

Musculoskeletal system

Humerus - The top of the arm

Radius - lower arm

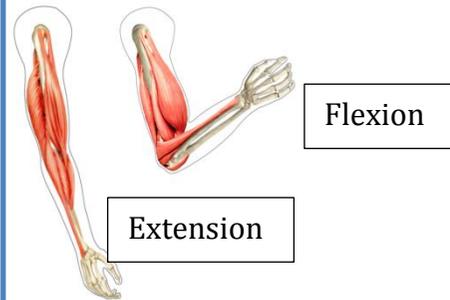
Ulna - Lower arm

Tendons attach muscles to bones.

Antagonistic muscle pairs

Bicep - Contracts when the arm flexes (flexion). Relaxes when the arm extends.

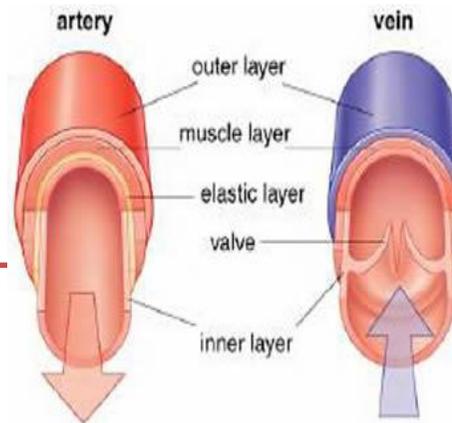
Triceps Contracts when the arm extends (extension). Relaxes when the arm flexes.



How can you link these to passing the ball in rugby?

Anatomy and physiology Rugby Year 9

RL



Respiratory system

Lungs

Working Muscles

Mouth

Gaseous exchange

- Oxygen is breathed in through the mouth.
- It then enters the lungs and the chest cavity becomes larger.
- Oxygen is then diffused into the blood and transported to working muscles that need it during a game of rugby such as the biceps and triceps.
- Carbon dioxide is created by the working muscles and is a waste product
- Carbon dioxide is transported by the blood back to the lungs and is breathed out.

Cardiovascular system

Heart

Blood vessels

- **Arteries** - Carry OXYGENATED blood away from the heart
- **Veins** - Carry DEOXYGENATED blood to the heart

Cardiac Output = Stroke volume x Heart rate

Cardiac Output - The volume of blood pumped out of the heart in 1 minute

Stroke Volume - The volume of blood pumped out of the heart per beat

Heart Rate - How many times the heart beats per minute.

When you play rugby your cardiac output increases due to the increased demand for oxygen by your working muscles.

COMMAND WORDS

Describe - Set out characteristics. Give a brief account

Explain - make an idea clear to someone by describing it in more detail or revealing relevant facts.

Compare - Identify similarities and or differences

Justify - Support a case with evidence (e.g. link it to sporting movements)

Identify - Name or otherwise characterise

Aerobic - Exercise whilst using oxygen (e.g. jogging for long periods of time)

Anaerobic - Exercise without using oxygen (short, fast movements such as tackling an opponent or sprinting past an opponent. Lasts a few seconds)

Short term effects of exercise (what happens straight away)

- Increased stroke volume
- Increase in blood pressure
- Increased breathing rate
- Increase in heart rate

Long term effects of exercise

- Decrease in resting heart rate
- Increase maximum cardiac output
- Increased lung capacity

How can you link anaerobic (tackling, sprinting) and aerobic exercise (running around during an 80 minute game) to different parts of rugby?

Synovial Joints

Hinge joint- Elbow + Knee

Ball and socket- Shoulder and Hips

The **hinge joint** at the **elbow** allows **flexion and extension**. When performing a pass **extension** occurs at the **elbow** caused by the **triceps contracting** and the **biceps relaxing**.

LINK EVERYTHING BACK TO YOUR SPORT!!

