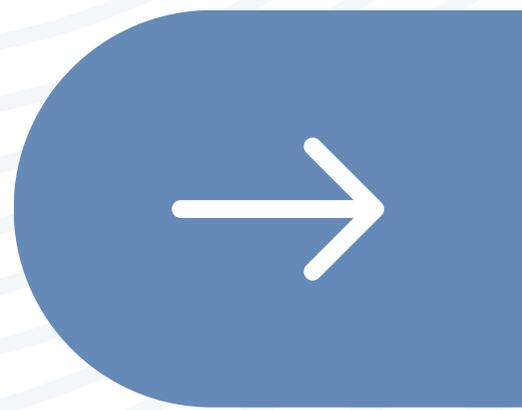


#DIBS BY NEXTILLO

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MICROANATOMY OF MUSCLE FIBRES





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MICROANATOMY OF MUSCLE FIBRES

The musculoskeletal system comprises one of the body's major tissue/organ systems.

- The three main types of muscle tissue are skeletal, cardiac, and smooth muscle groups.*
- Skeletal muscle attaches to the bone by tendons, and together they produce all body movements.*

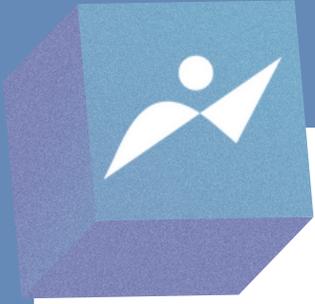


IMAGE DESCRIPTION



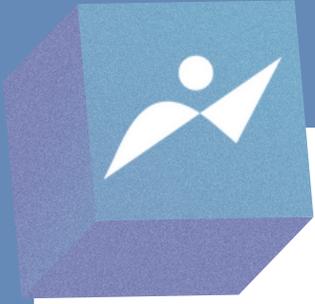
The above image shows Muscle Atrophy

- ***Muscle atrophy can occur after long periods of inactivity.***
- ***Causes - Poor nutrition, sarcopenia, genetics, diseases and chronic conditions like Amyotrophic Lateral Sclerosis (ALS), MS, Arthritis, Myositis, Polio, Neurological problems.***
- ***Treatments - Treatment mainly include physiotherapy and Functional Electric Stimulation(FES).***



EMBRYOLOGY

- ***During embryogenesis, the para-axial mesoderm under goes stepwise differentiation to generate the muscle tissue.***
- ***The para-axial mesoderm on either side of the neural tube starts to differentiate and undergoes segmentation to form the somites.***
- ***The regulatory factors include the Wnt, Shh, and BMP4 proteins.***
- ***Epaxial myotome giving rise to back muscles.***



CLINICAL SIGNIFICANCE

- ***Abnormalities in the skeletal muscles' function include myopathy, paralysis, myasthenia gravis, urinary and/or bowel incontinence, ataxia, weakness, tremors, and others.***
- ***Muscle palsies exist secondary to the long-term, downstream effects of various nerve conditions and neuropathies, potentially resulting in flaccid conditions (which may be permanent or temporary).***



ULTRAMICROSCOPIC STRUCTURE

- ***Thick Filaments - Arranged parallel to each other, in exact alignment across entire surface of myofibril.***
- ***Thin - Aligned across myofibril.***
- ***Light Band - Singly refractive , isotropic, I band.***
- ***Dark Band - Doubly refractive, anisotropic, A band, denser.***
- ***Z Disk - Dark thin band that bisects I band.***
- ***H Zone - Region A band where only thick filaments are present.***



MCQ

Question:

Q.) All of the following have proximal muscle weakness except?

- A.) *Myotonic muscular dystrophy*
- B.) *Spinomuscular atrophy*
- C.) *Dermatomyositis*
- D.) *Duchenne muscular dystrophy*

Ans - A.) Myotonic muscular dystrophy