

Protocol for Collecting Height, Weight and Waist Measurements in New Zealand Health Monitor (NZHM) Surveys

Written by Public Health Intelligence, with assistance from Professor Mike Marfell-Jones, UCOL

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Introduction to Anthropometry

Anthropometry is the measurement of body shape and size. In the Ministry of Health's New Zealand Health Survey, all respondents aged two years and over have their height and weight measurements taken, and respondents aged five years and over also have their waist girth measured.

The height, weight and waist measurements collected from survey respondents are important for the Ministry of Health. These measurements are used to:

1. calculate norms and averages for the New Zealand population
2. monitor changes over time in the shape and size of New Zealanders
3. research the association between obesity and diseases such as diabetes, heart disease, stroke and some cancers; and
4. inform public health policy and planning.

This manual details the correct techniques for taking anthropometric measurements from survey respondents.

Beginning the measurements

At the end of each interview, the computer will prompt you to take the respondent's height, weight and waist measurement. By this stage, you will have established rapport with the respondent, and the measurement procedure should be handled in a matter-of-fact way, as just another part of the interview.

Taking anthropometric measurements from a respondent is a privilege, not a right. It is the measurer's responsibility to make the respondent feel comfortable about the measurements being taken and to recognise that the respondent can ask that the measuring stop at any time. Handled in a light and easy manner, we expect there will be few refusals. However, if it does happen, tell the respondent that it is perfectly okay, tick the 'declined' box, and move on to the next section without placing any pressure on the respondent.

Please note that measurements are not taken from women who are pregnant. The computer will prompt you to ask female respondents whether they are pregnant and, if so, to skip the measurements section.

Measurements are taken on a hard surface. If necessary, suggest that you move to another room with a hard floor, if available.

We take two readings of each measurement: height, weight and waist, then height, weight and waist again. If the two readings of each measurement vary by more than 1%, the computer will prompt you to take a third reading.

You will find that measurements will often vary, so don't be concerned about it when they do. In fact, it would be strange if the readings were always the same.

Once you are ready to measure, the first step is to let the respondent know what you are going to do and ask them to remove their shoes and any heavy outer clothing they may be wearing.

Comment or instructions to respondents

“I’m going to take three measurements – height, weight and waist girth, in that order.”

“I’m then going to take those measurements again and, if any of the second measures are not close enough to the first ones, I’ll measure you a third time.”

“Please take off your shoes and all your outer clothing.”

Height

Definition: The perpendicular distance between the top of the head (the vertex) and the bottom of the feet.

Equipment: SECA 214 portable stadiometer.

Assembling the stadiometer

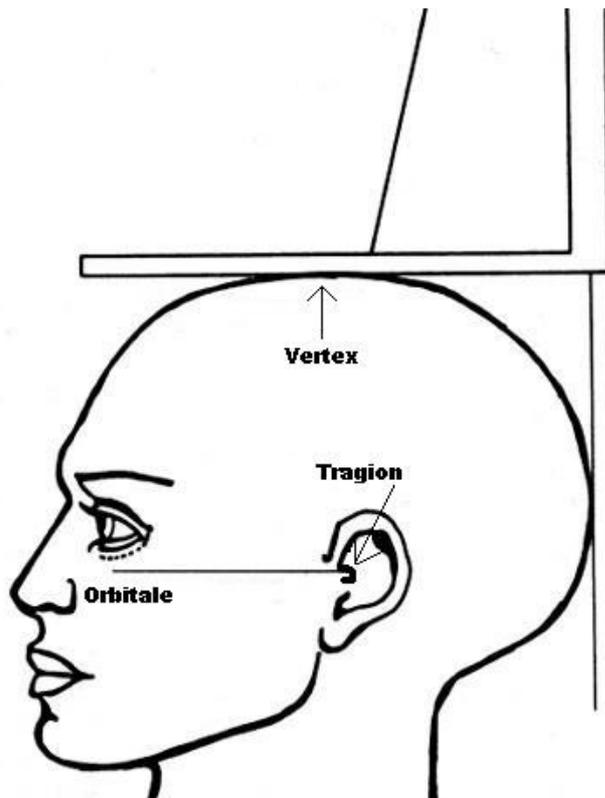
The stadiometer comes in eight pieces and is easy to assemble in the respondent’s home. Start with the blue base of the stadiometer. Place this on the floor, close to a wall. Slot the measurement rods into the base of the stadiometer in the correct order. Start with the rod that has a large arrow facing down. Make sure it is inserted fully. Add one of the white stabilisers with the long arm pointing backwards toward the wall, followed by the blue headboard facing forward, and then the second stabiliser facing backward. Connect the next three measurement rods in order, making sure that the symbols match (stars, then circles, then squares). Move the top stabiliser and the headboard up above the two metre mark and leave the other stabiliser down low. Push the completed stadiometer closer to the wall so that both stabilisers are touching the wall.

Method

Ask the subject to stand on the centre of the base with their back to the stadiometer. Ask them to put their feet together and move back until their heels touch the bottom of the stadiometer upright. Their buttocks and upper part of their back should also be touching the stadiometer upright. Their head does not have to touch the stadiometer.

The respondent’s head should be in the Frankfort plane. This is achieved when the lower edge of the eye socket (the Orbitale) is horizontal with the Tragon [see Figure 1]. The vertex will be the highest point on their head. If their head is not aligned properly, (and for most respondents it probably won’t be), ask them to raise or lower their chin until it is in the Frankfort Plane.

Figure 1: Head in the Frankfort Plane



Source: Adapted from the ISAK Manual, 2001.

When you are happy that the respondent is in the correct position, ask them to take a deep breath and hold it. Lower the blue headboard until it is in contact with the head. Compress the hair if needed. Make sure you don't bend the headboard from the horizontal, nor move the respondent's head. Hold the headboard firmly at its final position and **take the reading to the nearest 0.1 cm.**

When you have completed the reading, ask the respondent to step away from the stadiometer.

Move straight to the computer and record your reading.

Note: If the respondent is as tall as you, or taller, you will need to stand on a box to judge when the head is in the right position and to take the reading, as both these actions need your eyes to be in the same horizontal plane as the object you are looking at.

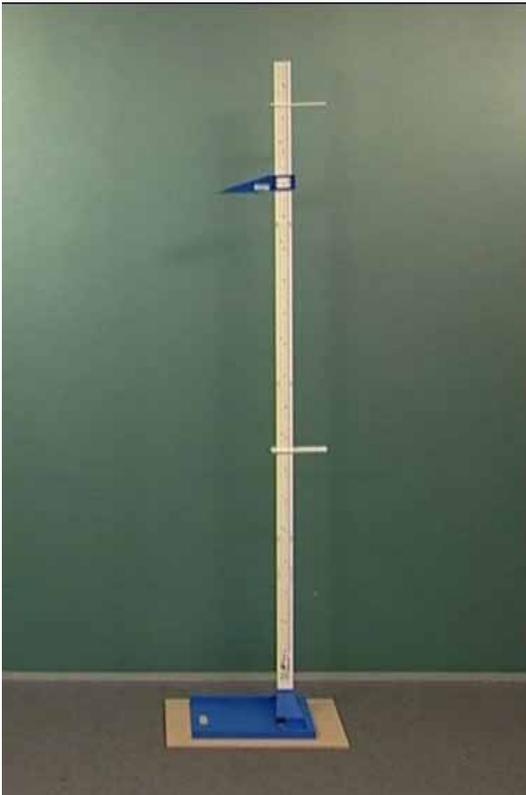
Comment or instructions to respondents

“Please stand on the centre of the base with your back to the stadiometer. Put your feet together and move them back until your heels touch the back of the stadiometer. Stand up straight and look straight ahead.”

(If their head is not horizontal, say ...) “Please raise (or lower) your chin.”

“Take a deep breath and hold it.”

“That’s fine, you can breathe normally now and step away from the stadiometer.”



Weight

Definition: Weight is the force the matter in the body exerts in a standard gravitational field.

Equipment required: SECA 770 or Tanita HD-351 weighing scales.

Setting the scales

Place the scales on a hard flat surface. If carpet is the only floor covering in the measurement location, put your board down on the carpet and place the scales on the board.

Method

Press firmly on the centre of the scales to turn them on. Once the zeros appear, ask the respondent to stand on the scales. Ask the subject to stand on the centre of the scales without support, with their arms loosely by their sides, head facing forward and with their weight distributed evenly on both feet. A reading will appear in a few seconds. The numbers will change, and then stop. Once the numbers have stopped, **take the reading to the nearest 0.1 kg.**

Ask the subject to step off the scale. Record the reading.

Comment or instructions to respondents

“Wait until it reads zero.”

“Please step onto the centre of the scale with your weight on both feet.”

“Relax.”

“Thank you. You can step off now.”

NB: Our scales weigh to a maximum of 200 kilograms. If a respondent weighs more than this, the scales will display _____. If this happens, record the weight as “200+ kg”.

Waist girth

Definition: The circumference of the abdomen at its narrowest point between the lower costal (10th rib) border and the top of the iliac crest, perpendicular to the long axis of the trunk.

Equipment: Lufkin W606PM anthropometric measuring tape.

Method

The cross-hand technique is used for measuring waist girth. The objective is to minimise the gaps between the tape and the body surface, and to minimise indentations of the body surface wherever possible. This is not always achievable. Where the contour of the surface of the body becomes concave (for example, across the spinal column), continuous contact with the surface is neither achievable nor desirable.

The waist measurement is normally taken at the level of the narrowest part of the waist. Since this measurement will be taken over clothing in this survey, (rather than against the skin), the level of the measurement will be determined by the respondent.

Ask the respondent to stand upright in a relaxed manner, feet comfortably apart, weight evenly balanced on both feet and with their arms hanging by their side.

To position the tape, hold the casing of the tape in your right hand and with your left hand give the respondent the stub end of the tape (into their right hand) and ask them to pass it around their back and give it back to you. Take hold of the stub with your right hand which then holds both the stub and the casing, leaving your left hand free to manipulate the tape at the correct level. Use enough tension on the tape with the right hand to hold it where you position it. Ask the respondent to put the tape at their waist level, i.e. the level at which it feels comfortable for them. When they have identified the level, use your left hand to ensure the tape is horizontal.

When you are happy with the tape position, reach underneath the casing with your left hand to take hold of the stub again and pull it across to your left into the cross-hand position, keeping enough tension on the tape to prevent it slipping out of position. Move the tape sideways with both hands as needed to position the zero line nearer the respondent's side, rather than middle. When the tape is where you want it, remind the respondent to breathe normally. This is important as most won't without a reminder.

Apply gentle pressure on the tape – enough to ensure it is parallel, not indented and fairly firm. **Take the reading to the nearest 0.1 cm, at the end of a normal expiration.**

Note: When reading the tape, your eyes should be at the same level as the tape.

When you have taken the reading, release the stub end of the tape and pull it gently around and off the respondent's trunk with your right hand. Take care that the stub end doesn't flick anywhere near your or the respondent's head.

Record the reading.

Comment or instructions to respondents

"Please stand in a relaxed position."

"Please take the end of the tape, pass it around your waist and hand it back to me. Thank you."

"Please help me to position the tape at the level of your waist."

"Good. Now, just breathe normally."

"Thank you."



Repeating the measurements

Once you have measured height, weight and waist girth once through, repeat the measurements, in order, using the same techniques as previously.

Comment or instructions to respondents

“I’m now going to repeat all three measures, starting with height again.”

Third measurements

If the computer prompts you to take a third reading on any of the measures, do so following the instructions on the screen.

Comment or instructions to respondents

“I’m now going to take a third measure of your _____.”

Packing up

Once you have finished with the equipment, it is best that you pack it away before continuing with the interview script. Put the scales in the pouch, along with the tape measure. Take apart the portable stadiometer and place all the pieces in the bag. Don’t forget to take this equipment with you when you leave!