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Pulse Rate Heart Rate and Blood Pressure

Experiment 14 - Practical Notes

Name: _____ Roll no.: _____ Date: _____

Aim

To measure a supervised resting pulse and blood pressure and distinguish pulse rate from heart rate.

Principle

Pulse is the palpable arterial pressure wave; heart rate is the number of cardiac cycles per minute. They are usually equal in a regular effective rhythm but may differ. Blood pressure measurement depends on preparation, cuff size, arm position and repeated readings; one classroom reading does not diagnose hypertension.

Requirements

- Timer, validated upper-arm BP device and suitable cuff sizes.
- Stethoscope for the instructor-prescribed auscultatory demonstration.
- Consenting adult volunteer under classroom supervision or simulation.

Procedure

1. Prepare

Explain the activity and obtain consent. For a resting BP measurement, avoid exercise, smoking and caffeine for 30 minutes beforehand when following the standard procedure; allow at least five minutes of quiet seated rest.

2. Position

Seat with back supported, feet flat and legs uncrossed. Support the bare upper arm at heart level. Select the cuff specified for the measured arm circumference.

3. Measure pulse

Palpate the radial pulse with finger pads, not the thumb. Record rate and rhythm. Count for a full minute when irregular or when the protocol requires it.

4. Measure BP

Use the validated device instructions. Keep the volunteer still and silent. Repeat readings with the prescribed interval, commonly at least one minute, and record each result.

5. Observe auscultation

Where demonstrated, the first Korotkoff sounds identify systolic pressure and disappearance identifies adult diastolic pressure under the prescribed method.

6. Record and interpret

Record arm, cuff, position, device and readings. Do not change a person's treatment on the basis of the exercise.

Observations and Record

Measurement	Reading 1	Reading 2
Pulse / heart rate	____ beats/min	____ beats/min
Blood pressure	____ / ____ mmHg	____ / ____ mmHg
Arm / cuff / position	_____	_____

Worked Example

The numbers below are illustrative; enter your own observations in the record.

- Regular pulse exercise: 36 beats in 30 s gives 36 × 2 = 72 beats/min. Use a full-minute count when required rather than extrapolating an irregular rhythm.
- Fictional BP readings: 124/78 and 122/80 mmHg. Arithmetic mean = 123/79 mmHg.
- An auscultated heart rate of 84/min with a radial pulse of 78/min gives a pulse deficit of 6/min, if counted under an appropriate comparable protocol.

Result

Pulse: ____ beats/min; rhythm: ____. BP readings: ____ and ____ mmHg. Device, cuff, arm and position are documented.

Precautions

- Use a cuff that fits the arm; an unsuitable cuff can bias the result.
- Do not measure over clothing or while the person talks.
- Concerning symptoms during a volunteer activity require the supervising clinician's attention.

Viva Questions and Answers

1. Why support the arm at heart level?

It helps standardise hydrostatic effects on the reading.

2. Why can pulse and heart rates differ?

Some cardiac cycles may not generate a palpable peripheral pulse.

3. Does one high reading establish hypertension?

No; correct repeated assessment and clinical evaluation are required.

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