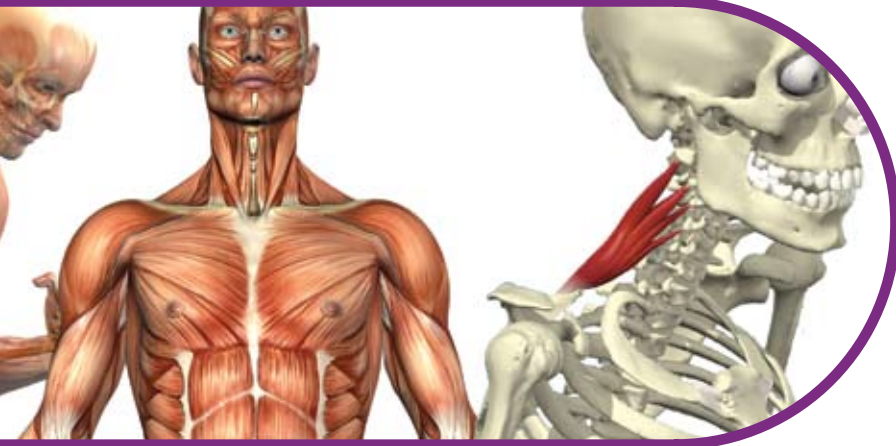




Exercise and Fitness
Knowledge
Manual



LEVEL 3: CERTIFICATE IN ADVANCED
FITNESS INSTRUCTING - GYM

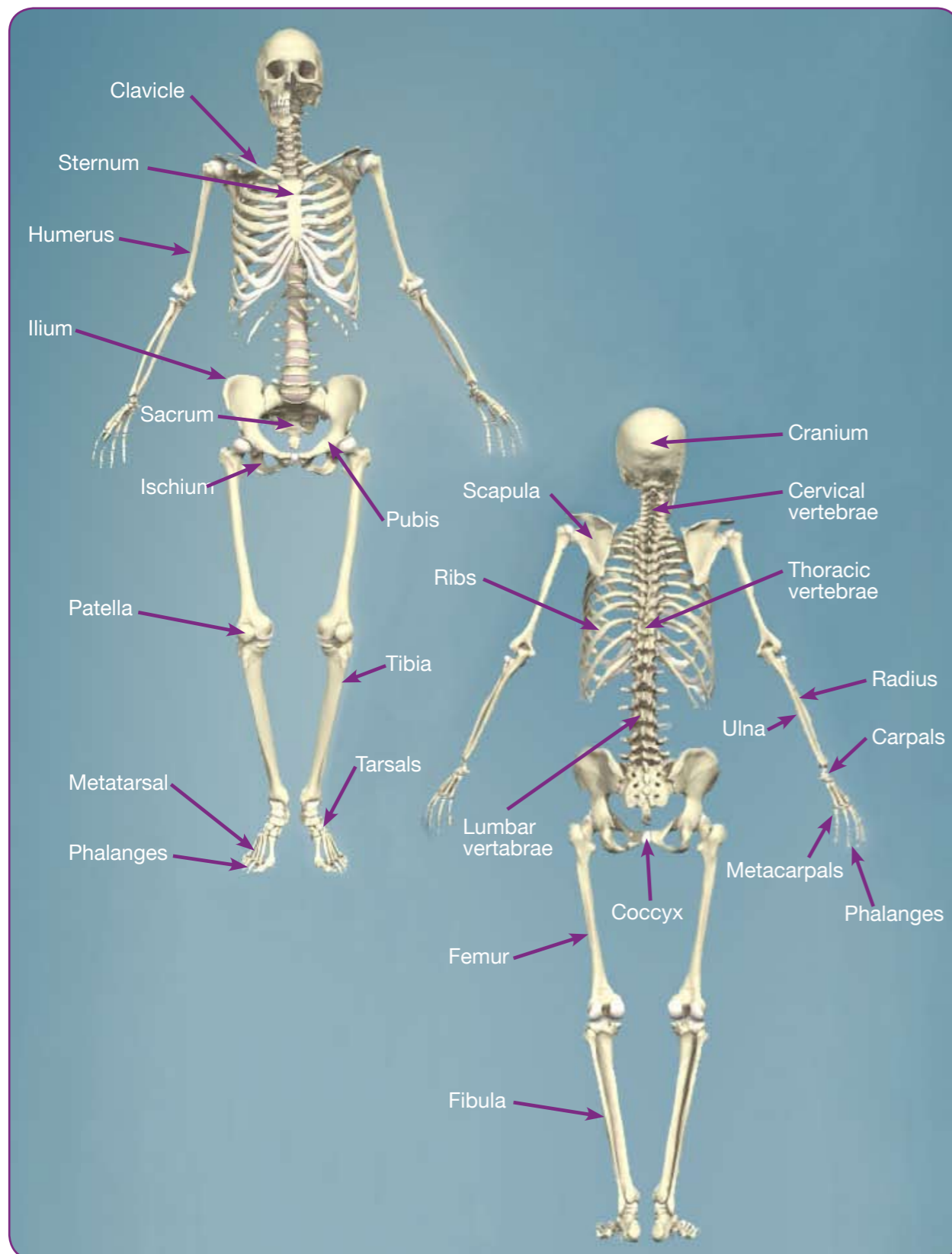


Figure 4.1 The human skeleton.

4.2 Anatomical planes and sites

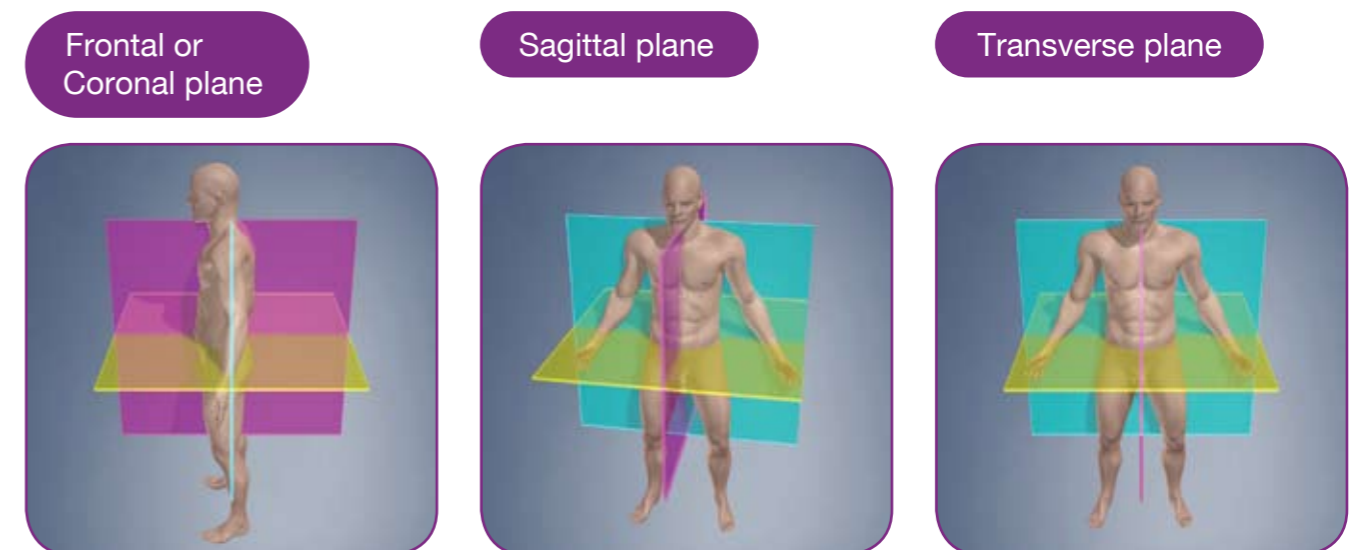
The body can be separated into different anatomical planes, used to describe the different sections of the body, movements of the body and to help provide the precise location of muscles.

Frontal or coronal plane – separates the **anterior** (front) and **posterior** (back) of the body. It is used to describe movement involving abduction or adduction. For example, an arm lateral raise is performed in the frontal plane.

In this case the word **lateral** has been used, to describe movement relating to the side of the body. Lateral may also be used to describe the site of a muscle, as in vastus lateralis. By contrast, the word **medial** would be used to describe movement towards the middle of the body, or muscle sited near the middle of the body, as in vastus medialis. The word used to describe the area in between the lateral and **medial** is **intermedius**, as in vastus intermedius.

Sagittal plane – separates the left and right sides of the body. It is used to describe movement involving flexion or extension. For example, an arm front raise is performed in the sagittal plane.

Transverse plane – separates the upper and lower part of the body. It is used to describe a movement involving rotation. For example, a trunk twist is performed in the transverse plane. The transversus abdominus muscle wraps around the body and provides another example of how the word can be used to identify muscle location.



These planes can be divided equally or unequally. If equal, the word **mid** is added before the name, to suggest separation at the middle point, eg mid-sagittal.

5.10 Muscle names and actions

There are over 600 skeletal muscles in the human body. Below are the names of the main muscles used in exercise, together with their attachments and the joint/s they cross.

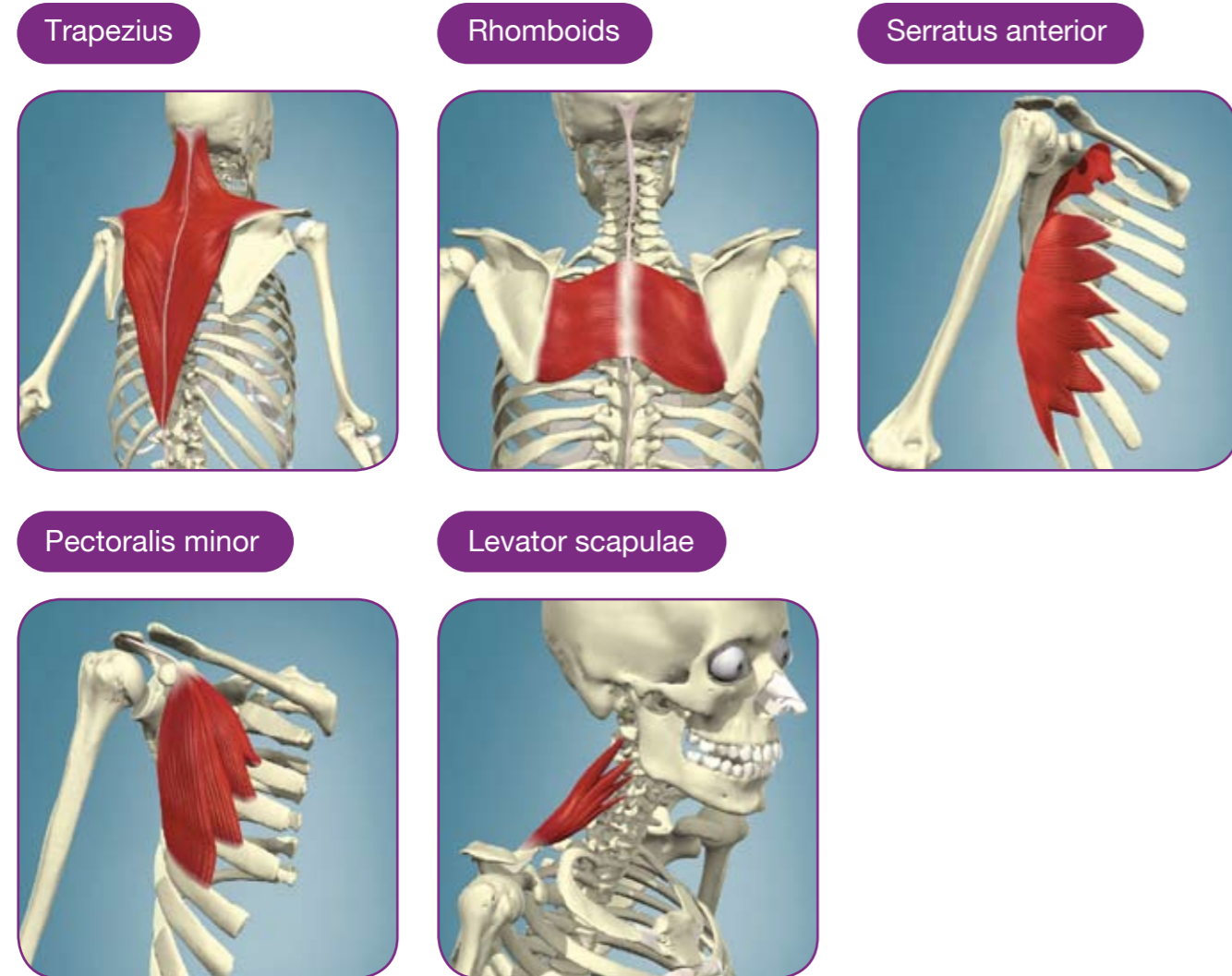
Knowledge about each muscle is important in order to give personalised advice to each participant when exercise programming. With information about the origin and insertion of a muscle it is possible to note the direction in which the muscle fibres lie and therefore the direction of pull. This together with information about the joint/s the muscle crosses (the type of joint will dictate the movement available at that joint), enables appropriate guidance to be given on exercise selection and technique.

Each muscle has a Latin name. The name often describes something about the muscle; its location, its shape or its function.

5.8.1 The shoulder girdle

Movements available: elevation, depression, protraction, retraction

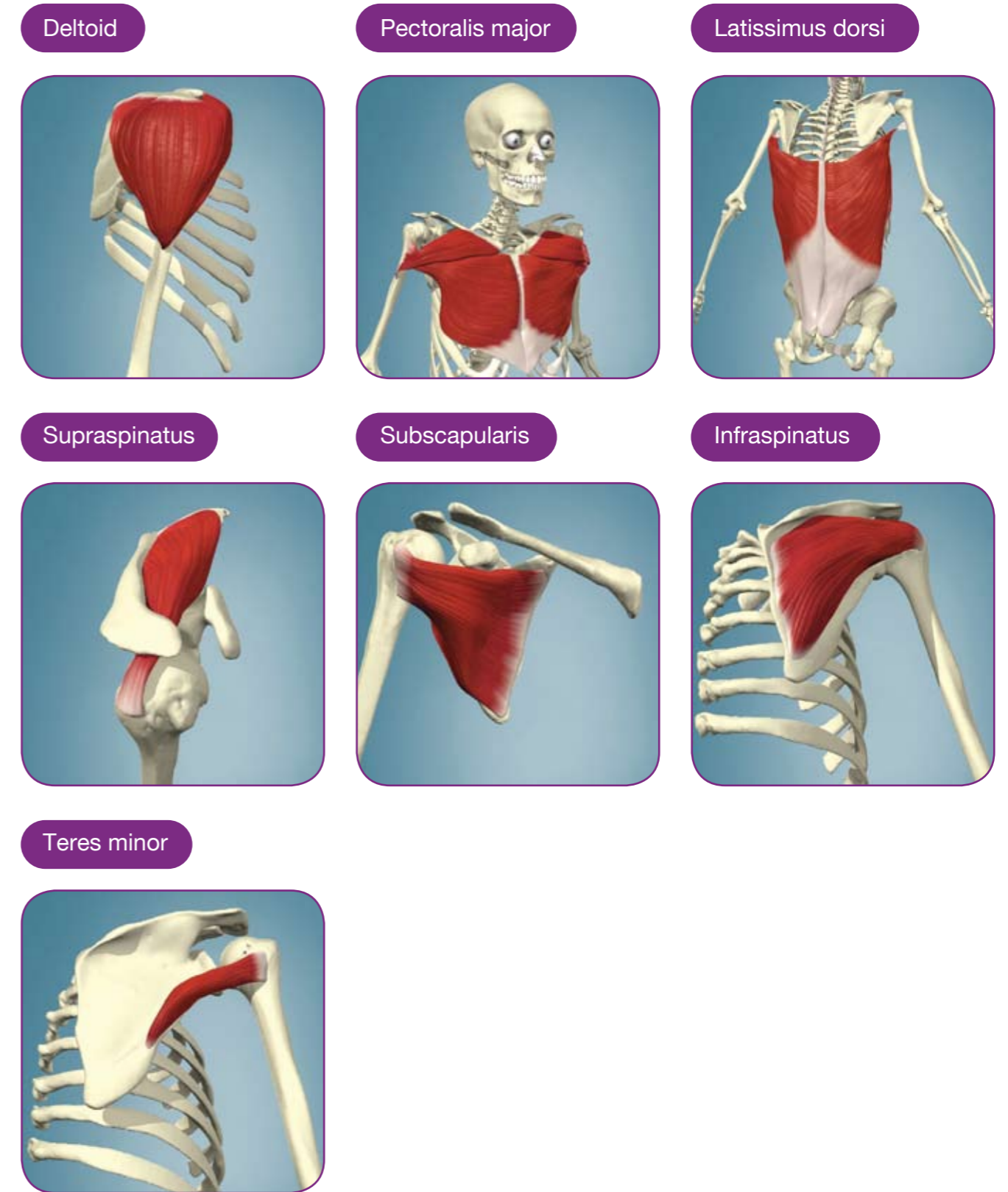
Muscles bringing about these actions:



5.8.2 The shoulder

Movements available: flexion, extension, abduction, adduction, rotation, circumduction

Muscles bringing about these actions:



The rotator cuff muscles are important shoulder stabilisers, required due to the natural instability of the relatively shallow glenohumeral joint. They are particularly prone to tear, particularly from performing repeated movements at the extreme of range, as brought about in some sports.

