

*The NIHR Southampton Biomedical Research Centre (BRC) has a tight quality assurance system for the writing, reviewing and updating of Standard Operating Procedures. As such, version-controlled and QA authorised Standard Operating Procedures are internal to the BRC.*

*The Standard Operating Procedure from which information in this document has been extracted, is a version controlled document, managed within a Quality Management System. However, extracts that document the technical aspects can be made more widely available. Standard Operating Procedures are more than a set of detailed instructions; they also provide a necessary record of their origination, amendment and usage within the setting in which they are used. They are an important component of any Quality Assurance Framework, but in themselves are insufficient and need to be used and interpreted with care.*

*Alongside the extracts from our Standard Operating Procedures, we have also made available here an example Standard Operating Procedure and a word version of a Standard Operating Procedure template. Using the example and the Standard Operating Procedure template, institutions can generate their own Standard Operating Procedures and customise them, in line with their own institutions.*

*Simply offering a list of instructions to follow does not assure that the user is able to generate a value that is either accurate or precise so here in the BRC we require that Standard Operating Procedures are accompanied by face-to-face training. This is provided by someone with a qualification in the area or by someone with extensive experience in making the measurements. Training is followed by a short competency assessment and performance is monitored and maintained using annual refresher sessions. If you require any extra information, clarification or are interested in attending a training session, please contact Dr Kesta Durkin ([k.l.durkin@soton.ac.uk](mailto:k.l.durkin@soton.ac.uk)).*

*This document has been prepared from Version 2 of the BRC Standard Operating Procedure for measuring ulna length of adults. It was last reviewed in June 2014 and the next review date is set for June 2016. The version number only changes if any amendments are made when the document is reviewed.*

## NIHR Southampton Biomedical Research Centre

### Procedure for Measuring ADULT ULNA LENGTH

#### BACKGROUND

This procedure is to be used for making adult ulna length measurements. Measurements of ulna length can be used to derive accurate estimates of a person's height. This method is useful for determining the height of the elderly and infirm and those with curvature of the spine.

#### PURPOSE

To ensure correct and uniform measurement of adult ulna length.

#### SCOPE

This procedure applies to any study that requires taking adult ulna length measurements, within the BRC.

#### RESPONSIBILITIES

It is the responsibility of the measurer to use this procedure when making adult ulna length measurements. It is the responsibility of the principle investigator to ensure that staff members who are working on specific studies have adequate experience to do so.

#### PROCEDURE

Where possible, make measurements on the non-dominant side.

1. The measurement is performed in the same way for both males and females.
2. Wash your hands and explain the procedure to the participant.
3. Ask the participant to stand straight facing you.

4. Ask them to raise their non-dominant arm so that their palm is across their chest, and their fingers are pointing upwards at the opposite shoulder (figure 1).

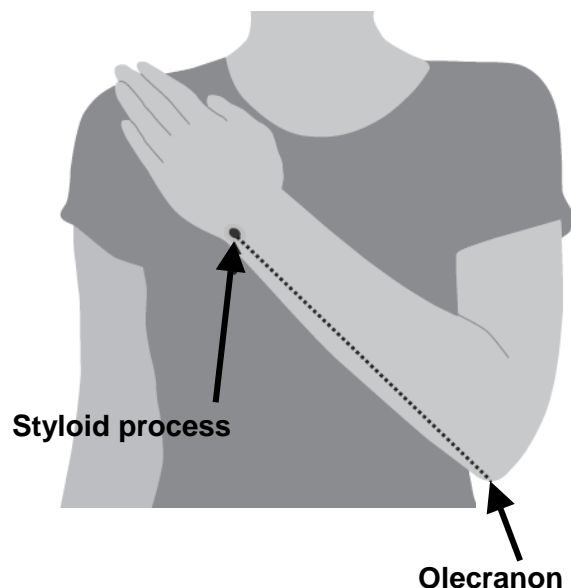


Figure 1. Measuring the ulna length.

5. Using a tape measure, measure the distance between the olecranon (point of the elbow) and the styloid process (the prominent bone of the wrist).
6. Read the tape to the nearest 0.1 cm.
7. Record three measurements of ulna length.
8. Record the mean measurement, by adding the values together and dividing by three.
9. When you have completed all the measurements on the participant, wipe the length of the tape measure with a detergent wipe. If you are using one of the retractable metal tapes, wipe dry the length of the tape with a hand tissue after wiping with the detergent wipe. Do not use alcohol as this will damage the equipment.
10. Height can be read from the table below.

**N.B.** You may make the measurements using either pre-marked anthropometric measuring tape or blank tapes. Blank tapes provide a permanent record and reduce observer bias. This way, the circumference is marked with pen on a blank tape and subsequently converted to length by measuring against a validated fixed ruler.

### Ulna Length to Height Conversion Chart

HEIGHT (m)	Men(<65 years)	1.94	1.93	1.91	1.89	1.87	1.85	1.84	1.82	1.80	1.78	1.76	1.75	1.73	1.71
	Men(>65 years)	1.87	1.86	1.84	1.82	1.81	1.79	1.78	1.76	1.75	1.73	1.71	1.70	1.68	1.67
	Ulna length (cm)	32.0	31.5	31.0	30.5	30.0	29.5	29.0	28.5	28.0	27.5	27.0	26.5	26.0	25.5
HEIGHT (m)	Women (<65 years)	1.84	1.83	1.81	1.80	1.79	1.77	1.76	1.75	1.73	1.72	1.70	1.69	1.68	1.66
	Women (>65 years)	1.84	1.83	1.81	1.79	1.78	1.76	1.75	1.73	1.71	1.70	1.68	1.66	1.65	1.63
HEIGHT (m)	Men(<65 years)	1.69	1.67	1.66	1.64	1.62	1.60	1.58	1.57	1.55	1.53	1.51	1.49	1.48	1.46
	Men(>65 years)	1.65	1.63	1.62	1.60	1.59	1.57	1.56	1.54	1.52	1.51	1.49	1.48	1.46	1.45
	Ulna length (cm)	25.0	24.5	24.0	23.5	23.0	22.5	22.0	21.5	21.0	20.5	20.0	19.5	19.0	18.5
HEIGHT (m)	Women (<65 years)	1.65	1.63	1.62	1.61	1.59	1.58	1.56	1.55	1.54	1.52	1.51	1.50	1.48	1.47
	Women (>65 years)	1.61	1.60	1.58	1.56	1.55	1.53	1.52	1.50	1.48	1.47	1.45	1.44	1.42	1.40