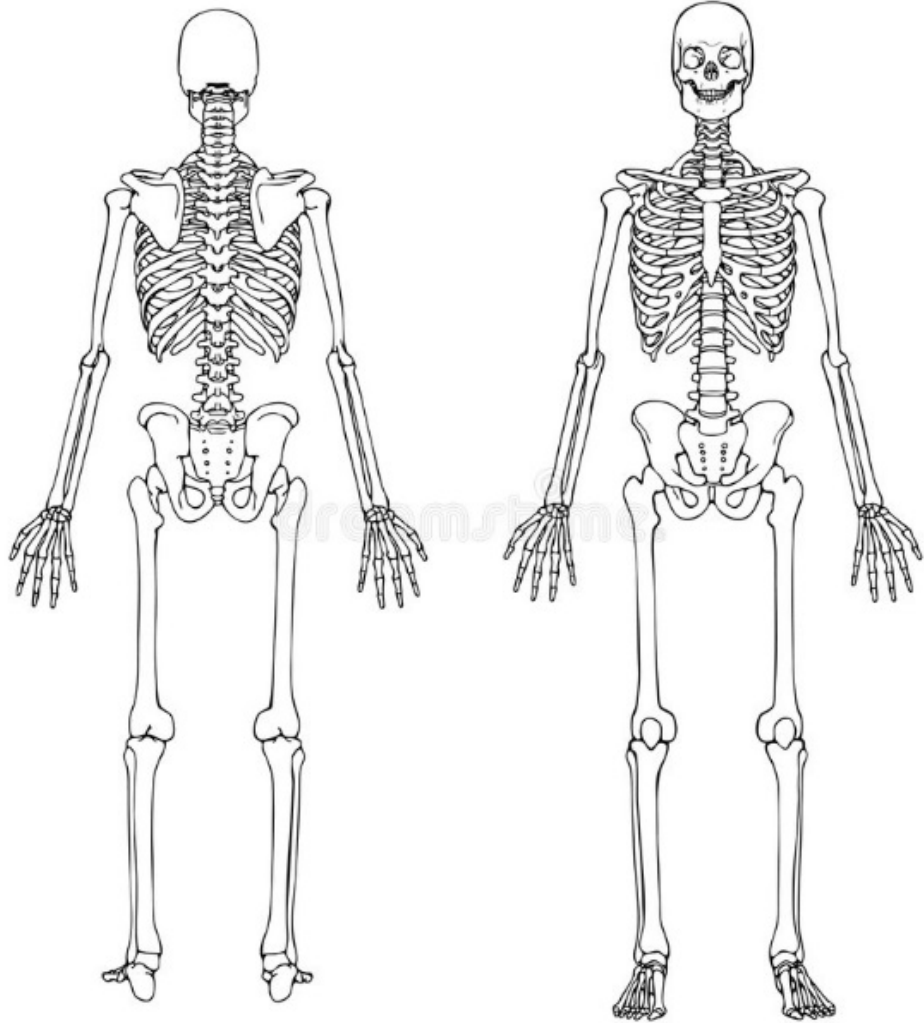


## Skeletal System

Cranium  
Mandible  
Scapula  
Clavicle  
Sternum  
Vertebral column  
Rib Cage  
Humerus  
Radius  
Ulna  
Carpals  
Metacarpals  
Phalanges  
Pelvic Girdle  
Femur  
Tibia  
Fibula  
Patella  
tarsals  
Metatarsals  
Phalanges



### Functions of the Skeletal System: Remember – SPAMB

- S** – Storage of Minerals
- P** – Protection of vital organs
- A** – Attachment of muscle
- M** – Movement (skeleton has JOINTS to allow movement)
- B** – Blood Cell Production

### Classification of Bones

- Long** – leverage
- Short** – strong -weight bearing & shock absorber
- Flat** – Flat surface for protection and muscle attachment
- Irregular** –specific function – vertebrae protect spinal cord

### JOINTS

**remember joints allow MOVEMENT**

**Pivot** (neck – atlas and axis),

- rotation

**Hinge** (elbow, knee and ankle),

- elbow/knee - flexion and extension
- Ankle - plantar-flexion (point toes toward floor) dorsi-flexion(point toes upwards towards head)

**Ball and socket** (hip and shoulder),

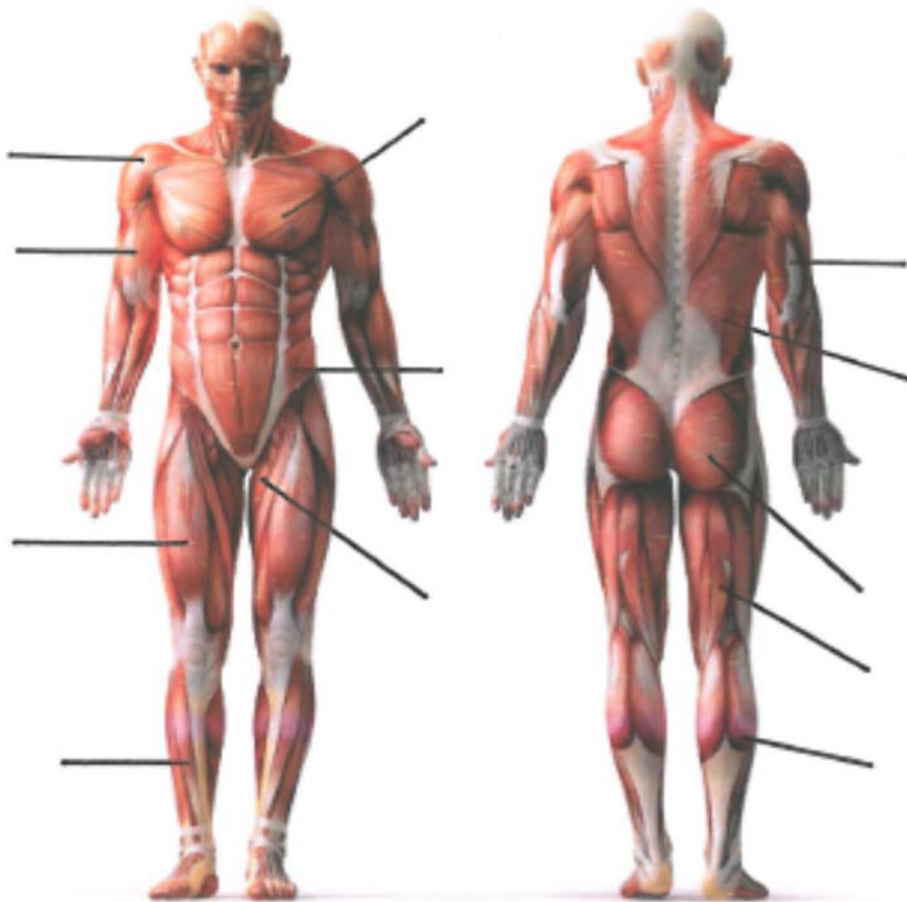
- Movement in all directions
- Wide range of movement useful for sport

**Condylloid** (wrist)

- Some movement in all directions (not rotation)


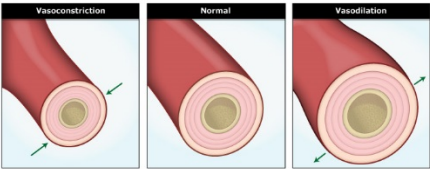
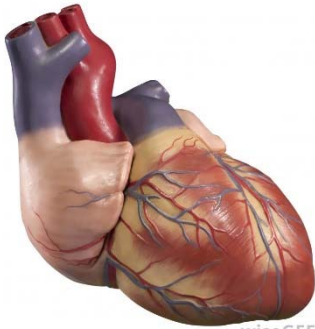
Tendons – attach muscle to bone

# Muscular System



Deltoid, biceps, triceps, pectoralis major, latissimus dorsi, external obliques, hip flexors, gluteus maximus, quadriceps, hamstrings, gastrocnemius, tibialis anterior, abdominals

## Types of Muscle

1. Voluntary muscle MOVEMENT	2. Involuntary Muscle CONTROL BLOOD FLOW	3. Cardiac Muscle PUMP OXYGENATED BLOOD
 <p>Contract &amp; Relax to create movement</p>	<p>Artery Function</p>  <p><b>Vasodilation</b> – lumen gets <b>WIDER</b> to allow <b>MORE</b> blood flow</p> <p><b>Vasoconstriction</b> – lumen narrows to restrict blood flow</p> <p><b>Vascular Shunt</b> – redirect blood flow</p>	 <p style="text-align: right; font-size: small;">wiseGEEK</p>

## **Long Term Adaptations to Training**

### **Skeletal System**

- Increased bone density/ stronger bones – weight bearing exercise only
- HEALTH – prevent osteoporosis
- SPORTS PERFORMANCE – Prevent broken bones e.g. in a tackle

### **Muscular System**

- Muscle Hypertrophy – training causes microtears, when they repair (during rest) they adapt by getting bigger/stronger, therefore more powerful
- Increased resistance to fatigue – can tolerate lactic acid therefore resist fatigue
- HEALTH – Improved Posture
- SPORTS PERFORMANCE – more powerful muscle OR improved muscular endurance

## Antagonistic Muscle Action

Each joint has 2 muscles that are in charge of movement – called an “antagonistic pair”

They take it in turns to contract and relax to create movement

Muscle Contracting = agonist



Muscle Relaxing = Antagonist

METHOD:

- 1) Identify the PAIR of muscles
- 2) Identify 1 movement
- 3) Name the AGONIST
- 4) Name the ANTAGONIST
- 5) Explain these terms

<b>Muscle</b>	<b><u>Function of the muscle</u></b> <b>*****remember: 1 muscle = 1 movement*****</b> <b>*****remember: you must say which joint*****</b>
Biceps	Flexion of the elbow
Triceps	Extension of the elbow
Quadriceps	Extension of the knee
Hamstrings	Flexion of the knee
Hip Flexors	Flexion of the hip
Gluteus Maximus	Extension of the hip
Tibialis Anterior	Dorsi-Flexion of the ankle
Gastrocnemius	Plantar-Flexion of the ankle

## Muscle Fibres

<p>Marathon</p> 	<p><b>Type I</b></p>		<p>100m</p> <p><b>Type IIx</b></p>
<p>Slow twitch</p> <p>Suited to endurance events 10,000m and marathon</p> <p>Weak contractions</p> <p>Highly resistant to fatigue</p>	<p>Fast twitch</p> <p>Share characteristics of Type I and Type IIx</p> <p>Suited to sprints 400m</p> <p>Strong contractions</p> <p>SOME resistance to fatigue – can <u>SUSTAIN POWER</u> longer than type IIx</p>	<p>Fast Twitch</p> <p>Suited to power events Throwing and jumping, 100m sprint</p> <p>Very strong/powerful contractions</p> <p>LOW resistance to fatigue</p>	