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STUDY OF OSTEOPOROTIC FRACTURES (V2)

Anthropometry Protocol

Rounding convention: Round up at .5 of smallest unit recorded on exam form.

I. WEIGHT IN KILOGRAMS

1. Equipment:

Weight is measured in kilograms using a standard balance beam scale. Each center should have a 50 kg weight for periodic calibration.

2. Subject preparation:

Weight is measured without shoes and without outer clothing or heavy sweaters.

3. Measurement Procedure:

a) The participant should stand in the center of the scales with her weight equally distributed on both feet and not touch or support herself on anything.

"In order to measure your weight, I would like you to remove your shoes (and any heavy outer clothing) and step forward onto the center of the scale."

b) Some participants may require support while being weighed. A scale with a safety railing would be ideal for this. It may be possible to have the manufacturer of your existing scale install a safety railing at a reasonable cost. Otherwise, weigh yourself with and without the participant's cane, etc., to determine its weight. Subtract the weight of the aid from the participant's weight before recording. In the event that it is necessary for the examiner to support the participant during weighing, provide the minimum support that is safe.

c) Weight is recorded to the nearest 0.1 kg. (If the scale is calibrated in pounds, measure to the nearest 1/4 pound and covert to kilograms.)

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II. STATURE (STANDING HEIGHT) WITH A WALL-MOUNTED HARPENDEN STADIOMETER

1. Equipment:

Height is measured in centimeters with a wall-mounted Harpenden Stadiometer.

2. Subject preparation:

Height is measured without shoes.

3. Measurement Procedure:

a) The participant stands with her back against the wall-mounted stadiometer with the heels together and both heels touching the wall plate. The back (scapulae) and buttocks should also be in contact with the wall-plate.

"Please stand against the device which is mounted on this wall. Your heels should be together (as close as possible) and both heels should be touching the wall-plate. Look straight ahead. (Optional: I will position your head so that I can measure your height more accurately.)"

b) Be sure that in this position the participant maintains erect posture, i.e., no slouching. Heels should be together with the weight equally distributed and the head in the "Frankfort Horizontal Plane." The line through the lowest point on the inferior orbital margin (orbitale) and the upper margin of the external auditory meatus (tragion) should be horizontal. The horizontal bar is brought down firmly onto the top of the head. It may be necessary, upon occasion, to remove or alter the hairdress of some of the participants. This is necessary for the horizontal bar to make contact with the top of the scalp.

Occasionally, it will be impossible to position the participant's heels, buttocks, scapulae and the back of the head in one vertical plane against the wall-plate and still have her stand naturally and comfortably. If the back is arched due to large buttocks, move the participant forward and have only one part (usually the buttocks) in contact with the stadiometer. Similarly for participants with severe spinal curvature, if the spine is the part that protrudes the farthest, then that should be the part that is touching the rule.

c) Have the participant inhale deeply, again not altering position by, for example, raising the heels off the floor. Once in position, say:

"Take a deep breath."

d) Stature is measured just before exhaling. Measure height and then say

"Exhale."

e) Record height to the nearest tenth of a centimeter.

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III. WRIST CIRCUMFERENCE

1. Introduction:

Wrist circumference is measured in centimeters with an inelastic tape.

Wrist circumference is a useful index of frame size because this region is relatively free from adipose tissue and muscle.

2. Equipment

An inelastic measuring tape, in centimeters, no more than 0.7 cm wide.

3. Measurement procedure:

- a) Measure the wrist circumference on the same side as the Osteon forearm scan (usually the right).
- b) The measurer faces the subject who stands and flexes the arm at the elbow so that the palm is uppermost and the hand muscles relaxed. (See Figure.)
- c) An inelastic tape is placed just distal to the styloid processes of the radius and ulna, which are located by palpating with the index or middle fingers of each hand. The tape is positioned perpendicular to the long axis of the forearm and in the same plane on the anterior and posterior aspects of the wrist. (See Figure.) The tape must be no more than 0.7 cm wide, so that it can fit into the medial and lateral depressions at this level.

Note: To correctly position the tape in the depression just distal to the bony prominences, it may be easier to have the subject turn the palm downward so that the styloid processes are more easily identified. However, the measurement should be taken with the palm facing upward.
- d) The measurement is made with the tape touching the skin around the whole circumference but not compressing the soft tissues.
- e) The wrist circumference is recorded to the nearest 0.1 cm.

IV. WAIST GIRTH

1. Introduction:

Waist girth will be measured in centimeters using an inelastic tape around the waist horizontally at the natural waist line, or if that cannot be determined, at the midpoint between the highest point of the iliac crest and lowest part of the costal margin in the mid axillary line.

Waist circumference is an index of deep adipose tissue, and is related to fat-free mass. When used in a ratio with the thigh or buttock (hip) circumference, waist circumference is an indicator of the degree of masculine distribution of adipose tissue. The higher the waist

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to thigh or hip ratio, the more masculine the pattern of fat distribution and the greater the risk of certain diseases such as noninsulin-dependent diabetes.

2. Equipment:

An inelastic fiberglass tape that is marked in centimeters alone on one side. Confusion may arise if the tape is marked in centimeters and inches on the same side.

3. Subject Preparation:

Heavy or extra clothing should be removed. Participants should not wear any restricting or compressing undergarments which could interfere with the measurement. The measurement should be taken over bare skin to insure that the proper circumference is chosen. This may require lifting up shirts and blouses and lowering pants a few inches.

4. Measurement Procedure:

a) The participant should stand with her weight equally distributed on both feet. She should relax and breath normally. The examiner should be sitting or squatting so that eye level is at the level of the waist.

"I'd like to take a few measurements around your middle. First, I'm going to measure your waist."

b) Pull the tape halfway around her waist at the natural waistline, i.e. the most narrow portion of the waist. If the natural waistline cannot be determined, palpate the rib cage and the top of the iliac crest on both sides with two or three fingers and place the tape midway between the two landmarks. Be sure the tape is in the same horizontal plane all around. An assistant may sometimes be needed to position the tape behind the subject.

c) Measure the waist directly over bare skin. Lower slacks or skirt so that waist bands do not produce a bulge in tissue. The tape is held snug against the skin without compressing the tissues and with its zero end below the value to be recorded.

d) The measurement is made at the end of a normal expiration to the nearest 0.1 cm.

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V. ABDOMINAL GIRTH

1. Introduction:

The abdominal circumference, like the waist circumference, is an anthropometric indicator of subcutaneous and deep adipose tissue. It differs from the waist circumference in being the maximum circumference of the abdomen and, therefore, may be a better indicator of adipose tissue. It is probable that the waist and abdominal circumferences are highly correlated, although the extent is unknown because in most studies one or the other measurement is recorded.

2. Subject preparation:

The measurement should be taken over bare skin to insure that the maximum circumference is chosen. This may require lifting up shirts and blouses and lowering pants a few inches.

3. Measurement procedure:

a) The measurer faces the subject. The subject stands with the arms by the sides and the feet together.

"Now I'm going to measure you at a level a little lower down than the previous measurement."

b) The procedures are the same as those to be followed for the waist circumference, except that the tape is placed around the subject at the level of the greatest anterior extension of the abdomen in a horizontal plane. The examiner should be squatting or sitting by the side of the subject to view the greatest extension. This level is usually, but not always, at the level of the umbilicus. (See Figure.)

c) The tape is held snug against the skin without compressing the tissues and with its zero end below the value to be recorded. The participant may assist in gently holding the tape in place on the side away from the examiner. Be sure the tape is in the same horizontal plane all around.

d) The measurement is made at the end of a normal expiration to the nearest 0.1 cm.

VI. HIP GIRTH

1 Introduction:

Hip girth will be measured with an inelastic tape at the level of the greater femoral trochanter, or if the trochanters cannot be palpated, at the greatest protuberance of the buttocks. Hip circumference is a measurement of external pelvic size that reflects the amount of adipose tissue in the region. Adipose tissue in the region is largely subcutaneous and relates to the lower segment of the body. Hence, hip circumference is an indicator of lower body fatness. Used in conjunction with waist circumference, in the

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waist-to-hip circumference ratio, it is an indicator of the pattern of subcutaneous adipose tissue distribution, with low values being characteristic of women.

2. Subject Preparation:

The measurement should be made over undergarments only. Participants should not wear any restricting or compressing undergarments which could interfere with the measurement. Pants should be lowered to below the hips.

3. Measurement procedure:

a) Ask the participant to lower her pants to just below the hips.

"I'm also going to measure your hips. To do so I have to find the bony point called the trochanter."

Palpate the greater trochanters of the hip. Ask the subject to assist in finding the "hip bones." If necessary, mark each with a piece of tape. Pull one end of the tape halfway around the hips and ask the participant to hold it in place on the bony prominence on one side. Then pull the other half of the tape over the spot marking the other trochanter.

b) If the greater trochanters cannot be felt, the measurement should be taken at what appears to be the greatest protruberance of the buttocks, as viewed from the side.

c) When the tape is in place, look to be sure that it is horizontal all around and has not slipped out of place, especially in back. An assistant may sometimes be needed to help position the tape on the opposite side of the subject's body. The zero end of the tape should be below the measurement value. The tape is in contact with, and should gently indent the clothing, but not compress the underlying tissue.

d) The measurement is recorded to the nearest 0.1 cm.