





## Humans as the subject of investigation (2)

including exercise, breathing and blood pressure

See also CLEAPSS Student Safety Sheets 3, 6, 8 and 9

Source	Hazard	Comment
Investigating effects of exercise	 DANGER	Over-exertion may be a hazard, especially for those with certain medical conditions. Competitive situations can lead to careless behaviour and accidents.  Unsuitable footwear, uneven surfaces, running up and down stairs and unstable equipment may be hazards.
Investigating breathing	 DANGER  BIOHAZARD	Shared mouthpieces are sources of infection. When using manometers, fluid may be taken into the mouth.  Use of spirometers which have a large chamber filled with air or oxygen must be closely supervised by the teacher. Use of lung-volume bags (or even water-filled bell jars), data-logging sensors and peak-flow meters are much safer. It is dangerous to carry out investigations involving rebreathed air for more than 1 minute.
Investigating blood pressure	 DANGER	Using a sphygmomanometer with a mercury manometer and a stethoscope requires great skill. Electronic models, especially with automatic cuff inflation, are much more suitable but still require close teacher supervision.

### Typical control measures to reduce risk

- Ensure only willing volunteers are used and reassure them if results are exceptional or surprising.
- Make sure you know how to use any equipment safely.
- When taking exercise, use step-ups on stable equipment rather than running up stairs, do not exercise more than in PE and be aware of students with asthma, diabetes, circulatory problems or those advised not to take part in normal PE lessons.
- Change and disinfect mouthpieces after each pupil.
- Ensure manometers have a trap to prevent fluid being taken into the mouth.
- Only use equipment for measuring blood pressure under the direct supervision of trained staff.

### Assessing the risks

- **What are the details of the activity to be undertaken? What are the hazards?**
- **What is the chance of something going wrong?**  
*eg, could somebody over-exert themselves or trip dangerously?*  
*If first-aid treatment were not applied, could the casualty's condition put his or her life at risk?*
- **How serious would it be if something did go wrong?**  
*eg, could it become life-threatening?*
- **How can the risk(s) be controlled for this activity?**  
*eg, can it be done safely? Does the procedure need to be altered?*

### Emergency action

- **Impact injury** Rest the injured part; apply ice to reduce the bruising and pain; get attention from a first-aider.
- **Asthma or breathing difficulties** Students should use their own inhalers (if any) and inform teacher