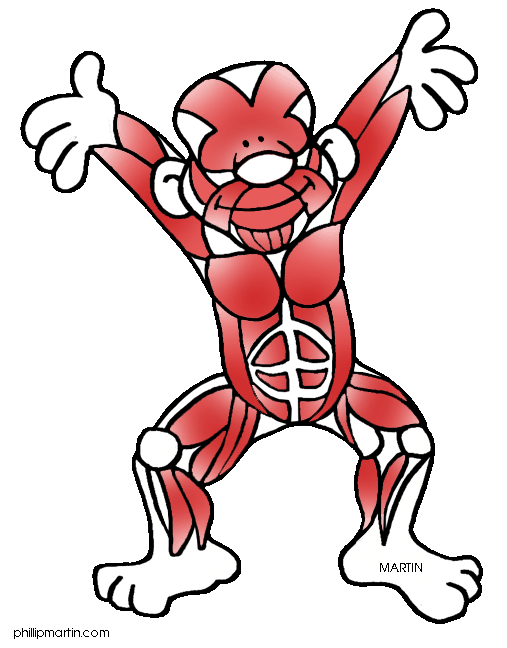
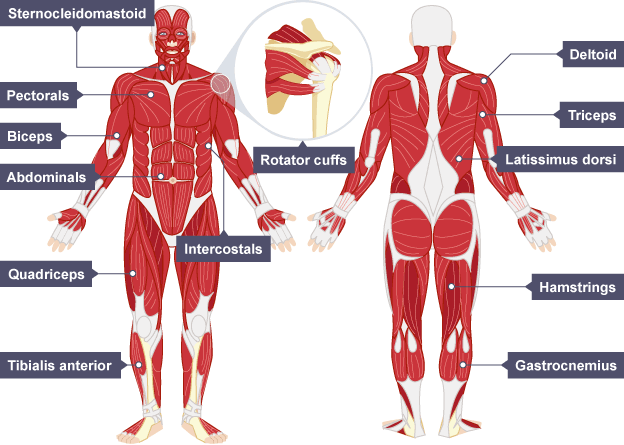
**Muscular System Revision Guide**







**Voluntary Muscles**

|  |  |  |
| --- | --- | --- |
| Muscle Name | Function | Sporting Examples |
| Sternocleidomastoid | Aid the breathing process. | All endurance events (1,500m). |
| Deltoid | Abduction of the shoulder. | Outward arm in a jumping jack. |
| Rotator Cuffs | Stabilises the shoulder preventing dislocation. | Throwing a javelin. |
| Pectorals | Adduction of the shoulder. | Upwards phases of a press up. |
| Intercostal | Assists with the breathing process. | All endurance events (1,500m). |
| Triceps | Extension of the elbow. | Shooting in netball. |
| Biceps | Flexion of the elbow. | Drawing a bow in archery. |
| Abdominals | Flexion of the trunk across the stomach (Sitting up). | Performing a sit up. |
| Latissimus Dorsi | Adduction of the shoulder. | Butterfly stroke in swimming. |
| Quadriceps | Extension of the knee. | Kicking a football. |
| Hamstrings | Flexion of the knee. | Performing a hamstring curl on a weight machine. |
| Gastrocnemius | Plantar flexion of the ankle. | Standing on tiptoes to mark a goal shoo in netball. |
| Tibialis Anterior | Dorsiflexion of the ankle. | Foot making contact with a football when passing. |

**Muscle Movement**

**CONCENTRIC CONTRACTION (ICC)** – This involves the muscles shortening. The **ORIGIN** and **INSERTION** of the muscle move closer together and the muscle becomes **FATTER**.

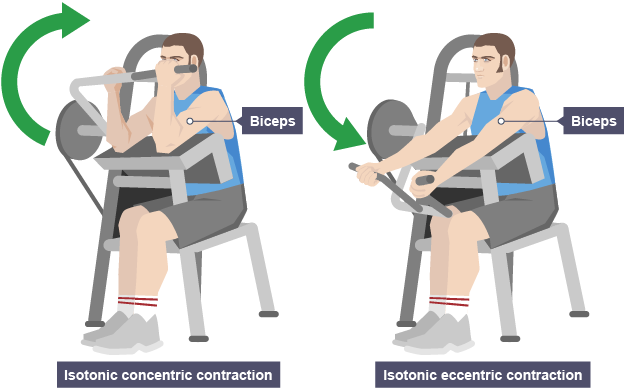
Main muscles of the body: sternocleidomastoid, pectorals, biceps, intercostals, rotator cuffs, abdominals, quadriceps, tibialis anterior, deltoid, triceps, latissimus dorsi, hamstrings, gastrocnemius.

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**ISOTONIC ECCENTRIC CONTRACTION (IEC)** – This involves the muscle **LENGTHENING** whilst it is under tension. The **ORIGIN** and the **INSERTION** move further away from each other. An eccentric contraction provides the control of a movement on the downward phase and it works to resist the force of gravity.



**ISOMETRIC CONTRACTIONS - This involves a muscle producing tension but staying the same length. This occurs when the body is fixed in one position.**

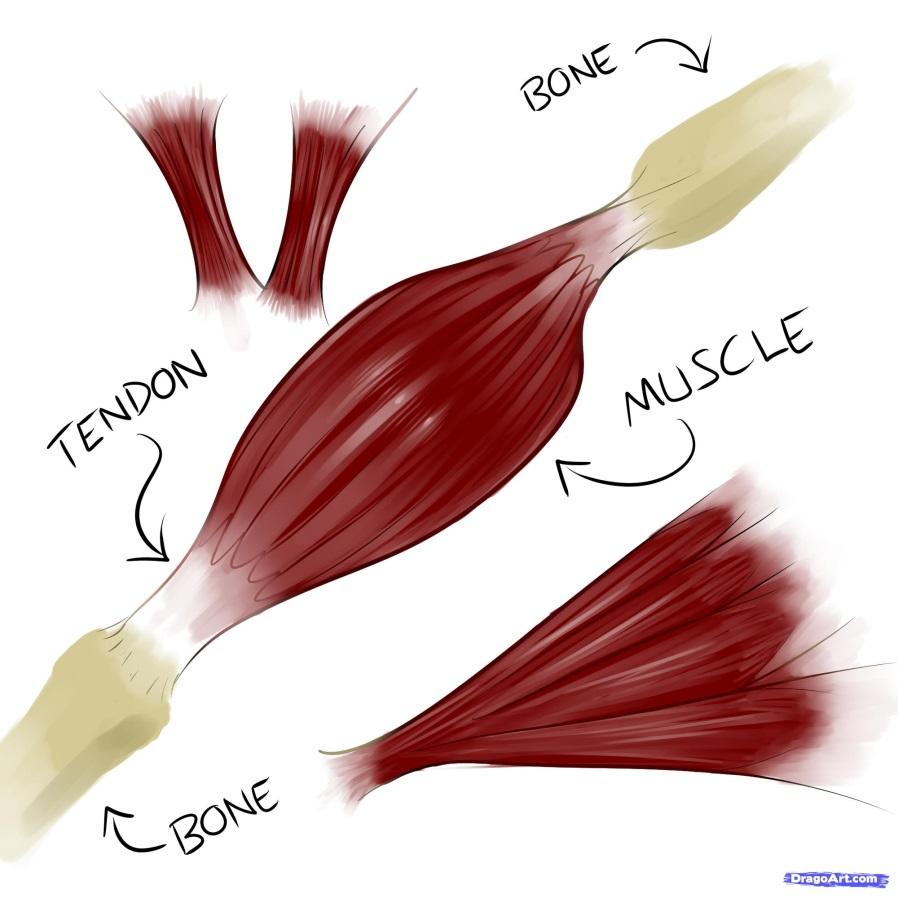


Right: **Eccentric contraction** - the biceps are contracting eccentrically to lower the weights against resistance

Left: **Concentric contraction** - the biceps are contracting concentrically to move the weights upwards.

**ISOMETRIC CONTRACTION** - The muscles are contracting isometrically to hold this gymnast in the crucifix position and are not changing length. When the isometric contractions end, isotonic contraction will occur.





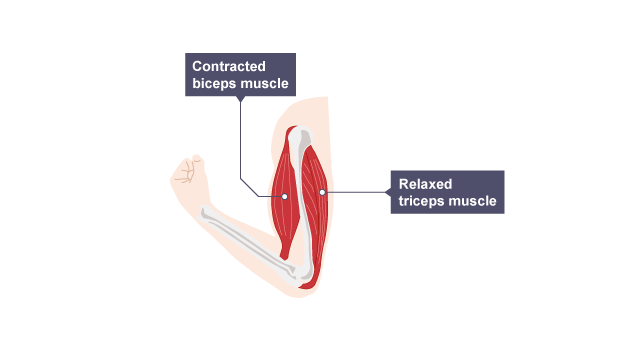
**Muscle Pairs**

**Muscles transfer force to bones through tendons. They move our bones and associated body parts by pulling on them – this process is called muscle contraction.**

**Muscles work in ‘antagonistic muscle pairs’. One muscle of the pair contracts to move the body part, the other muscle in the pair then contracts to return the body part back to the original position. Muscles that work like this are called antagonistic pairs.**

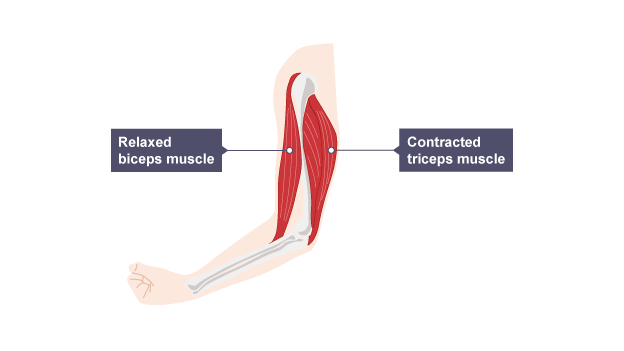
**In an antagonistic muscle pair as one muscle contracts the other muscle relaxes or lengthens. The muscle that is contracting is called the agonist and the muscle that is relaxing or lengthening is called the antagonist.**





**The biceps contracts and raises the forearm as the triceps relaxes.**

Related image



**The triceps contracts and lowers the forearm as the biceps relaxes.**

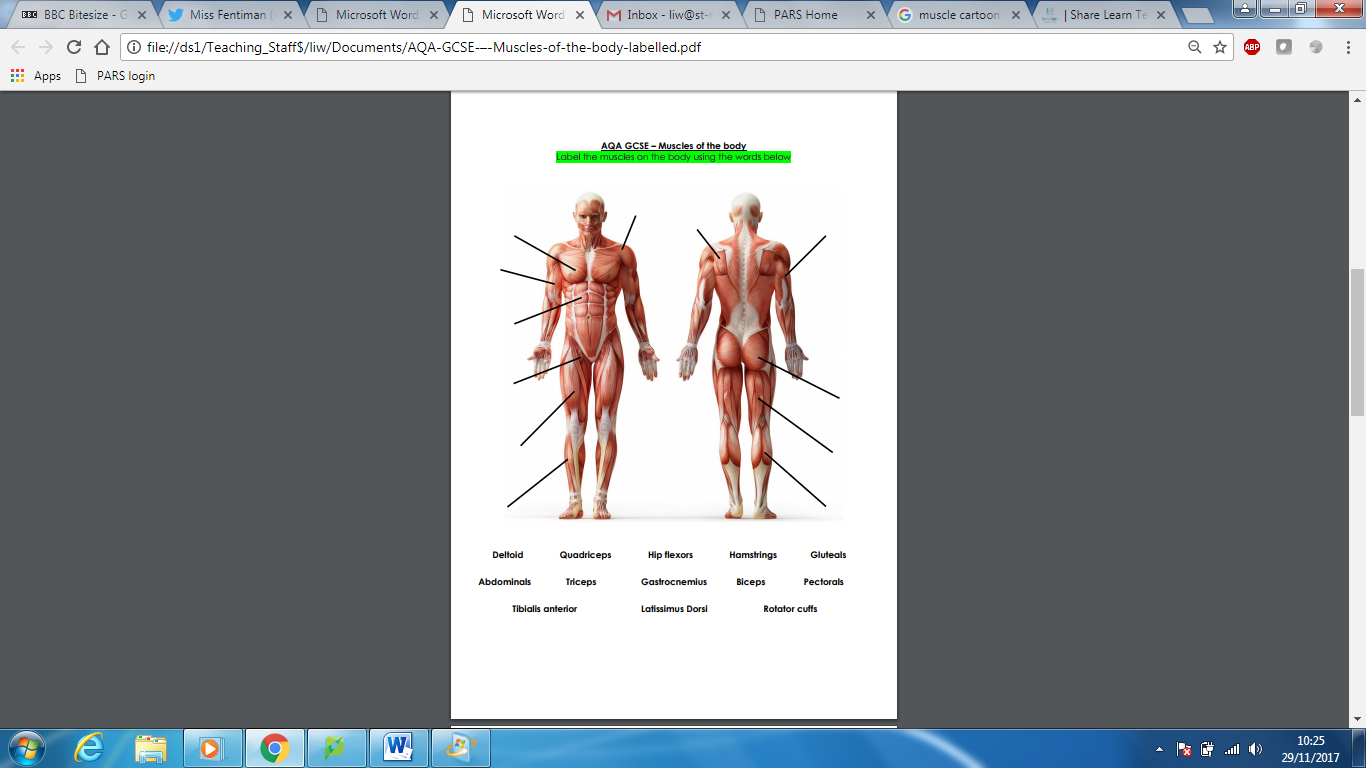
**The Following groups of muscles are antagonistic pairs.**

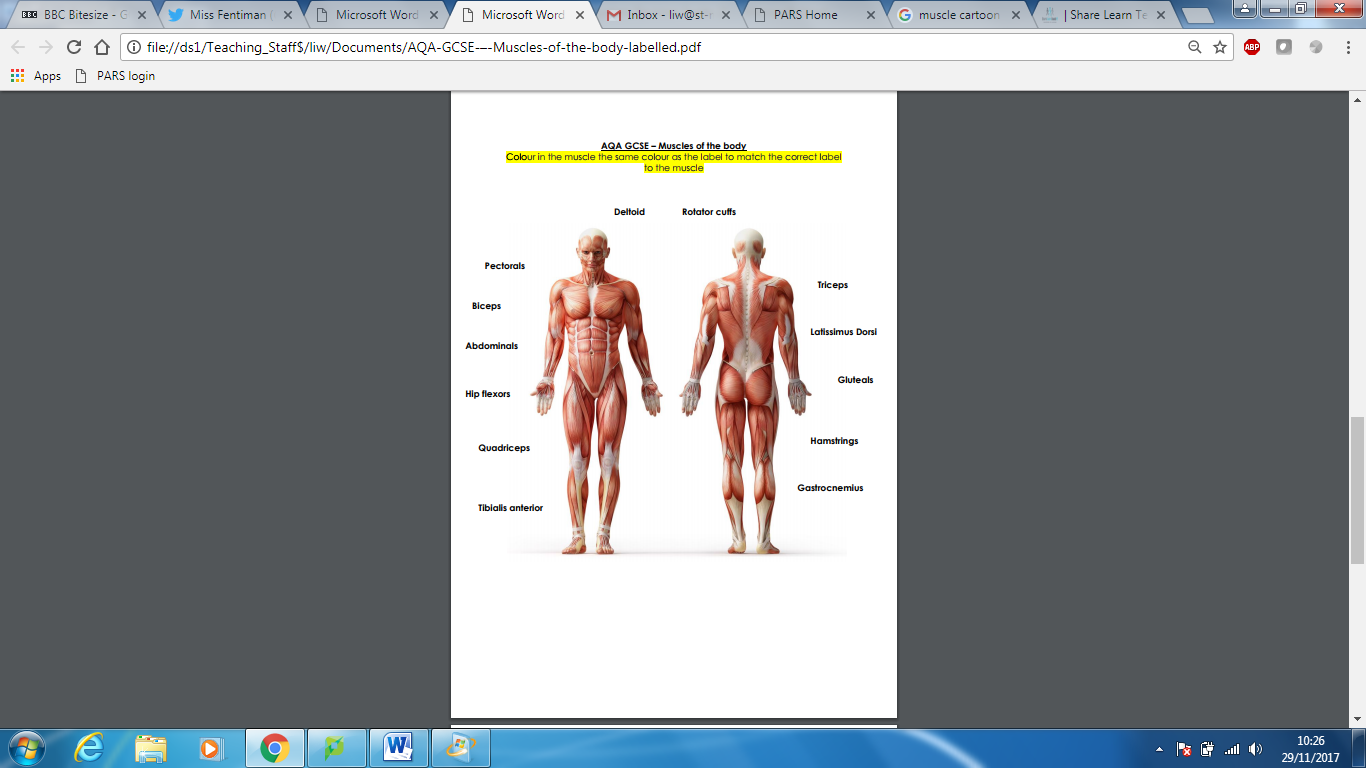


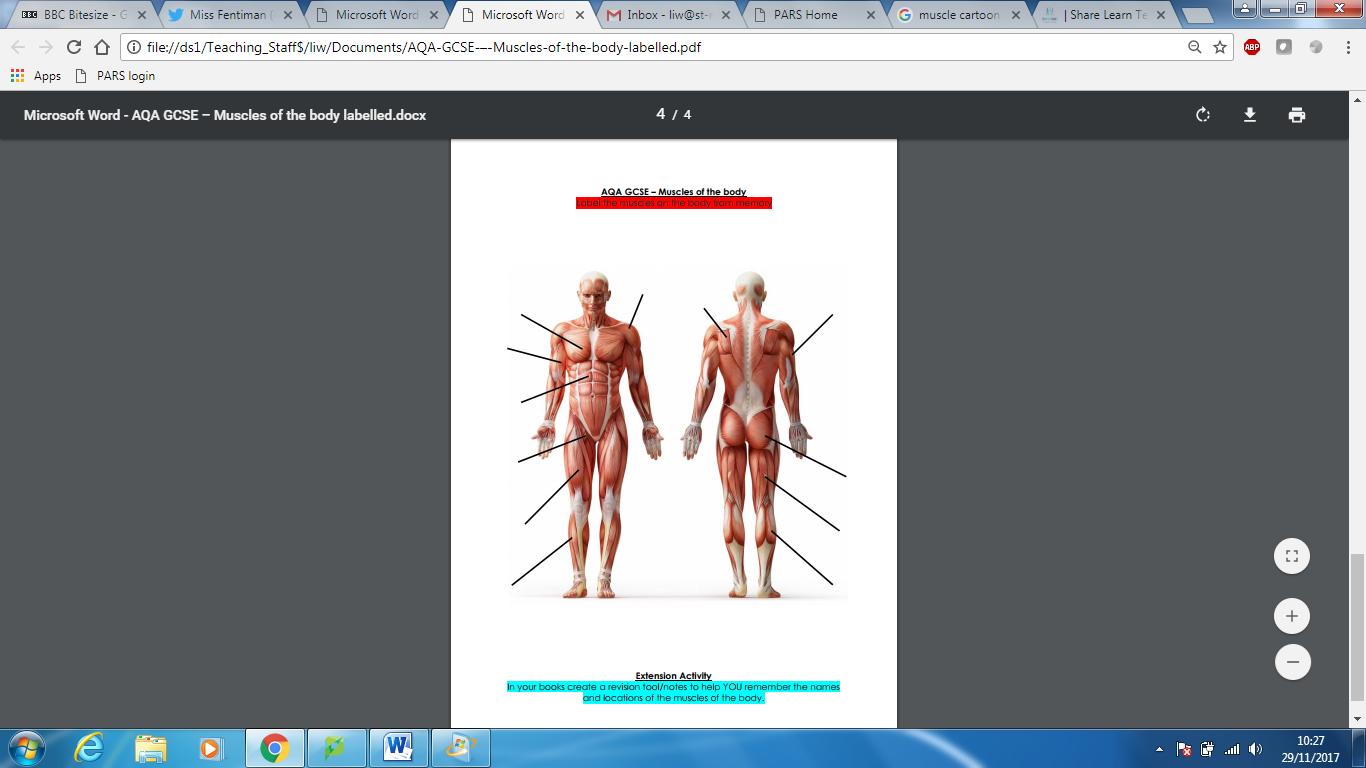
|  |  |
| --- | --- |
| BICEPS | **TRICEPS** |
| HAMSTRINGS | **QUADRICPES** |
| GLUTEALS | **HIP FLEXORS** |
| GASTROCNEMIUS | **TIBIALIS ANTERIOR** |
| PECTORALIS MAJOR | **LATISSIMUS DORSI** |













**Which muscle group acts as a fixator at the shoulder to stabilize the joint during movement?**

**Biceps**

**Triceps**

**Deltoid Rotator cuff**





















**Deltoid Rotator Cuff**

**Lengthening**

**Sternocleidomastoid**

**Pectorals**

**Hamstrings**

**Plantar Flexion**

**Concentric Contraction**

**A sprinter in the ”set” position**

**Gluteus Maximus**

**Tendon**

