

Guidelines for measuring weight and waist

In order to ensure facilitator consistency in recording the weight and waist data of Life! participants, the following steps are recommended.

Accurately measuring waist circumference

The measurement protocol for waist measurement described below was sourced from the Australian Institute of Health and Welfare and has been recommended by the World Health Organization (WHO Expert Committee 1995) which was adapted from Lohman et al. (1988) and the International Society for the Advancement of Kinanthropometry as described by Norton et al. (1996).

1. The participant should remove any belts and heavy outer clothing. Measurement of waist circumference should be taken over at most one layer of light clothing. Ideally the measure is made directly over the skin.
2. The participant stands comfortably with weight evenly distributed on both feet, and the feet separated about 25-30 cm. The arms should hang loosely at the sides. Posture can affect waist circumference. The measurement is taken midway between the lower margin of the last rib and the crest of the ilium (top of pelvis), in the mid-axillary plane (middle of side). Each landmark should be palpated and marked, and the midpoint determined with a tape measure and marked.
3. The circumference is measured with an inelastic tape (you may use the Life! tap measures) maintained in a horizontal plane, at the end of normal expiration. The tape is snug, but does not compress underlying soft tissue. The measurer is positioned by the side of the subject to read the tape. To ensure contiguity of the two parts of the tape from which the circumference is to be determined, the cross-handed technique of measurement, as described by Norton et al. (1996), should be used. The so-called "cross-handed" technique is simply a matter of reaching across with the left hand and gripping the stub end of the tape with the thumb and index finger while the right hand similarly grasps the tape at the housing end. The tape is then brought into juxtaposition using the third digit of each hand to control or make adjustments.
4. The measurement is recorded at the end of a normal expiration to the nearest 0.1 cm. Take a repeat measurement and record it to the nearest 0.1 cm. If the two measurements disagree by more than 1 cm, take a third measurement. The participant's measured waist circumference is subsequently calculated as the mean of the two observations, or the mean of the two closest measurements if a third is taken, and recorded on the participants' personal records and the Life! database for that session.
5. It may be necessary to round the mean value to the nearest 0.1 cm. If so, rounding should be to the nearest even digit to reduce systematic over-reporting (Armitage & Berry 1994). For example, a mean value of 72.25 cm would be rounded to 72.2 cm, while a mean value of 72.35 cm would be rounded to 72.4 cm.

V1 - 18th Jan 2010

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Accurately measuring weight

Medical grade **digital scales** should be used to accurately measure a participant's weight, as they are reliable, precise and easy to use. Digital weighing scales have digital displays that prominently display the weight measured in exact number of grams/ounces – hence one does not need to interpret the reading and there is no scope for interpretation errors. Additionally, this type of scale continues to accurately weigh till late into its lifespan, whereas an analog device faces the possibility of much quicker wear and tear, reducing the accuracy factor. All these make the digital device a more preferred choice over the analog mechanical one. We recommend the Wedderburn patient/clinical scales, as they have a wide range of digital scales with some light and easy to transport while also having the capacity to measure up to 200kg. For more information regarding these scales see: <http://www.wedderburn.com.au/> or you may contact Wedderburn on (03) 9497 3933.

1. The participant should remove their shoes before stepping onto the scales.
2. After stepping onto the scales, they should stand comfortably with their arms hanging loosely at their sides. Their feet should be separated at about 25-30 cm and weight evenly distributed on both feet.
3. Once the participant and scale are settled, the weight measurement is obtained. If using a digital scale this should suffice and the participant's weight can be recorded. However, if using an analog scale it is recommended that you take an additional two measurements and the participant's weight is subsequently calculated as the mean of the three measurements, and recorded in the participants' personal records and on the Life! database for that session.

Additionally, it is recommended that the following steps should also be taken:

1. Scales need to be calibrated every 12 months to ensure they remain accurate.
2. Weight measurements should be performed on a flat solid surface, if you only have carpet as a surface to measure on, you should get a wooden board to place the scales onto as this has a significant impact on the scales precision.