

act in a similar manner to the Synergist. In order for the Agonist to achieve its maximum, the fixator stabilises the origin.

The muscles have a number of functions within the body, these include, Shape, Movement, Posture (support) as well as aids the circulation of blood around the body.

### Types of Contractions

The brain sends impulses to the muscles, these impulses tell the muscles to pull on bones (contract) that they are closely attached to in order to produce movement. These messages travel from the brain to the muscles through the somatic nervous system.

During **Isometric contractions** the muscle stays the same length as it works, as a result of this there is no movement. The Trapezius is an example of a muscle that works without movement, as it maintains posture.

**Concentric contractions** cause the muscle that is working to shorten under a load or tension as the origin and insertion move closer together.

During **Eccentric contractions** the muscles lengthens and develops tension and the Origin and insertion move further away from each other. For example, when performing a squat exercise, the Quadriceps lengthen on the way down. This is an Eccentric contraction. On the way back up, a concentric contraction occurs, as the Quadriceps shorten.

When a muscle produces a movement at constant speed over a joints range of motion, this is an **Isokinetic contraction**. These movements are generally exercises that are used to test and improve strength within the muscles.

### Muscle Characteristics

The muscles have four different characteristics. These include, contractibility, elasticity, excitability and extensibility.

A muscles Contractibility describes how easily the muscles contract or shorten, and how forcefully or actively they are able to exert a pull. For example, we can look at how forcefully the muscles are able to contract within a sprinters legs during a 100m race. This will have an effect on how fast they will go and how well they will perform, also depending on the speed and the distance that an athlete is running will determine the degree of contractibility that their muscles will allow.

Muscle elasticity is all about stretch recoil. This means if these muscles are stretched they will return to their original position and length, just like an elastic band. So for example, before we exercise we stretch the muscles, in order to warm them up, they also return