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Foundations of Facilitated Stretching with Bob McAtee, RMT, CSCS, C-PT

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Foundations of Facilitated Stretching

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Defining Flexibility

• Flexibility can be defined as the range of motion about a joint or a group of joints.

• Flexibility is specific to the joint and plane of movement.

• Flexibility varies from joint to joint
Flexibility <<<<稳定性 >>>>>

- Increased flexibility results in decreased stability.

- A certain minimum range is required to safely and optimally carry out a given activity.

- Training goal: develop flexibility within the needs and abilities of the client.
PNF Stretching Techniques

• PNF (proprioceptive neuromuscular facilitation) is a physiotherapy modality that seeks to enhance neuromuscular function by activating proprioceptors through facilitation, inhibition, strengthening, and relaxation of selected muscle groups.

• PNF stretching techniques are a small component of the entire PNF repertoire.
Four Main PNF Stretching Techniques

• Agonist contract (reciprocal inhibition)

• Contract-relax stretching (CR)

• Hold-relax stretching (HR)

• Hold-relax-agonist-contract stretching (HRAC)
Defining Facilitated Stretching

- Facilitated Stretching is a modified version of HRAC stretching.

- The combination of HR and AC techniques facilitates the greatest possible increase in ROM.
Defining Facilitated Stretching

• Uses an isometric contraction of the target muscle to prepare it to stretch.

• Encourages active stretching on the part of the athlete, avoiding additional passive stretching when possible.

• Can be done with a partner or alone.
Key Differences in Performing Facilitated Stretching

- The stretcher actively moves the limb to the beginning position of the stretch.
- The stretcher initiates the isometric contraction and the partner offers only matching resistance.
- The stretcher actively stretches to the new ROM.
Facilitated Stretching in Three Easy Steps

- **Step 1.**
  Stretcher *actively* moves the limb to lengthen the target muscle to the end of range.

- **Step 2.**
  Stretcher isometrically contracts the target muscle for 6 seconds.

- **Step 3.**
  Stretcher *actively* stretches to a new range of motion.
Facilitated Stretching: Three-Step Protocol

• The protocol has evolved over many years of clinical practice.

• In practice, repeat each stretch up to three times.

• Use proper biomechanics for the partner and the stretcher to isolate the target muscles, to avoid injury, and to prevent compensation.
Physiology of Stretching

• In recent years, our understanding of physiology has broadened as a result of research.

• Traditional explanations based on the mechanical effects of stretching (increase in muscle length) have not been supported by research.
Sensory Theory of Stretching

- Sensory theory posits that stretch tolerance improves, that is, sensory perception may diminish, allowing the stretch to go farther before reaching a soft-tissue barrier.

- Stretching may alter the point at which the stretch is perceived as a “threat” by the sympathetic nervous system.

- PNF may influence stretch tolerance to a greater extent than other stretching methods.
Components of Facilitated Stretching

- Single Plane Stretches
- Spiral Diagonal Movement Patterns
- Spiral Diagonal (Tri-Planar) Stretches
- Tri-Planar Strengthening Exercises
Single Plane Stretches

• Use single plane stretches to develop flexibility or awareness in a specific muscle or muscle group.

• Use as an adjunct to soft-tissue therapy
Hamstrings Stretch

Stretcher keeps both hips flat on the surface.

Maintain straight knee during isometric.

Actively stretch pain-free.
Hamstrings Stretch Video
Bent Knee Hamstring 1

Stretcher keeps the thigh vertical throughout the sequence.

During the isometric contraction, stretcher pushes the heel toward the buttocks as if bending the knee.
Bent Knee Hamstring 2

Stretcher holds thigh close to chest throughout the sequence.

During the isometric contraction, stretcher pushes the heel toward the buttocks as if bending the knee.
Bent-Knee Hamstrings Video
Hamstrings, Self-Stretch

Use the strap only to resist the isometric contraction, never to increase the stretch.
Pectoralis Major

Prevent trunk rotation.

Stretcher contracts pecs, leading from the elbow and relaxes rhomboids.

Changing the angle of abduction of the arm emphasizes different fibers of the pectoralis major.
Pec Major Self-Stretch

Keep low-back flat by using a lunge stance.

Use the post for resistance during the isometric phase, but stretch the pecs actively.
Spiral Patterns of PNF

- PNF movement patterns are “tri-planar” and include flexion or extension, adduction or abduction, and medial or lateral rotation.

- They’re designed for rehabilitating function (synergistic muscle groups) rather than individual muscles.

- “Train movements, not muscles.” (Vern Gambetta).

- Use the spiral patterns for dynamic warm-ups, to improve functional flexibility and strength.
Natural Movement is Spiral-Diagonal

- Spiral–diagonal movements occur naturally from the design of the skeletal system and the placement of the muscles on it.
Natural Movement is Spiral-Diagonal

- Many muscles spiral around the bones from origin to insertion. When these muscles contract, they tend to create that spiral in motion.
Natural Movement is Spiral-Diagonal

- The psoas is primarily a hip flexor, but also assists adduction and external rotation of the femur.
Learning the Patterns

- First learn each pattern through dynamic movement.

- Can be used to help improve your own coordination through multiple planes of motion.

- Mix and match patterns to explore the connections between your brain and your muscles.
D1 Pattern for the Leg

- D1 flexion ("soccer kick")
- Flexion, adduction and external rotation of femur.

- D1 extension ("toe off")
- Extension, abduction and internal rotation of femur.
Spiral One Stretch: Hip Flexion

• Wind-up into flexion, adduction and external rotation (FADER position).

• Then, unwind isometrically toward the opposite direction.

• Hips stay flat on the surface.

• Stretch by winding-up again.
Spiral One, Hip Flexion Self-Stretch
D1 Pattern for the Arm

- D1 flexion ("grab seatbelt")
- Flexion, adduction and external rotation of humerus.

- D1 extension ("fasten seatbelt")
- Extension, abduction, internal rotation of humerus.
Spiral One Stretch: Shoulder Flexion

• Wind-up into flexion, adduction, external rotation (FADER position).
• Stretcher rotates the head to allow the arm to adduct more.
• Stretcher maintains scapula on the table or does not twist torso.
Spiral One, Shoulder Self-Stretch

Grab Seat Belt

Fasten Seat Belt
Strengthen Arms: Spiral One
Strengthen Arms: Spiral One
Strengthen Legs: Spiral One
Strengthen Legs: Spiral One
Designing Stretching Programs

- Stretching recommendations are clouded by misconception and conflicting research.

- Program will vary from person to person.

- Influenced by many factors including:
  - previous injury, scar tissue, and genetics
  - compliance with the program
  - type of sport
  - type of stretching used
  - proper technique
Thank you for attending!

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