Waist Circumference (WC)

Assessment Overview

Assessment Area

ICF Domain:
Body Structures
Subcategory:
Structures Related to Movement

You Will Need

Equipment:
Tape measure or other measuring devices

Summary

Waist circumference (WC) is the simple measure of length around a person's abdomen. It can be particularly important in people with SCI for health and for function as many experience lack of core function and weight fluctuations.

Waist circumference is usually measured after a normal expiration at the narrowest part of the waist, often defined as the midpoint between the crest of the ilium and the last rib. It can be measured in the seated or the supine positions, but will have a larger value in the supine (Sumrell et al. 2018). There is evidence that self-reported and measured WC have sufficient correlation to be used in research (Battram et al. 2011; Rimm et al. 1990).

Availability

N/A

Assessment Interpretability

Minimal Clinically Important Difference

Not established in SCI

Statistical Error

Standard Error of Estimate:
7.61 cm for walkers
4.00 cm for non-walkers

(Willems et al. 2015; n=7, 7 males; motor complete SCI; mean (SD) time since SCI: 12 (7) years)

Typical Values

Mean (SD) Scores:
Seated Waist Circumference (cm) 88.8±9.3
Supine Waist Circumference (cm) 85.9±11.8

(Sumrell et al. 2018; n=22; 22 males; mean age: 36±10 years; time since injury: 8±8 years)

Threshold Values:
Not established in SCI. In the general population, WC > 102cm in men and WC > 88 cm in women are at high risk for developing medical conditions.

(Han et al. 1995; n=4881; 2183 males; age 20-59; random sample)

Measurement Properties

Validity – **Moderate** to **High**

High correlation with bioelectrical impedance analysis:

r = 0.83

(Eriks-Hoogland et al. 2011; n=23; 23 males; AIS-A/B; mean (SD) time post-SCI = 14.6 (13.3) years)

High correlation with Body Fat:

Abdominal fat: r = 0.82 (mass), 0.76 (percentage)

Total fat: r = 0.73 (mass), 0.70 (percentage)

(Cragg et al. 2015; n=27; 22 males; cervical and thoracic; ASIA A-D; mean (SD) time post-SCI: 14 (10) years)

Moderate correlation with Framingham Risk Score (cardiovascular disease):

r = 0.66

(Cragg et al. 2015; n=27; 22 males; cervical and thoracic; ASIA A-D; mean (SD) time post-SCI: 14 (10) years)

Moderate correlation with Body Mass Index (BMI):

Male: r = 0.46

Female: r = 0.45

(Alschuler et al. 2012; n=488; 324 males; no info on injury type; mean (SD) time post-diagnosis = 15.4 (11.3) years)

Moderate correlation with

Low density lipoprotein: r = 0.50 – 0.61

Non-high-density lipoprotein: r = 0.46 – 0.58

Total cholesterol: r = 0.52 – 0.58

(Sumrell et al. 2018; n=22; 22 males; mean age: 36±10 years; time since injury: 8±8 years)

Number of studies reporting validity data: 8

Reliability – **High**

High Intra-rater Reliability:

ICC = 0.999

(Edwards et al. 2008; n=31; 24 males; 15 with SCI, 16 able-bodied; traumatic SCI, mixed injury level; >= 1 year post-SCI)

Number of studies reporting reliability data: 1

Responsiveness

Floor/Ceiling Effect:
Not established in SCI

Effect Size:
Not established in SCI

Number of studies reporting responsiveness data: 0