

Reference values for interstitial tissue water in the head and neck area: non-lymphedema participants

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Purpose: To determine the test-retest reliability of a percentage water content (PWC) measurement protocol developed for the head and neck area in healthy participants; determine reference values, and explore cut-off points for lymphedema (HNL) diagnosis.

Methods:

- Developed measurement protocol (see video, figure).
- Test-retest 50 healthy participants
- Reference values 412 healthy participants
- Pilot with patients

Take home message!

- Usable measurement protocol
- Average of three measurements
- Measuring around fibrosis and scares can be challenging

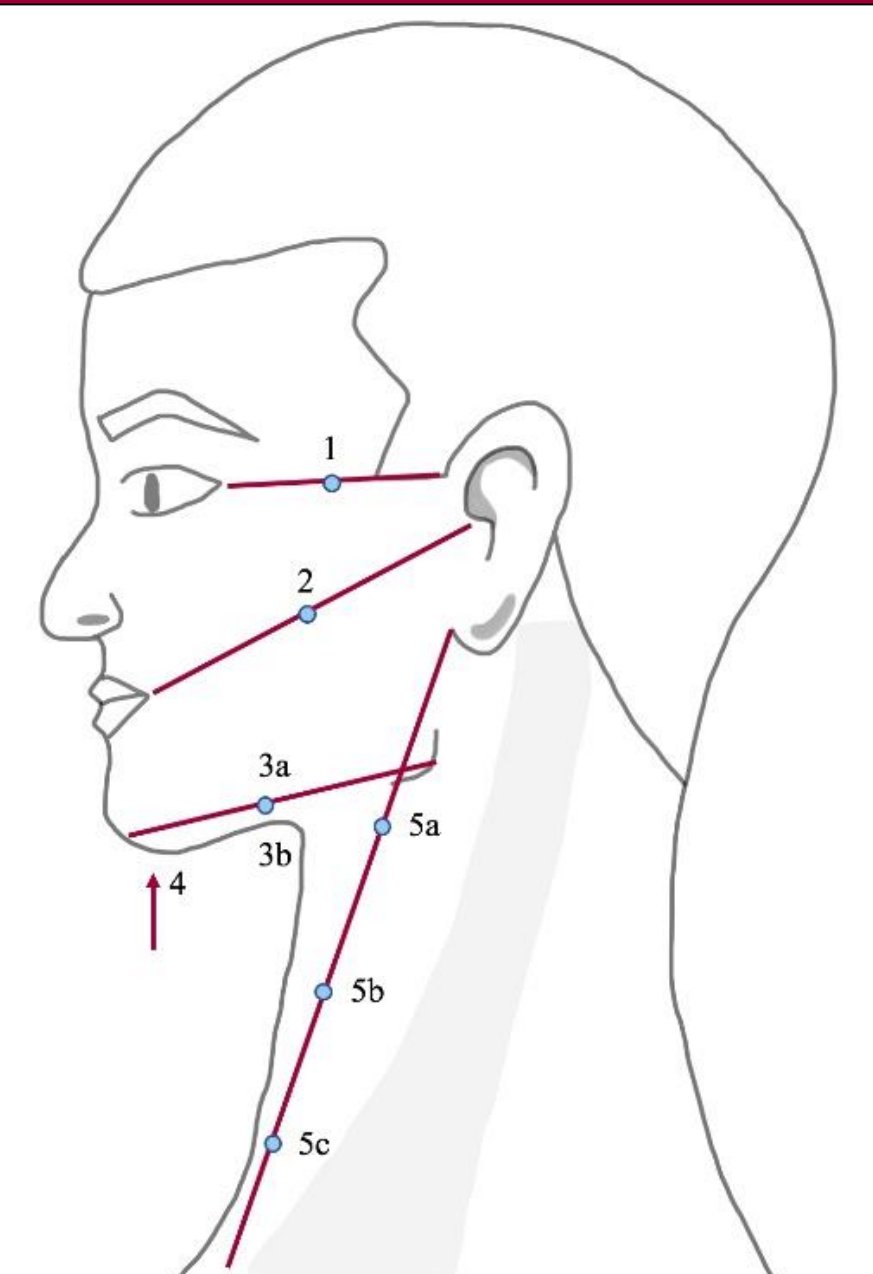


Figure and video showing a visual reproduction of the measuring protocol

Results: Reference values (n = 412)

♂ 140 (34%)



BMI 26.8 (+/- 4.5)

♀ 272 (66%)



Skin type III 116 (28%)

I 58 (14%) IV 46 (11%)

30+ Age 50 (+/- 13)

II 143 (35%) V/VI 49 (12%)

Table Mean (SD) [range] PWC values unstratified and stratified by sex

Location	PWC values unstratified	PWC values Male	PWC values Female
1	42.1 (6.7) [13.7-60.3]	46.8 (5.5) [26-60]	39.7 (5.9) [13.7-53.7]
2	39.9 (7.6) [11.0-62.3]	42.5 (9.8) [11-62.3]	38.5 (5.8) [15-52.7]
3a	41.1 (7.4) [11.3-62.7]	44 (9.4) [11.3-62.7]	39.7 (5.6) [13-55.3]
3b	39.2 (6.1) [14.7-55.3]	41.5 (7) [14.7-55.3]	38 (5.2) [16.3-52.3]
4	38.9 (5.9) [18.7-60.7]	42 (7) [19-60,7]	37.3 (4.5) [18.7-51.3]
5a	41.7 (6.1) [10.3-63.7]	44.1 (7.5) [10.3-63.7]	40.4 (4.8) [23.3-53]
5b	45.3 (5.6) [25.7-63.3]	48.4 (6) [32-63.3]	43.7 (4.7) [25.7-57.7]
5c	45.3 (5.7) [27.0-64.0]	48.1 (6) [32.3-64]	43.8 (4.9) [27-57]

Conclusion: We established reference PWC values in a non-lymphedema population, for which we recommend taking sex and BMI into account.