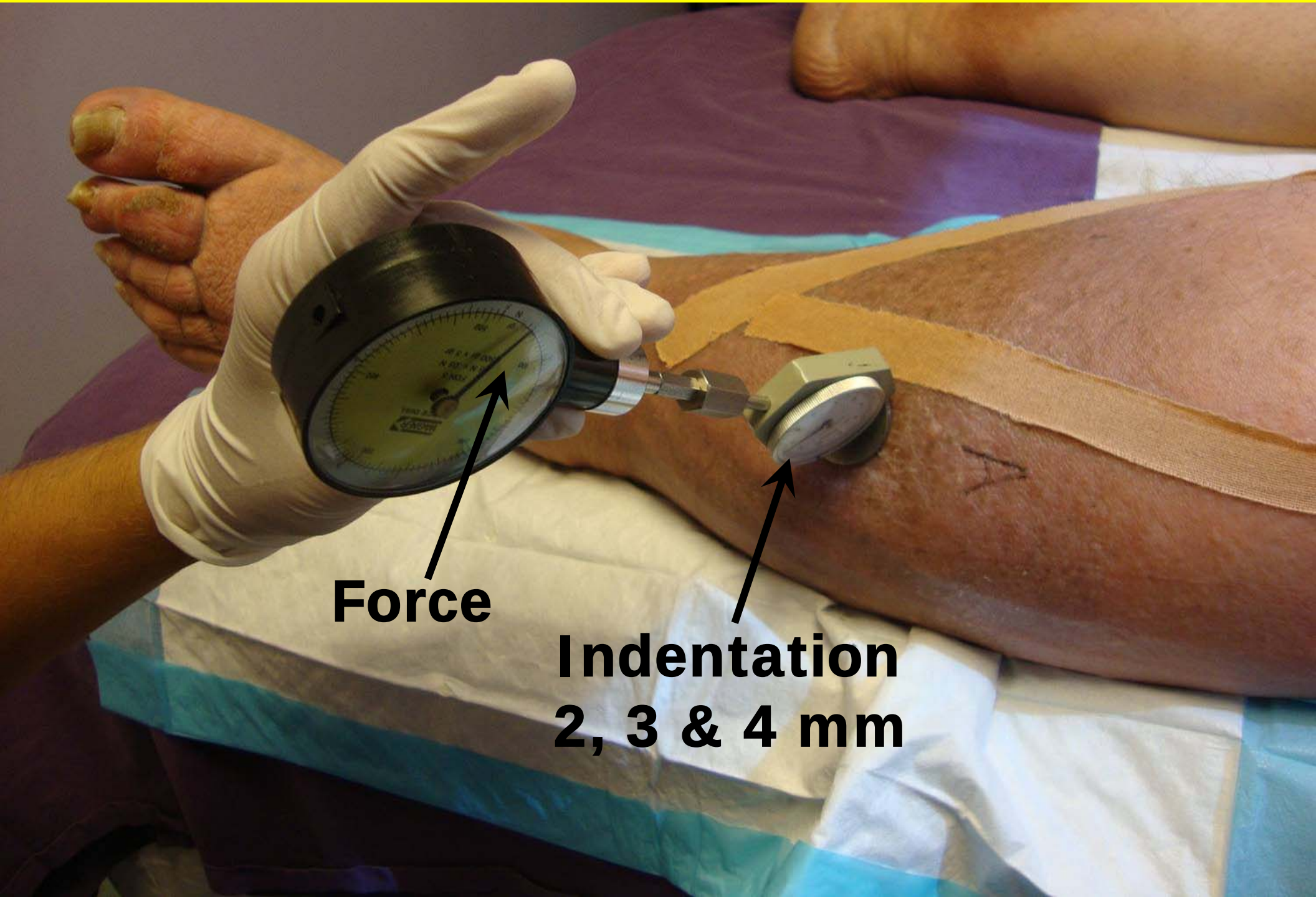


Girth

Tissue Dielectric Constant (TDC)



Tissue Resistance (Force-Indentation)



LLLT 1 min @ each site

Results

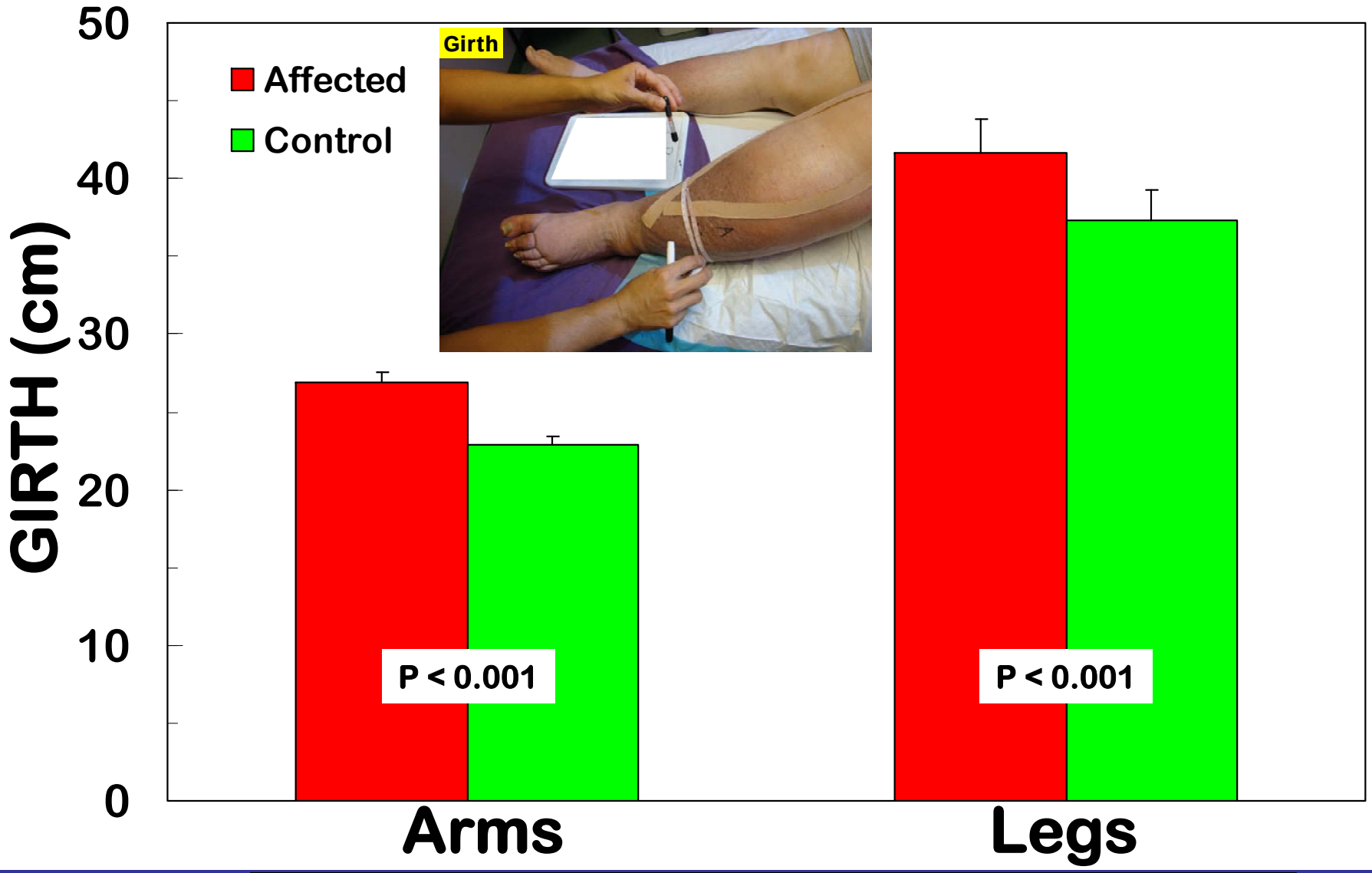
Pre-Treatment Comparisons

Affected vs. Control

Arms → 37

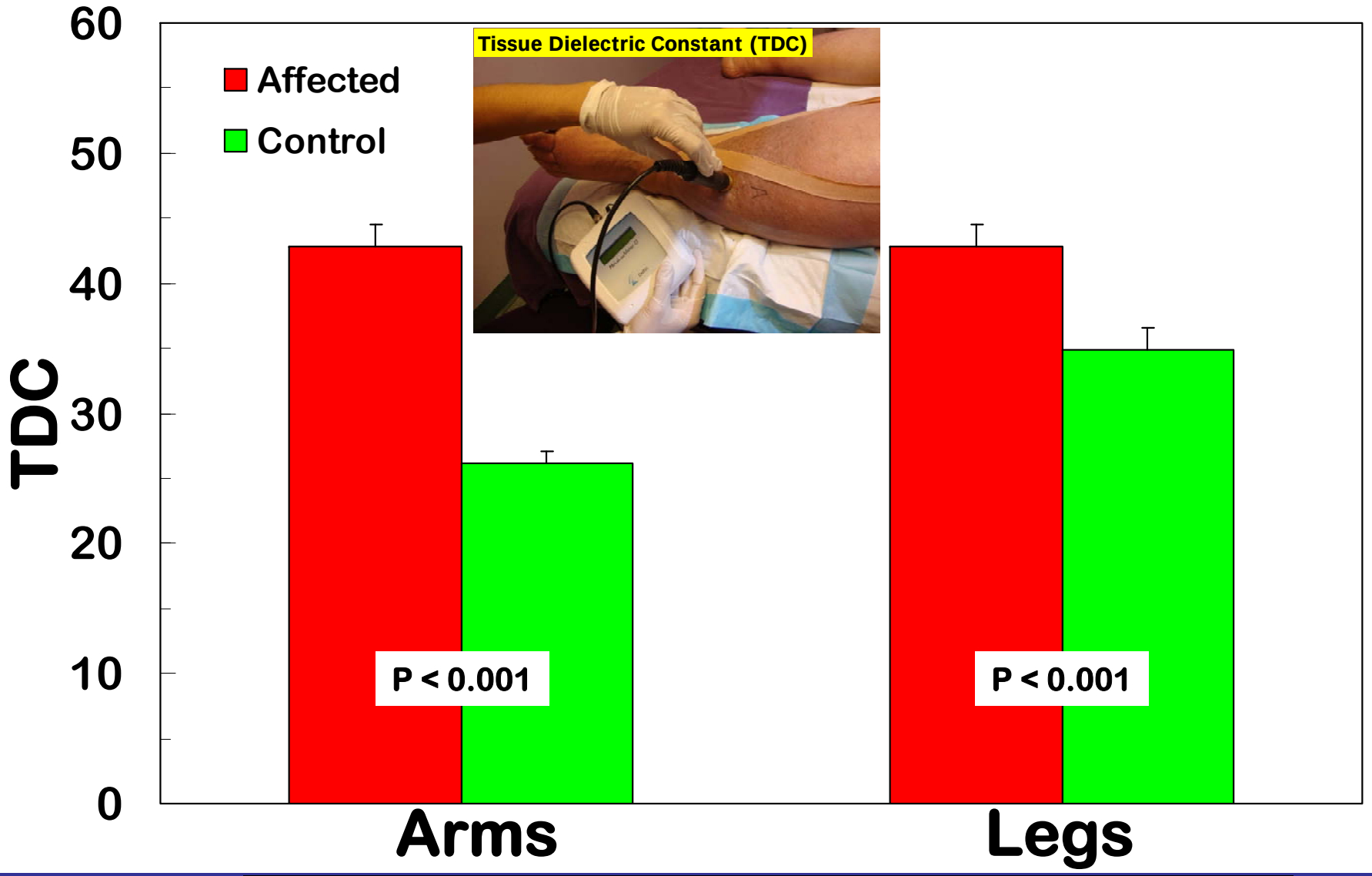
Legs → 36

Limb Girth



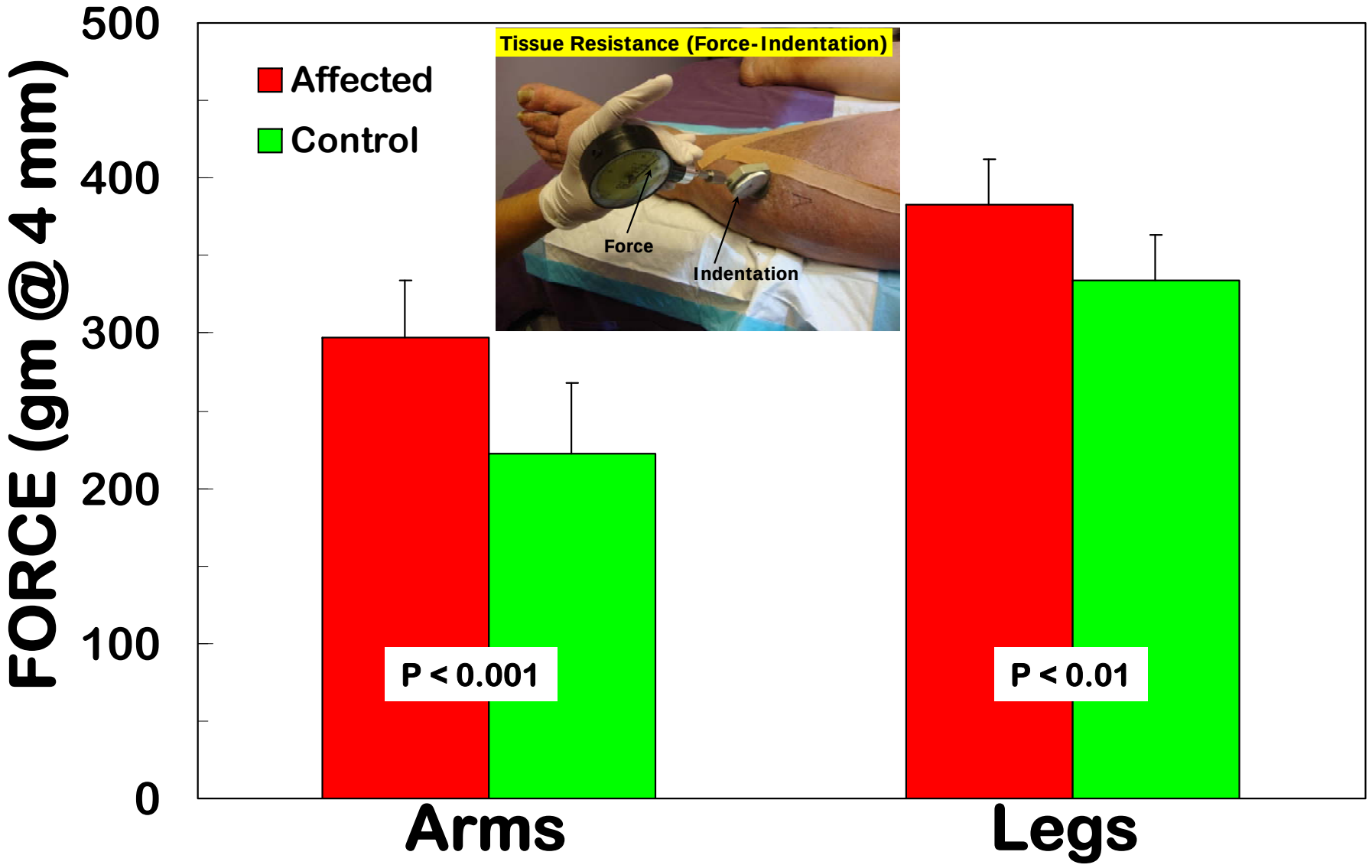
Affected > Contralateral

Tissue Water



Affected > Contralateral

Tissue Force



Affected > Contralateral

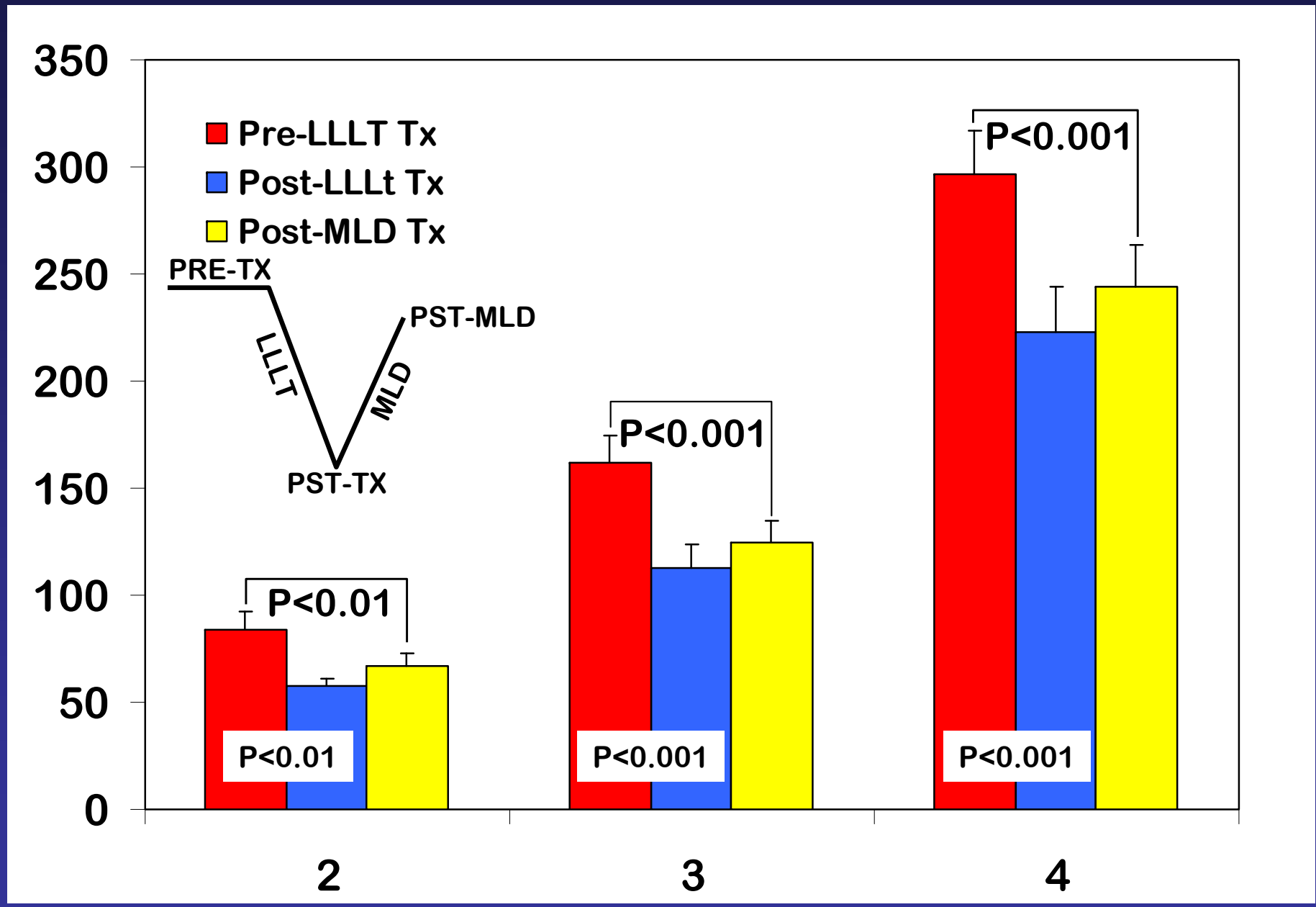
Results

LLLT Treatment Effects

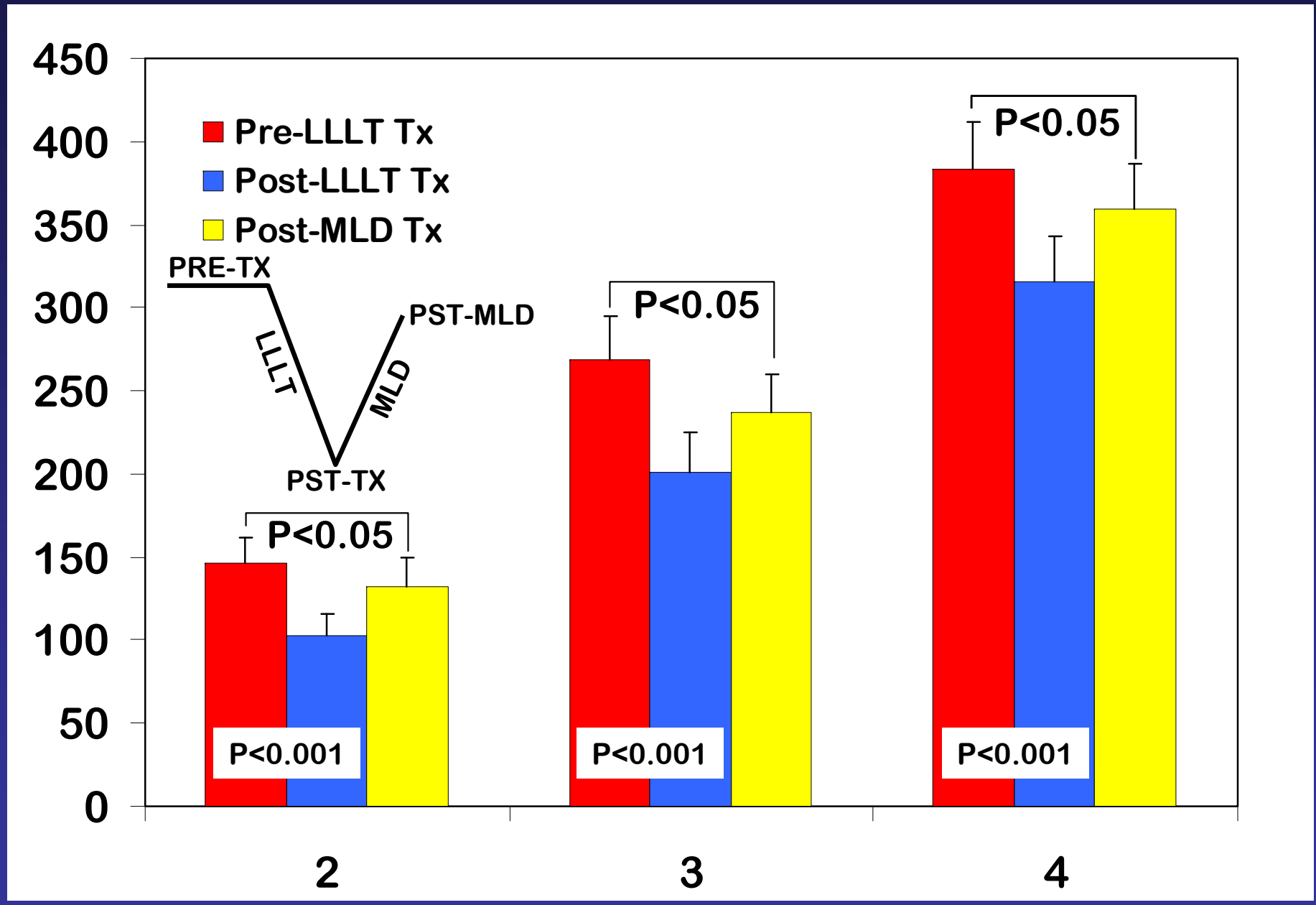
Pre - Tx → Post - Tx

Pre - Tx → Post - MLD

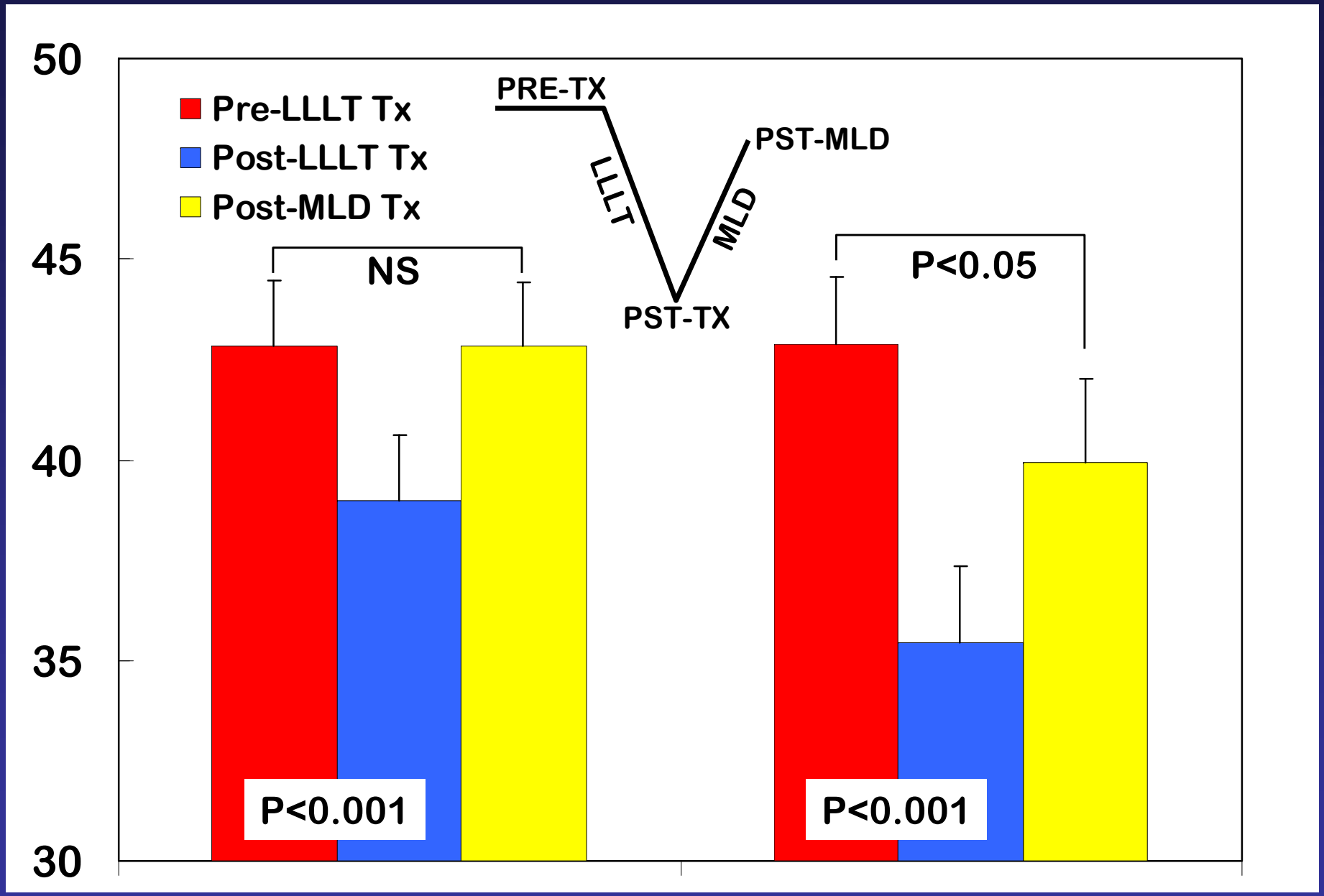
Tissue Force - Arms



Tissue Force - Legs



Tissue Water



Results

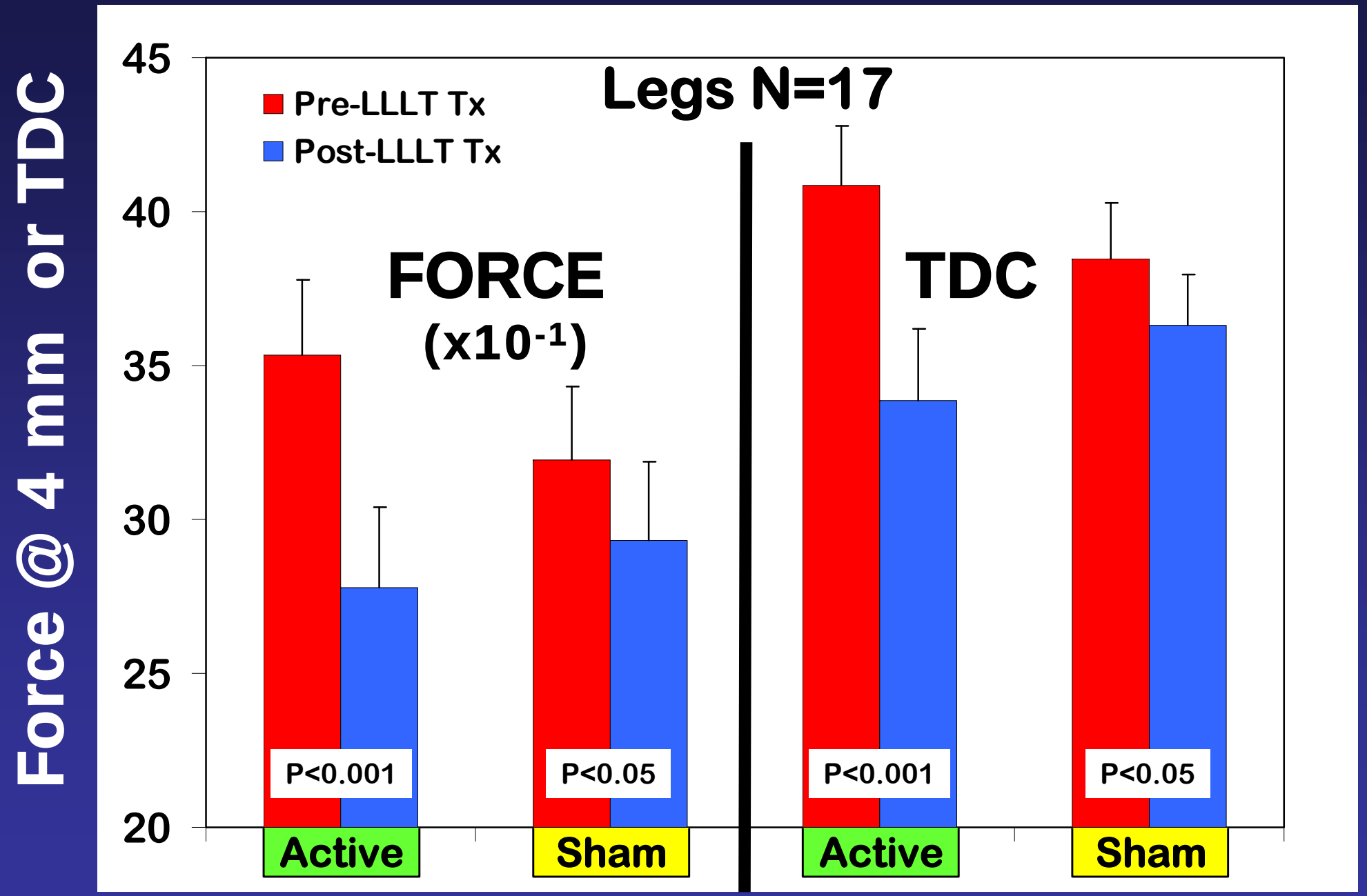
Active LLLT Treatment

Vs.

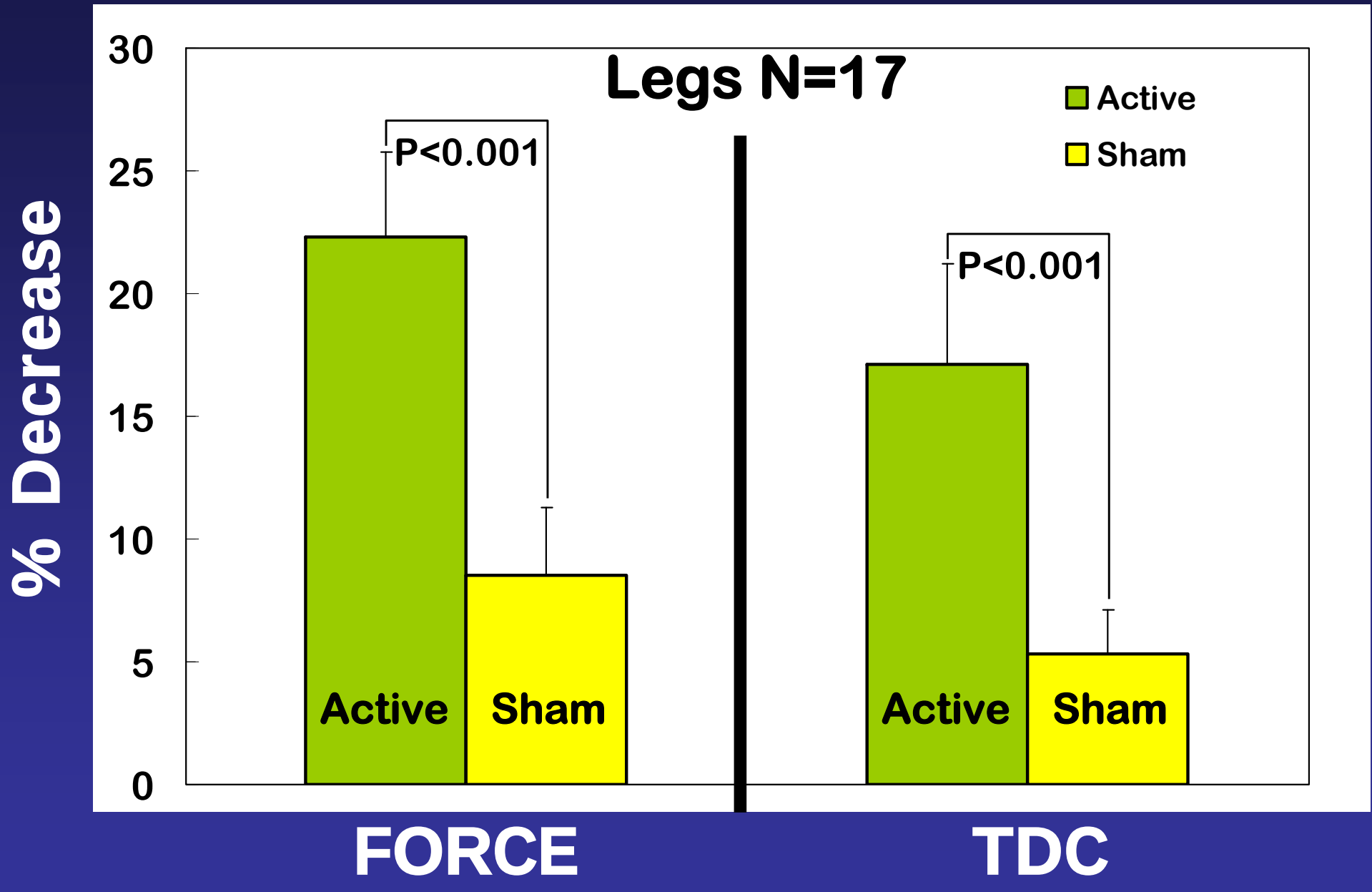
Sham Treatment

N= 17 Legs

Active vs. Sham



Active vs. Sham



Summary

- Rapid acute reduction in local tissue water and hardness with 5 minute treatment
- Occurs with active LLLT & with SHAM but greater reductions with ACTIVE
- Tissue water & hardness trend back toward pre-tx levels by the end of an MLD session
- Specific role & mechanism of low level laser light in observed changes is not yet known

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