

The normal extensibility of all soft tissues that allow the full range of motion of a joint.
Flexibility



The combination of flexibility and the nervous system's ability to control this range efficiently.

Dynamic Range of Motion



The ability of the neuromuscular system to allow agonists, antagonists, and stabilizers to work synergistically and control the entire kinetic chain in all three planes of motion
Neuromuscular efficiency



The capability to be elongated or stretched.

Extensibility



Multiplanar soft tissue extensibility with optimal neuromuscular efficiency throughout the full range of motion.

Dynamic Functional Flexibility



Alteration of muscle length surrounding a joint

Muscle Imbalance



The tendency of the body to seek the path of least resistance during functional movement patterns

Relative Flexibility



The concept of muscle inhibition, caused by a tight agonist, which inhibits its functional antagonist.

Altered Reciprocal Inhibition



The neuromuscular phenomenon that occurs when synergists take over the function of a weak or inhibited prime mover.

Synergistic Dominance



The motions of joints in the body

Arthrokinematics



Altered forces at the joint that result in abnormal muscular activity and impaired neuromuscular communication at the joint

Arthrokinematic Dysfunction



Major sensory organ of the muscle that are composed of microscopic fibers that lie parallel to the muscle fiber

Muscle Spindles



Located within the musculotendinous junction and are sensitive to changes in muscular tension and rate of tension.

Golgi Tendon Organs



The process when neural impulses that sense tension is greater than the impulses that cause muscles to contract, providing an inhibitory effect to the muscle spindles.

Autogenic Inhibition



Consistently repeating the same pattern of motion, which may place abnormal stresses on the body.

Pattern Overload



States that soft tissue models along the lines of stress.

Davis's Law



The three phases of flexibility training

Corrective, active and functional.



What is the flexibility continuum?

The systematic progression of flexibility training.



This flexibility training is used to improve muscle imbalances and altered joint motion. Includes self-myofascial release (foam roll) and static stretching. Uses autogenic inhibition principals. Stabilization Phase I of the OPT model.

Corrective Flexibility



Flexibility training designed to improve extensibility of soft tissue and increase neuromuscular efficiency using reciprocal inhibition. Appropriate at the Strength level (phases 2,3, and 4) of the OPT model.

Active Flexibility



Flexibility and movement without compensations. Appropriate for Power level phase 5 of the OPT model.

Functional Flexibility



This flexibility type uses self-myofascial release and static types of stretches

Corrective Flexibility



This flexibility type uses self myofascial release and active-isolated types or stretches.

Active Flexibility



This flexibility type uses self-myofascial release and dynamic types of stretches.

Functional Flexibility



The process of passively taking a muscle to the point of tension and holding the stretch for a minimum of 20 seconds.

Static Stretching



Examples of static stretches

- Gastrocnemius Stretch
- Standing psoas Stretch
- Kneeling Hip Flexor Stretch
- Standing Adductor Stretch
- Latissimus Dorsi Ball Stretch
- Static Pectoral Ball Stretch
- Upper Trapezius/Scalene Stretch.



Examples of Active Stretches

- Active supine biceps formis
- Active kneeling quadriceps
- Active standing adductor
- Active pectoral wall



Acute variable for active-isolated stretches

1-2 sets holding each stretch for 1 - 2 seconds for 5 - 10 repetitions.



Acute variables for static stretches

1 - 3 sets hold each stretch for 20 - 30 seconds.



Acute variables for dynamic stretches

1 set 10 repetitions 3-10 exercises.



Examples of Dynamic Stretches

- Prisoner Squat
- Multiplanar Lunges
- Single-leg squat touchdowns
- Tube walking
- Medicine ball chop/lift



If the feet turn out during a overhead squat, which muscles are probably overactive?

- Soleus
- Lateral gastrocnemius
- Biceps Femoris (Short Head)



If the feet turn out during a overhead squat, which muscles are probably underactive?

- Medial Gastrocnemius
- Medial Hamstring
- Gracilis
- Sartorius
- Popliteus



An example of foam roll and static stretch techniques for feet turning out in a squat

- Gastrocnemius/soleus
- Biceps femoris (short head)



Example strengthening exercises for feet turning out in a squat

Single-Leg Balance Reach



If the knees move inward during an overhead squat, what muscles are probably overactive?

- Adductor Complex
- Biceps Femoris (Short Head)
- TFL
- Vastus Lateralis



If the knees move inward during an overhead squat, what muscles are probably underactive?

- Gluteus medius/maximus
- Vastus Medialis Oblique (VMO)



An example of foam roll and static stretch techniques for knees moving inward during a squat

- Adductors
- IT Band / TFL



Examples of strengthening exercises for knees moving inward during a squat?

- Tube walking



If there is excessive lean during an overhead squat, what could be the overactive muscles?

- Soleus
- Gastrocnemius
- Hip Flexor Complex
- Abdominal Complex



If there is excessive lean during an overhead squat, what could be the underactive muscles?

- Anterior Tibialis
- Glutius Maximus
- Erector Spinae



An example of foam Roll and static stretch techniques for excessive lean in a squat

- Hip Flexor Complex
- Piriformis



Example of strengthening exercises for excessive lean in a squat?

Ball Squats



If the lower back arches during a overhead squat, what could be the overactive muscles?

- Hip Flexor Complex
- Erector Spinae
- Latissimus Dorsi



If the lower back arches during an overhead squat, what could be the underactive muscles?

- Glutius Maximus
- Hamstrings
- Intrinsic Core Stabilizers



Examples of foam roll and static stretches for back arching during a squat

- Hip Flexor Complex
- Latissimus Dorsi
- Erector Spinae



Examples of strengthening exercises for the back arching during a squat

-Ball Squats



If the arms fall forward in an overhead squat, what could be the overactive muscles?

- Latissimus Dorsi
- Teres Major
- Pectoralis Major / Minor



If the arms fall forward in an overhead squat, what could be the underactive muscles?

- Mid / Lower Trapezius
- Rhomboids
- Rotator cuff



Examples of foam roll and static stretches for arms falling forward in a squat

- Latissimus Dorsi
- Thoracic Spine

Example of strengthening exercises for arms falling forward in a squat

-Squat to row

If the shoulders elevate during a pushing or pulling assessment, what could be the overactive muscles?

-Upper Trapezius

-Levator Scapulae

If the shoulders elevate during a pushing or pulling assessment, what could be the underactive muscles?

-Mid/ Lower Trapezius

Example foam roll and static stretch techniques for shoulders elevating in a push / pull assessment

-Upper Trapezius

Example strengthening exercises for shoulders elevating in a push / pull assessment

-Ball Cobra

If the head moves forward in a push / pull assessment, what could be the overactive muscles?

-Upper Trapezius

-Levator Scapulae

If the head moves forward in a push / pull assessment, what could be the underactive muscles?

-Deep Cervical Flexors

Example foam roll or static stretches for the head moving forward in a push / pull assessment?

-Upper trapezius

Example of strengthening exercises used in the head moving forward in a push / pull assessment?

-Keep the head in a neutral position during all exercise.

Flexibility

The normal extensibility of all soft tissues that allow the full range of motion of a joint

Extensibility

capability to be elongated or stretched



Dynamic range of motion

the combination of flexibility and the nervous systems ability to control this range of motion efficiently



neuromuscular efficiency

the ability of the neuromuscular system to allow agonist, antagonist, and stabilizers to work synergistically to produce, reduce and dynamically stabilize the entire kinetic chain in all three planes of motion



Dynamic functional flexibility

multiplanar soft tissue extensibility with optimal neuromuscular efficiency throughout the full range of motion



postural distortion patterns

predictable pattern of muscle imbalances



relative flexibility

the tendency of the body to seek the path of least resistance during functional movement patterns



muscle imbalance

alteration of muscle length surrounding a joint



altered reciprocal inhibition

the concept of muscle inhibition, caused by a tight agonist, which inhibits its functional antagonist



synergistic dominance

The neuromuscular phenomenon that occurs when inappropriate muscles take over the functional of a weak or inhibited prime mover



Autogenic inhibition

the process when neural impulses that sense tension is greater than the impulses that cause muscles to contract, providing an inhibitory effect to the muscle spindles



pattern overload

consistently repeating the same pattern of motion which may place abnormal stresses on the body



Davis's Law

state that soft tissues remodels itself along the lines of stress. Soft tissues remodels itself with an inelastic collagen matrix that form in random fashion.



corrective flexibility

designed to improve muscle imbalances and altered joint motion

-Includes self myofascial release and static stretching



Active flexibility

designed to improve the extensibility of soft tissue and increase neuromuscular efficiency by using reciprocal inhibition

-Includes self myofascial release and active isolated stretching techniques



functional flexibility

integrated, multiplanar soft tissue extensibility, with optimum neuromuscular control, through a full range of motion. Movement without compensation.

-Includes self myofascial release and dynamic flexibility



self myofascial release exercises

-Gastrocnemius/Soleus

-TFL, IT band

-Adductors

-Piriformus

-Latissimus Dorsi



Static stretching

the process of passively taking a muscle to the point on tension and holding the stretch for a minimum of 20 sec



Static Stretching Exercises

Static gastrocnemius stretch

Static standing psoas stretch

static kneeling hip flexor stretch

static standing adductor stretch

static latissimus dorsi ball stretch

static pectoral wall stretch

Static Upper Trapezius/Scalene Stretch



Static stretching summary

autogenic inhibition

1-3 sets hold each for 20-30 sec



Active isolated Stretch

The process of using agonists and synergists to dynamically move the joint into a range of motion



Active isolated stretching summary

used reciprocal inhibition

1-2 set

hold each stretch for 1-2 sec for 5-10 reps

Active isolated stretching exercises

-Active gastrocnemius stretch with pronation and supination

- Active supine bicep femoris stretch

- Active kneeling hip flexor stretch

- Active standing Adductor stretch

- Active Latissimus Dorsi ball stretch

- Active pectoral wall stretch

- active upper trapezius/ scalene stretch

Dynamic Stretching

The active extension of a muscle, using force production and momentum, to move the joint through the full available range of motion

uses reciprocal inhibition

1 set of 10 reps should be done

3-10 exercises

Dynamic Stretching Exercises

-Multiplanar Lunge

-single leg squat touchdown

-tube walking: side to side

-medicine ball chop and lift

If a client's feet turn out during a squat assessment what stretching would you recommend and what strengthening exercises

Active and SMR of

Gastrocnemius/soleus

bicep femoris (short head)

strength: single leg balance reach

If a client's knee is leaning inward during a squat assessment what stretching would you recommend and what strengthening

Active and SMR of

adductors

TFL/IT Band

Strength:

Tube walking

If a client shows an excessive forward lean during a overhead squat assessment what stretching and strengthening would you recommend

Active and SMR of
hip flexor complex
piriformis

strength:
ball squats



If a client shows an excessive lower back arch during a overhead squat assessment what stretching and strengthening would you recommend

Active and SMR of
hip flexor complex
latissimus dorsi
erector spinae

strength:
ball squats



If a clients arms fall forward during a overhead squat assessment what stretching and strengthening would you recommend

Active and SMR of;
lattisimus dorsi
Thoracic spine

strength:
squat to row



If a clients shoulders elevate during a pushing/pulling assessment what stretching and strengthening would you recommend

SMR and static stretch:
upper trapezius, scalene

strength:
ball cobra



If a clients head is forward during a pushing/pulling assessment what stretching and strengthening would you recommend

SMR and static stretch:
upper trapezius, scalene

strength:
head neutral position during all exercises