1. Making measurements of HEIGHT

- *Height measurement can be affected by posture, foot wear, feet and head positioning.*
- *Two practitioners (lead and second) are required to measure height*

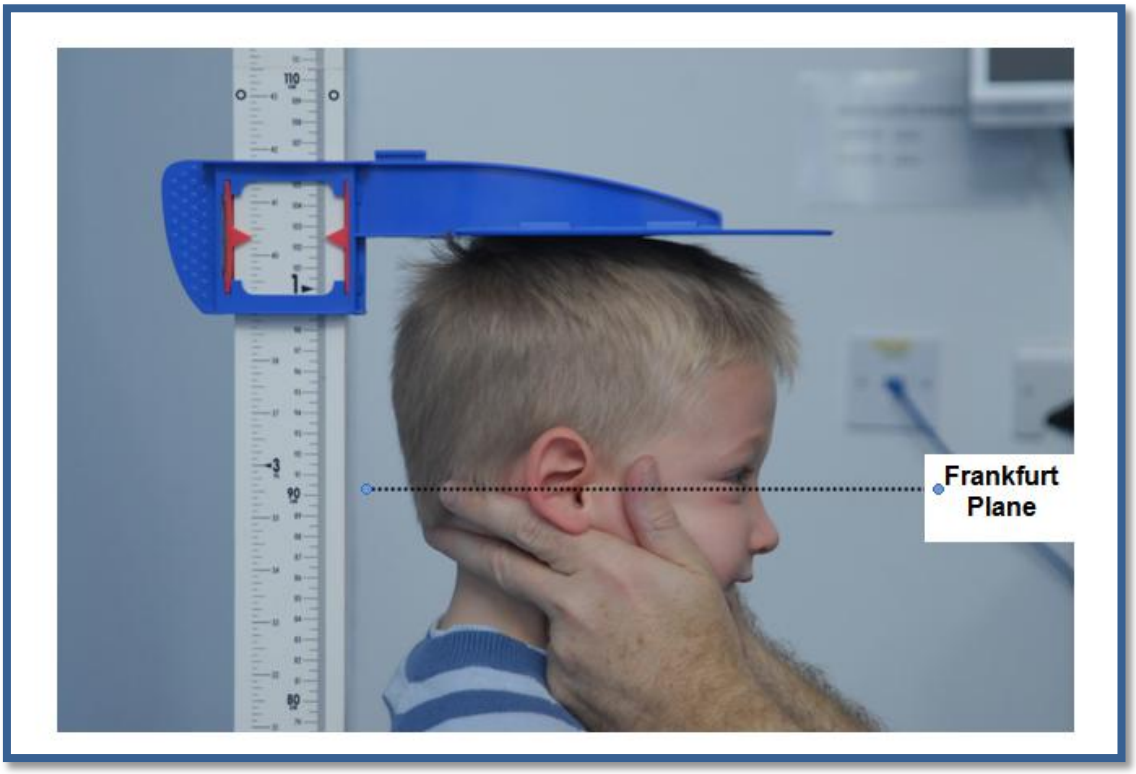
Taking the measurement:

1. Ensure that the stadiometer is wiped clean before use.
2. Ask the person to be measured whether they are happy to have their height measurement taken. If yes, proceed to point 3. If not, record this on the form, thank them for attending and ask them to leave.
3. Wash your hands and explain to the person " volunteer " what you are going to do before you start the process. This should be done at every stage. "You should never touch or handle any individual before explaining to them the process beforehand".
4. Explain you will want them to stand as tall and straight as possible. Ask the person to be measured to remove their shoes, socks " barefoot", coat, hat and any other items of clothing that may affect the accuracy of the reading " remember: aim to measure wearing light clothing- minimal clothing to facilitate correct positioning of the body - " Socks should be removed and trousers /jeans rolled up to reveal the foot so as to be able to ascertain that the heel is in contact with the floor at the point of measurement "to enable the measurer to check the position of the heels".
5. If a person has a hairstyle that may affect the reading, this needs to be discussed with them. Any clips or raised hairstyles that interfere with measurement should be removed. If this cannot be altered/removed, it should be noted on the form and accommodated for in the measuring process by taking a short rod (or pen), of a known & measured length and placing it on the crown of the individual at the appropriate time (see point 10).
6. The lead practitioner should kneel or stand in front of the person and help them to stand facing forwards as straight as possible parallel to the floor, arms hanging loosely at their sides with their feet flat on the centre of the base plate with their heels against the backstop and their feet slightly apart so that they feel comfortable and stable "to aid balance" (he should not stand with their feet together as indicated on the footplate as this is likely to make them less stable). Weight should be evenly distributed on both feet. Where necessary, the second practitioner should stand at the side and ensure that the heels are in contact with the floor " heels need to be touching the back plate .

   Summary:
   - ✓ The individual should look straight ahead, with eyes focussed on a point.
   - ✓ Shoulders should be relaxed, Knees should be straight, arms to the side and legs straight.
   - ✓ Check for any bending of the knees or raising of heels
7. The second practitioner should lower the measuring arm so that it is just above the head but not touching.
8. The lead practitioner should then move the head so that the Frankfort Plane is in a horizontal position (i.e. parallel to the floor). The Frankfort Plane is believed to be the natural anatomical position of the human skull and can be best thought of as a plane passing through the inferior margin of the left orbit (the point called the left

orbitale) and the upper margin of the ear canal (the point called the **porion**) ""Frankfort plane", an imaginary line from the centre of the ear hole to the lower boarder of the eye socket" (See Figure). With the head in this plane, the crown should be the highest point of the skull and so represents the tallest point of the body in most people. It is a quick and effective guide to ensuring that the maximal height is attained when the measuring arm rests on the crown of the head.

9. The lead practitioner should cup "manipulate" the person's head in their hands ", placing the heels of the palms either side of the jaw with the tips of the fingers resting under the back of the skull (See Figure). Explain what you are doing and tell them that you want them to stand up straight and tall, inhale deeply, but not to move their head or allow the heels to rise off the floor. Firmly, but gently, apply upward pressure to the back of the skull lifting the head upwards towards the measuring arm, thus ensuring that they attain their maximum height. Avoid jerky movements, perform the procedure smoothly and take care not to tilt the head at an angle – you must keep the head in the right plane.



10. Still holding this position, the second practitioner lowers the headplate measuring arm down gently on to the head after asking the volunteer to take a deep breath. Keep the fingers in contact with the headplate to ensure downward pressure such that the plate touches the crown of the skull and remains horizontal with enough pressure to compress the hair. Check that the body position remains correct. If a rod or pen is to be used, then the rod or pen should touch the crown of the head and the headplate brought down to touch this. The length of the rod or pen should then be subtracted from the total length measured and recorded on the form.

11. Still holding the head and allow them to stand relaxed. If the measurement has been done correctly, the volunteer should be able to move out from under the measuring arm, without the measuring arm moving.

12. Read the measurement, at eye level, where the arrows of the measuring arm intersect the upright section to the last completed mm.

13. If the practitioner/measurer is shorter than the individual being measured and therefore cannot read the measurement at eye level, the practitioner/measurer should stand on a stable box/step to take the measurement. Alternatively, if the practitioner/measurer is taller than the child being measured, then they should squat down to read the measurement at eye level.

14. ***Repeat the process to make three measurements*** – the three values should be within 2 mm.

15. If these readings are within 2mm of each other, then record these readings as well as the average of the three readings.

16. If you do not have three readings that are within 2 mm of each other, then continue to repeat the process until you do.

17. Do not comment on the height of an individual as measurements are taken. Neutral comments only such as "thank you", "can you step away from the wall please" are appropriate.

Remember:

- ✓ The stadiometer should be placed on a hard, uncarpeted floor.
- ✓ Two or three times a year the accuracy of the stadiometer should be further assured through calibration.

<u>For information only:</u>

Stadiometers: www.white-medical.co.uk

- Stadiometers are devices specifically designed for the accurate measurement of height and when used with care yield data of the highest quality.
- The '*Leicester Height Measure'* allows measurement accuracy of height to the nearest 1mm. It is a portable stadiometer with a range of 0 – 2.07m in 1mm gradations, available from the Child Growth Foundation.
- It comes in the form of a plastic measuring rod, in four sections which slot together. There is a unique code at each end of each rod (i.e. star shape, square, triangle etc.) which line up with each other to ensure that sections are slotted together properly. It has a base plate for the individual to stand on, two stabilising side arms that make contact with the wall and a head plate with arrows indicating the point at which the measurement should be read. Each rod is marked in metric (centimetres and millimetres) and imperial (feet and inches) units.

2. Measuring WEIGHT

Taking the measurement:

1. Ask the person to be measured whether they are happy to have their weight measured. If yes, proceed to point 2. If not, record this on the form, thank them for attending and ask them to leave.

2. Explain to the person what you are going to do before you start the process. This should be done at every stage. You should never touch or handle any individual before explaining to them the process beforehand.

3. Ask them to remove shoes, socks, coat, hat, thick jumper/cardigan " heavy clothing", heavy items of jewellery or items in pockets etc. along with any other items of clothing that may affect the accuracy of the reading .

4. Check the scales read zero before the person steps onto the scales and ensure that they are in kilogram mode.

5. If you are not using a set of scales with a remote display, then you may want to consider using a card or some form of visual blocking aid as they step onto the scales, if you do not wish for them to see the result.

6. The person should have both feet on the centre of the platform & not touching any other objects or persons.

7. They should stand upright, feet slightly apart so that they are comfortable and stable. Their arms should be by their side, relaxed " Their arms hanging loosely at their sides , their head facing forward "and they should look straight ahead. (The posture is important as this ensures their weight is evenly distributed, to achieve an accurate reading).

8. Weight should be recorded as displayed (ie to the nearest 200g or 0.2kg). They should then step off the scale and ***repeat the process a further 2 times*** to get a total of three readings.

9. If these readings are within 200g of each other, then record these readings as well as the average of the three readings.

10. If you do not have three readings that are within 200g of each other, then continue to repeat the process until you do.

11. After the person steps off the scales, check that the scales return to the zero position.

12. Do not comment on the weight of an individual as measurements are taken. Neutral comments only such as “thank you”, “can you step off the scale please” etc. are appropriate.

Remember:

- Compared with balance beam scales, electronic scales tend to be lighter in weight, somewhat more portable, and faster and easier to use.
- They provide easy-to-read digital output and, when properly calibrated, are highly accurate.
- Errors are commonly made in reading scale and rulers.
- Scales should be placed on a flat, hard, uncarpeted floor. The zero weight on the scale's should be checked regularly and after the scale has been moved.
- The scales should read zero before any individual steps onto the scales.
- Two or three times a year the accuracy of the scales should be further assured by using standard weights "scale must be calibrated" or by a professional dealer.
- Balance-beam scales with wheels that are moved from one location to another are not recommended either because scales must be recalibrated every time they are moved.
- Bathroom scales are not recommended as they tend to be unreliable " because of errors that may be introduced with use over time".

<u>For information only:</u>

- The recommended device that meets specific criteria" have a remote display so that the individual cannot see the reading-are portable, light and easy to transport-display weight to 200g over the range 0-150 kg ....etc " is the *Seca Model 884 electronic weighing scale.*

Timing of the session: weight

- The time of day the measurements are taken can make a difference to the results depending on whether the individual has consumed food and drink or voided their bladder/bowels prior to measurement.
- It is recommended that measurements should be conducted during the morning and before lunch - taking measurements immediately after lunch or during the afternoon should be avoided.
- Children and adults should know beforehand that they are to be measured and asked to visit the toilet before having their measurements taken and to avoid eating or drinking anything after breakfast and before lunchtime.
- Diurnal variations (cyclical changes occurring throughout the day) in weight of about 1 kg in children and 2 kg in adults are known to occur. For this reason, it is a good practice to also record the time weight was measured.
- Ideally, children and adults should be weighed after voiding and dressed in an examination gown of known weight or in light underclothing.

Should the weight of clothing be subtracted from the subject's weight?

It depends on the purpose for which measurements are obtained and how accurate the need to be.

- In setting requiring a high degree of accuracy, subjects can be clothed in an examination gown of known weight for which consideration can be easily made.
- In situations having somewhat less stringent requirements, a reasonable estimate of clothing weight can be subtracted from a subject's weight.