

Finding your pulse – Instructor lesson plan

Aims

To explore where pulses are & how to detect them

Age range secondary school (12 -16yrs)

Numbers up to 50

Duration up to an hour

Equipment

- Doppler ultrasound machines, gel & paper towels
- Small speakers for Doppler if large group
- A/V aids optional (e.g. pictures of pulse sites, Doppler sounds etc)
- Accompanying worksheet

Learning intentions

By the end of the session learners will be able to:

- Identify different pulse sites in the body
- Determine how to find pulses
- Recognise some of the difficulties in finding a pulse
- Use a Doppler to locate a pulse

Introduction

Team to introduce themselves & aims from session

Explain learners will be working in pairs to locate pulses

Task 1 What is a pulse?

Ask learners what a pulse is & to note this in their workbook

Task 2 What creates a pulse?

Pulses in reality are a pressure wave from the heart & blood travels continuously through an artery **away** from the heart.

Ask learners essential differences between arteries & veins

Task 3 Are there different pulse locations in the body?

Identify all different pulse locations in body using top to toe approach & learners to add these to the picture in their work book

[carotid, brachial, radial, femoral, popliteal, dorsalis pedis & posterior tibial]

Task 4

In pairs, learners try to locate each other's pulses (radial probably simplest)

Identify how many successfully can find a pulse

Then determine reasons pulses are difficult to locate & learners to note this- factors such as Correct anatomical position, need to use 3 fingers, not too much pressure etc.

Task 5

Instructors to demonstrate Doppler (wrist or foot)

Identify how Doppler aids pulse location (tip: use speakers in Doppler headphone port)

Task 6

Distribute Dopplers & supervise learners using Doppler to detect pulse

- Ask learners what they hear – learners to identify there are distinct sounds

Task 7

Ask learners what they think the sounds represent

Work towards:

1. A high forward flow during systole due to left ventricular contraction,
2. A transient period of flow reversal in early diastole resulting from the pressure wave travelling faster than blood and being reflected back from a high-resistance from bed of smaller arteries - think of pouring water into a funnel
3. A second further forward flow because a valve at the start of the aorta stops blood from flowing back into the heart and the large artery leaving the heart (the aorta) has an elastic wall and stretches like a balloon when the heart contracts. The elastic walls of arteries returning to their normal shape propel blood away from the heart.

If time/understanding permits, you may move on to clinical descriptions:

Clinically, we call this pattern 'Triphasic': three phases—forward flow, flow reversal, and a second forward component.

There is also a Biphasic type: two phases—one forward flow and one reverse component

Biphasic and triphasic flow patterns are normal in a resting person

If the artery being listened to has a severe blockage, the arterioles will open (vasodilation) to allow more flow in an attempt to deliver the amount of blood required by parts of the body. That stops the reflection of the pressure wave giving a flow pattern with only one sound - in a forward direction - which is described as monophasic. A monophasic pattern generally indicates significant disease in their arteries.