

# Anatomy and Physiology

## Year 9 Football

### Musculoskeletal system

Humerus - The top of the arm

Radius- lower arm

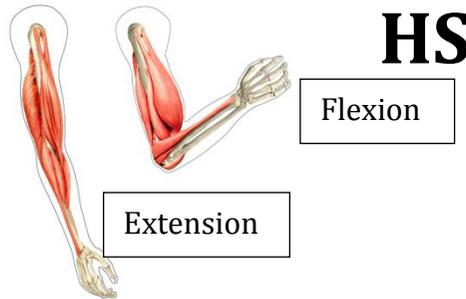
Ulna- Lower arm

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 doing a throw in?

### Cardiovascular system

#### Heart

#### Blood vessels

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

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

When you play football your heart rate increases due to the increased demand for oxygen by your working muscles.

### Respiratory system

#### 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 football

Carbon dioxide is transported by the blood back to the lungs and is breathed out.

#### Mechanics of breathing

##### Inhalation:

The rib cage moves up and out  
Diaphragm flattens out

##### Exhalation:

Rib cage moves inwards and downwards.  
Diaphragm becomes dome shaped.

**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 heart rate

Increased breathing rate

Increased body temperature

### Long term effects of exercise

Remember the 4 S's (increased strength, speed, stamina & suppleness)

Body shape may change

### Synovial Joints

Hinge joint: Elbow + Knee

Ball and socket joint: Shoulder and Hip

Components of a synovial joint:

Ligaments: attach bone to bone

Cartilage: covers ends of bone, providing a smooth, friction-free surface

Synovial fluid: lubricates a joint

The **hinge joint** at the **elbow** allows **flexion and extension**.

# LINK EVERYTHING BACK TO YOUR SPORT!!

