MUSCLE RELAXATION

After the muscle contracts, calcium goes back into the sarcoplasmic reticulum. The decrease in calcium in the sarcoplasm means it doesn't bind to troponin C. Troponin changes shape, and both tropomyosin and troponin go back to their original positions. This blocks the active site of myosin on actin, preventing myosin from binding to actin and causing muscle relaxation.

Two things help a muscle fiber relax after contracting. First, the enzyme acetylcholinesterase (AChE) quickly breaks down acetylcholine (ACh). When action potentials stop in the motor neuron, the release of ACh stops, and AChE breaks down the ACh already in the synaptic cleft. This stops the generation of muscle action potentials, and the Ca^{2+} release channels in the sarcoplasmic reticulum membrane close.

Second, Ca^{2+} active transport pumps rapidly remove Ca^{2+} from the sarcoplasm into the sarcoplasmic reticulum. There, molecules of a calcium-binding protein called calsequestrin bind to the Ca^{2+}. This causes the tropomyosin-troponin complex to move back over the myosin binding site of actin, preventing further binding of myosin head to actin. As a result, the thin filaments slide back to their normal relaxed position.

Red and White Muscle fibres

Distinguishing Features of Red and White Muscle Fibers

S.No	Red Muscle fibres	White Muscle fibres
1	Red muscles have a smaller amount of sarcoplasmic reticulum.	White muscles have more sarcoplasmic reticulum.
2	They perform aerobic oxidation without building up a lot of lactic acid. Because of this, red muscle fibers can keep contracting for a longer time without getting tired.	They use anaerobic oxidation (glycolysis) to produce energy and build up a lot of lactic acid during intense activity, causing them to get tired quickly.
3	They have larger diameter	They have larger diameter
4	Mitochondria are more in number.	Mitochondria are less in number
5	These muscle fibers look dark red because they contain a red protein called myoglobin. Myoglobin grabs and holds onto oxygen, forming oxymyoglobin in the red fibers. When muscles contract, oxymyoglobin releases oxygen for use.	These muscle fibers have a lighter color because they contain very little myoglobin.
6	They have more blood capillaries.	They have less blood capillaries.
7	These musde fibres have a slow rate of contraction for long periods.	These muscle fibres have a fast rate of contraction for short periods.
8	Example: Extensor muscles of the human back, Flight muscles of kites.	Example: Eye ball muscles, Flight muscles of sparrow.