PRINCIPLES OF RELAXATION AND STRETCHING OF MUSCLES AND OTHER STRUCTURES

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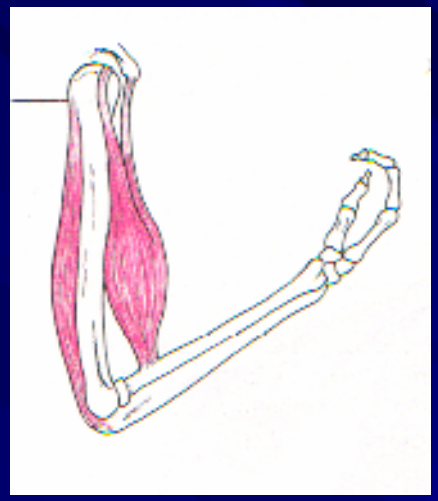
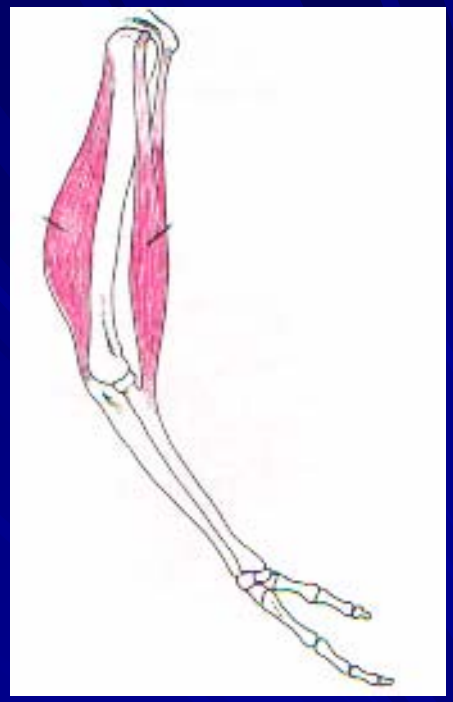


The starting position,correspond to position imposed by shortening



The final position, correspond to extent of maximum range of movement

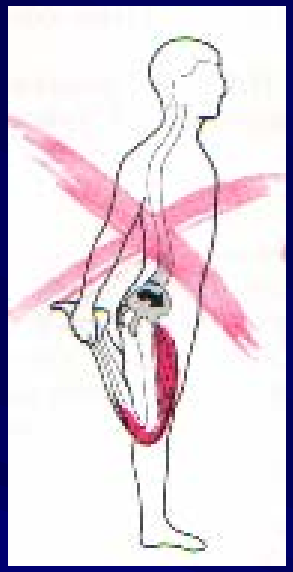
Definition of stretching

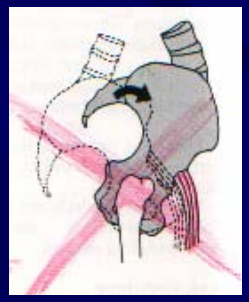
- Moving apart the two ends of tissue to lengthen the shortened structures.

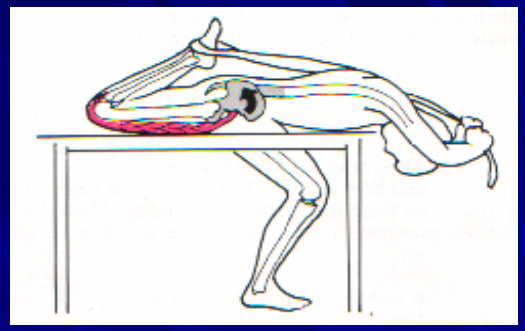
Stretching divides into

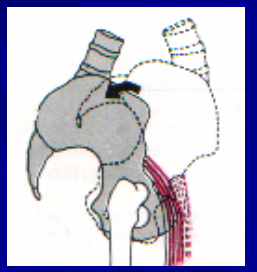
- ***therapeutic stretching,*** the topic of this course and
- ***self-stretching*** as used in exercise, athletic training, dance, and certain ritual exercises.

The two categories of stretching may supplement each other.
For instance, therapists may teach their patients self stretching to speed recovery, and sports teams may employ therapists to treat athletes.









An understanding of
why, when and how
muscles or other structures
should be stretched
is prerequisite to stretching to benefit
rather than degrade
body function.

The role of the therapist
in stretching is then not
just to understand and treat,
but also to guide and teach
patients self-stretching

In case of

Manual/Assisted Stretching Techniques

It’s Important for therapist to Understand How to Stretch Clients/Athletes to Enhance Flexibility

- Every patient with symptoms involving the loco-motor system particularly symptoms of pain and/or constrained movement should be examined to assess joint and muscle function.

INDICATIONS

- If examination shows joint play to be normal but reveals shortened muscles or muscle spasm, then treatment by stretching is indicated.

Prevention

- With a view towards preventive medicine all younger children should be examined and, if necessary treated for any disturbed muscle function before symptoms appear.

CONTRAINDICATIONS

- Any dysfunction and/or pain of suspected pathological origin.

Affected patients should he advised to seek medical diagnosis and return to therapy if their doctors negate the suspected pathology and recommend return.

Normal muscle function

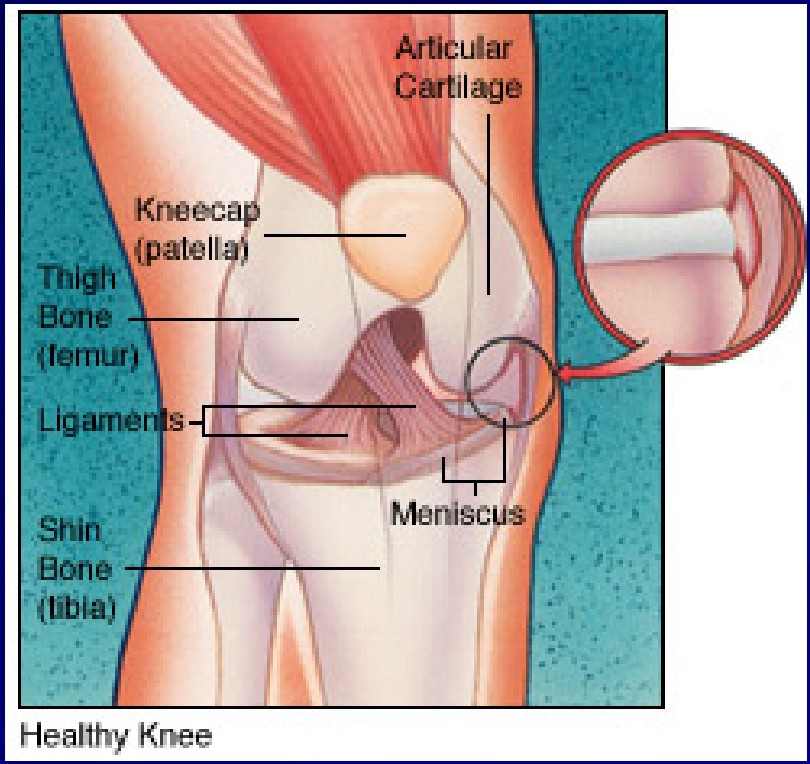
- When functioning normally, a muscle has optimum circulation and innervation,
- is able to move freely,
- is unimpaired in contracting and relaxing, and
- has normal elasticity and strength.
- All movements should be free of pain.

MUSCLE DYSFUNCTION

- Stiff or shortened muscles are often activated in movements in which they otherwise would not take part. This overuse in turn leads to injury and/or to excess inhibition of their antagonists.
- Shortened muscles may cause pain from the periosteum, tendons, or muscle belly, including referred pain to other structures or segments.
- In a synergistic group, no one muscle should be shorter than the others of the group. A stiff, shortened muscle will be subjected to greater stress when contracted suddenly and forcefully, thus damaging, itself and/or its associated tendon. This can he prevented by, stretching the relevant muscle or muscle group.

Shortened muscle being treated should always be stretched before its antagonists are strengthened.

Normal range of movement is determined by several structures



Healthy Knee

- skin
- subcutaneous tissue
- muscles
- ligaments
- joint capsules
- joint surfaces, and
- intraarticular structures.

If a reduced range of movement is caused by shortened muscles ⇨ then treatment by stretching increases and may restore the range of movement to normal.

Symptoms

Dysfunction due to shortened structures can be detected by observing one or more of the following changes it may cause:

- Pattern of movement,
- Volume and swelling and/or distention of a muscle,
- Elasticity of a muscle,
- Range of movement at a joint,
- Joint play,
- Quality of the passive stop, end feel, *most important.*

In addition to these indicators, a patient may experience

- fatigue;
- pain radiating to other muscles and structures;
- feeling of stiffness in the shortened muscle(s);
- irritation and damage of the peripheral nerves and blood vessels;
- poor physical condition, inadequate coordination, or unaccustomed movement often cause altered circulation and faulty muscle movement patterns.

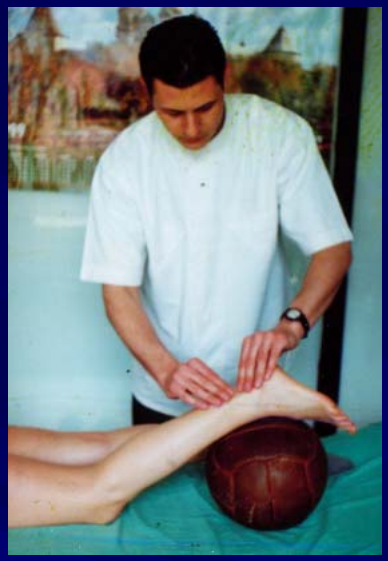
- According to Vl. Janda, this leads to → constant micro trauma, which, in turn, subsequently effects → alterations in patterns of movement with chronic muscle spasm, contractures and pain.
- In an advanced case, joint function is altered and degenerative changes at the joints result.

⇨ Stretching of the relevant muscle(s) is one way of *preventing* this *chain of events.*

Basics of Stretching

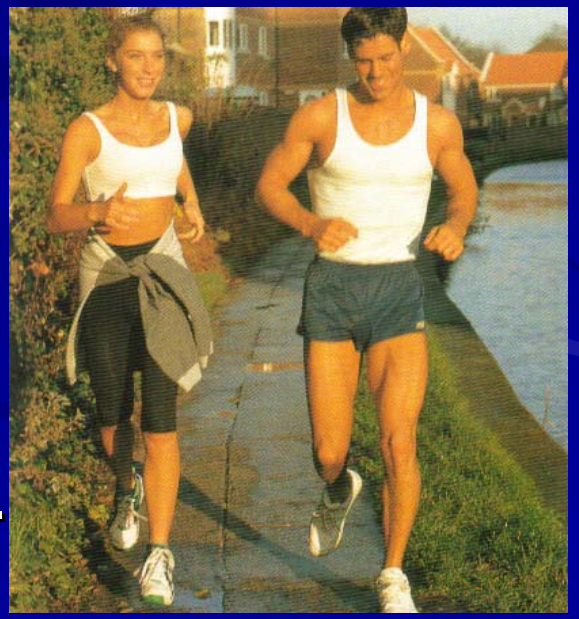
- Stretching techniques are based on the principle that a muscle is most relaxed and therefore may be maximally stretched immediately alter an isometric contraction.
- According to Sherrington (2) the stronger the contraction (without pain), the greater the subsequent relaxation.

- So all procedures start with a static contraction of the shortened muscle(s).
- Then the muscles are relaxed, which makes them more easily stretched for a period of a fraction of a second up to 10 or 12 seconds in pathological cases.



Basics of Stretching

- Muscles are most amenable to stretching when they are warmed up in the physiological sense, by preliminary exercise
- rather than by the application of passive, external heat.
- Thus all treatment should start with some form of warm-up.



Basics of Stretching

- The patient should always be made as comfortable as possible.
- The treatment should be quiet and other distracting influences should be eliminated whenever possible.