

SNS COLLEGE OF PHYSIOTHERAPY COIMBATORE-35

COURSE NAME : BPT., Physiotherapy II Year
SUBJECT : Exercise Therapy II
UNIT : I
TOPIC : Stretching
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- Definition
- Purpose
- Indications
- Contraindications

Stretching is a therapeutic manoeuvre in which a muscle–tendon unit or other soft tissues are elongated with the goal of increasing flexibility, range of motion (ROM) and reducing stiffness.



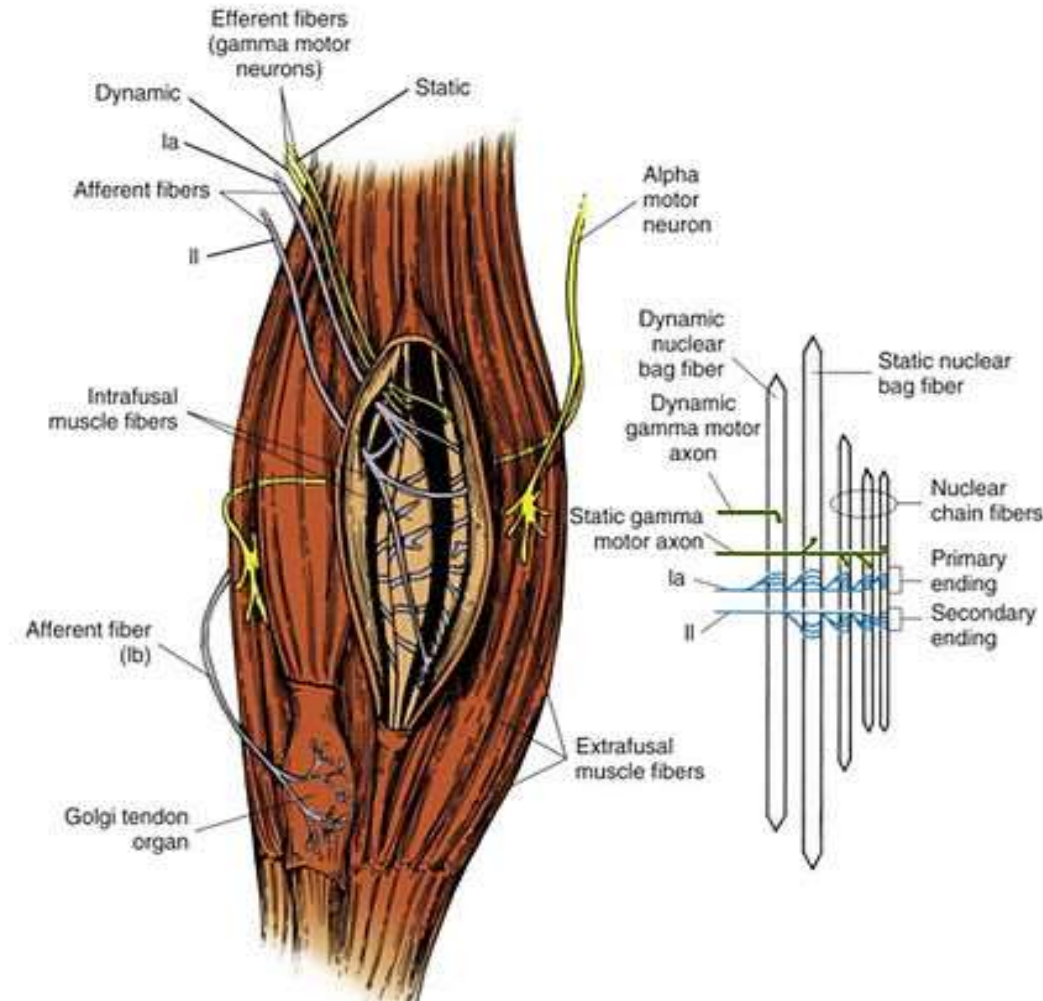
- To increase soft-tissue extensibility
- To restore normal muscle length
- To correct muscle imbalance
- To prevent contractures
- To improve functional mobility
- To reduce risk of injury
- To relieve muscle soreness and tension
- To prepare the body for activity (dynamic stretching before sports)

- Muscle tightness
- Reduced ROM
- Post-immobilization stiffness
- Contractures (non-bony)
- Adaptive shortening due to posture
- Sports warm-up (dynamic stretch)
- Muscle imbalance
- Pain due to soft-tissue tightness

- Recent fracture
- Acute inflammation
- Acute muscle or tendon tear
- Hematoma
- Bony block limiting ROM
- Unstable joint
- After recent surgery (unless physician approved)
- Severe osteoporosis
- Sharp pain during stretch

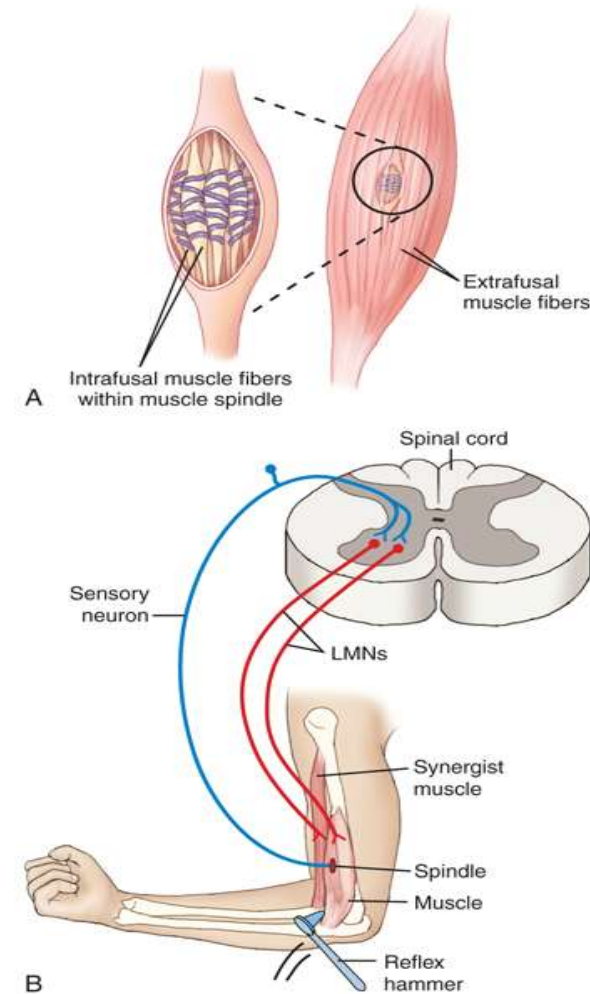
A. Physiological Changes in Muscle During Stretch

- Lengthening of sarcomeres
- Decrease in passive tension
- Viscoelastic properties → creep & stress relaxation
- Plastic deformation if stretch is held long enough



B. Neurological Changes in Muscle

- **Muscle spindle** resists rapid stretch → reason ballistic stretching can be unsafe
- **Golgi Tendon Organ (GTO)** activated by sustained stretch → causes reflex inhibition → muscle relaxes
- **Autogenic inhibition** – relaxation of the same muscle that is stretched
- **Reciprocal inhibition** – contraction of agonist inhibits antagonist (used in PNF)



1. Passive Stretching

- Therapist or external force produces stretch
- No active muscle contraction
- Used in: contractures, post-immobilization, neurological conditions

2. Active (Self) Stretching

- Patient performs movement to elongate muscle
- Used in home exercise program
- Safer and used for long-term flexibility



3. PNF Stretching (Proprioceptive Neuromuscular Facilitation)

combines stretch with muscle contraction

Techniques:

Hold–Relax

Contract–Relax

Agonist contraction

Hold–Relax with Agonist Contraction

4. Ballistic Stretching

- Repetitive bouncing movements
- Activates muscle spindle → risk of injury
- Used only for well-trained athletes, never in rehabilitation



- Warm up tissues before stretching (hot pack/aerobic warm-up)
- Move to point of mild discomfort, **not pain**
- Hold stretch for **15–30 seconds (static)** / **60 seconds for chronic tightness**
- Repeat 3–5 times
- Slow and controlled movements
- Stabilize proximal segment
- Avoid compensatory movements
- Breathe normally – no breath holding
- Stretch both sides symmetrically



1. Stretching is defined as:

- A. A technique to increase muscle strength
- B. A manoeuvre to elongate soft tissues and improve flexibility
- C. A method to enhance bone density
- D. A technique to increase cardiovascular endurance

2. Which of the following is NOT a purpose of stretching?

- A. To prevent contractures
- B. To improve functional mobility
- C. To increase soft-tissue extensibility
- D. To reduce bone deformation

3. Muscle imbalance is listed under:

- A. Indications of stretching
- B. Contraindications of stretching
- C. Types of stretching
- D. Principles of stretching

4. Which of the following is a contraindication for stretching?

- A. Muscle tightness
- B. Reduced ROM
- C. Recent fracture
- D. Post-immobilization stiffness

