FITNESS & NUTRITION EXPERT PROGRAM

FITNESS SESSION 4:

Muscular Concepts

What we are going to cover

DIFFERENT TYPES OF MUSCLES

MUSCULAR ANATOMY
- Muscle Function and Structure
- Special characteristics of muscle tissue
- Muscle contraction and muscle mechanics

THE NERVOUS SYSTEM AND ITS CONNECTION TO STRENGTH

MAJOR MUSCLE GROUPS
- Action and Attachment points
- How to train each Major Muscle Group!

THE FITT PRINCIPLE FOR STRENGTH TRAINING
- Benefits of resistance training
- Recommended strength training guidelines

What you need before we start

1. Water
2. Put your finger tips together
3. Take 3 deep breaths

Muscles!

Types of muscles

THERE ARE THREE TYPES OF MUSCLE IN THE BODY:

Skeletal
- Voluntary muscle, controlled consciously
- Moves the body by pulling on bones of the skeleton
- Allows us to walk, dance, bit an apple, play the guitar

Smooth
- Involuntary muscle, controlled unconsciously
- Found within the walls of internal organs
- Ex. Stomach, intestine, bladder, and blood vessels

Cardiac
- Controls itself with assistance from the nervous and endocrine systems
- Only in the heart
- Propels the blood through the blood vessels

Muscular Anatomy

Muscle Functions

- Movement of bones or fluids
  - Ex. Blood, lymph
- Maintaining posture and body position
- Stabilizing joints
- Maintain body temperature
- Support soft tissues
- Guard entrances and exits
- Provide nutrient reserves

Muscular Anatomy

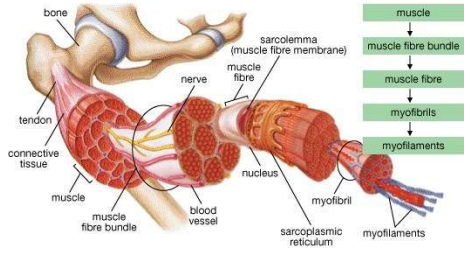
Special Characteristics of Muscle Tissue

- Excitability: Ability to receive and respond to stimuli
- Contractibility: Ability to shorten when stimulated
- Extensibility: Ability to be stretched
- Elasticity: Ability to recoil to resting length

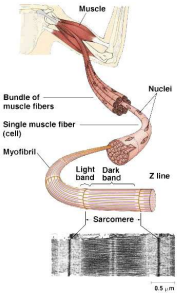
Skeletal Muscle

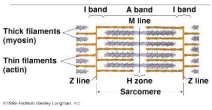
- Each muscle is served by ONE artery, ONE nerve, and One or more veins
- Contains connective tissue
- Over 600 throughout the body

Muscular Structure



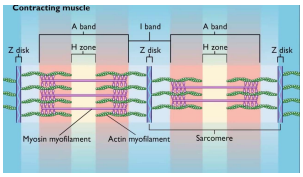
Muscular Structure





Muscular Structure

Sarcomere
- Smallest contractile unit of a muscle fiber
- The region of a myofilament between two successive Z discs
- Composed of thick (myosin) and thin (actin) myofilaments



Muscular Contraction

Contraction
- The generation of force
- Requires energy (ATP)
- Does not necessarily cause shortening of the fiber

Sliding Filament Model of Contraction
- In the relaxed state, thin and thick filaments overlap only slightly
- During contraction, myosin heads bind to actin, detach and bind again, to propel the thin filaments toward the M line
- As H zones shorten and disappear, sarcomeres shorten, muscle cells shorten, and the whole muscle shortens

https://www.youtube.com/watch?v=cnAbzz3N0ak

Muscular Contraction

Different types of muscle contraction

- Isotonic – muscle changes in length and moves the load
  - Concentric - the muscle shortens and does work
  - Eccentric – the muscle contracts as it lengthens
- Isometric
  - The load is greater than the tension the muscle is able to develop
  - Tension increases to the muscles capacity, but the muscle neither shortens or lengthens

Different types of muscle fibers

- Slow oxidative fibers – needs oxygen, slow to contract - long endurance
- Fast oxidative fibers and Fast glycolytic fibers - quick, powerful bursts

Connective tissue

- Surrounds each layer of the muscle
- Merge to form tendons or aponeurosis

Principles of Muscle Mechanics

Important contractile properties

1. Length-tension relationship
   - There is an optimal length for max force production
2. Force velocity relationship
   - Highest force is generated at slowest velocity

- Same principle applies to contraction of a single muscle fiber and a whole muscle
- Contraction produces tension, the force exerted on the load or object to be moved
- Contraction does not always shorten a muscle
  - Isometric – no shortening, muscle tension increases but does not exceed load
  - Isotonic – muscle shortens because muscle tension exceeds the load
- Force and duration of contraction vary in response to stimuli or different frequencies

Principles of Muscle Mechanics

Force of a muscle contraction is affected by:

Number of muscle fibers stimulated

- Recruitment

Relative size of the fibers

- Hypertrophy increase strength

Frequency of stimulation

- Increased frequency allows time for more effective transfer of tension to non-contractile components

Length- tension relationship

- Muscles contract most strongly when muscle fibers are 80 – 120% of their normal resting length

Muscle Fatigue

Muscle Fatigue

- Physiological inability to contract
- Occurs when
  - Ion balances interfere with nervous system stimulus (Na+, K+, Ca+)
  - Prolonged exercise can damage the myofilaments and surrounding structures
- Total lack of ATP causes contractures (continuous contractions)
  - Occurs rarely, during states of continuous contraction

The Nervous System

Movement requires the nervous system to work with the muscles

- Skeletal muscles are voluntary muscles stimulated and controlled by the brain and the nervous system.
- When you think about moving, your brain decides which muscles are necessary to make that movement happen.
- Electrical impulses are sent via the spinal cord and nerves to the appropriate muscles (Action Potential).
- Once the movement has started, we get feedback which is sent to the brain to process and decide what to do next
- Proprioception
  - The sense of where one body part is located in relation to others and in relation to gravity.

The Nervous System

A skeletal muscle controls muscle tension by the number of motor units stimulated

Motor Unit

- The nerve-muscle functional unit
- A single motor neuron and all (four to several hundred) the muscle fibers it supplies

Small motor unit

- In muscles that control fine movement (fingers, eyes)

Large motor unit

- In large weight bearing muscles
- Muscle fibers from a motor unit are spread throughout the muscle so that a single motor unit causes weak contraction of an entire muscle
- Motor units in a muscle usually contract asynchronously to help prevent fatigue

Strength and Neural Recruitment

- To be strong, you need both muscle mass AND neurological patterning
- When you lift weights regularly, you create new patterns of communication between the brain, nerves, neuromuscular junction, and muscle fibers. Every time you do that movement, those neuro-connections get stronger.
- Your absolute strength does depend on your muscle mass but it also depends on your neurological ability to recruit more muscle fibers. You can lift more if you can recruit and fire 50,000 vs. 25,000 fibers.
- Muscle recruitment allows people to get so much stronger in the first few weeks of a new strength training program before increasing the mass of muscle.
- Motor neurons in the muscle and nervous system die as people get older but exercise can reverse that process.

Strength and Neural Recruitment

Sitting around with tons of muscle you don't use would be a waste of energy for your body

When you start to demand work from your body, it will adapt by:

1. Changing how your nervous system recruits and activates the muscles (neurological changes)
2. Changing the muscles themselves (morphological changes)

If you don't use it, you lose it!

Morphological Changes

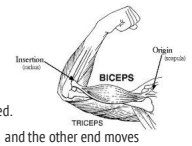
Hypertrophy = Getting Bigger!

- Enlargement of stimulated muscles
- Results from repeated, exhaustive stimulation of skeletal muscle
- Muscle fibers develop more mitochondria, glycolytic enzymes, and larger glycogen reserves
- These muscle fibers have more myofibrils and these myofibrils contain more thick and thin myofilaments
- No new muscle fibers are created; they just increase in volume and size
- Since tension production is proportional to the cross-sectional area of a muscle, strength increases

Atrophy = Getting Smaller

- A skeletal muscles loses mass and tone when it is not regularly stimulated by a motor unit
- Muscle fibers become smaller and weaker

Muscle Attachments



- Muscles attach on each side of a joint and when the muscle contracts or shortens, the joint moves.
  - Ex The bicep muscle crosses the front part of the elbow. When you do a bicep curl, the muscle contracts, the elbow flexes and the weight is lifted.
- In most cases one end of a muscle is fixed in position, and the other end moves during a contraction
- **Origin**
  - Where a muscle attaches to the bone closest to the center of the body
  - Where the fixed end is
- **Insertion**
  - Where a muscle attaches to bone farthest from the center of the body.
  - Where the movable end attaches to another structure
- **Action**
  - The specific movement a muscle makes when it contracts

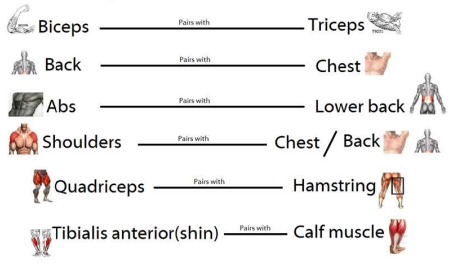
Agonist/Antagonist

- When a muscle contracts or shortens, it pulls the insertion towards the origin and causes the joint to move.
- With complex movements, muscles work in groups rather than individually. Their cooperation makes a particular movement more efficient.
- To return the joint to its original position, the reciprocal muscle on the other side of the joint must contract and shorten.
- The muscles working together creates a "reciprocal" synergy that is called the agonist/antagonistic system.

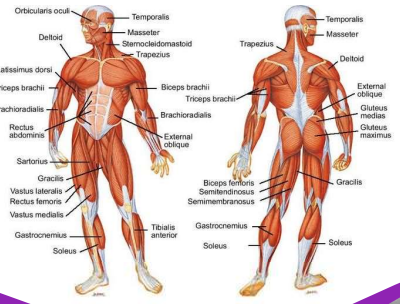
Agonist:
- The prime mover mostly responsible for producing a particular movement

Antagonist:
- Opposes the movement of the agonist

Antagonistic Muscle Groups List



Muscles of the Body



Muscles of the Arms

Upper arm

Anterior

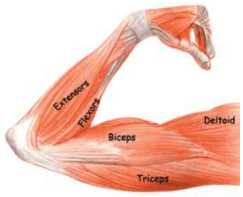
- Biceps Brachii
- Brachialis
- Brachioradialis

Posterior

- Triceps brachii

Forearms

- Wrist flexors
- Wrist extensors



Biceps Brachii

Action

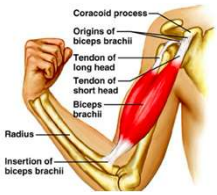
- Flex the elbow
- Supinate the forearm
- Flex the shoulder

Origin

- Short head – coracoid process of scapula
- Long head – supraglenoid tubercle of scapula

Insertion

- Tuberosity of the radius and aponeurosis of the biceps brachii



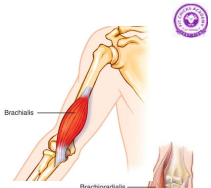
Brachialis and Brachioradialis

Brachialis

Action
- Flex the elbow

Origin
- Distal half of anterior surface of humerus

Insertion
- Tuberosity and coronoid process of ulna



Brachioradialis

Action
- Flexes the elbow
- Assists to pronate and supinate the forearm

Origin
- Proximal two-thirds of the lateral supracondylar ridge of humerus

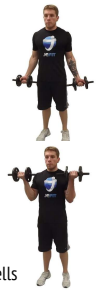
Insertion
- Styloid process of radius

What exercises would help me train these muscles?

Biceps Brachii, Brachialis and Brachioradialis

What exercises would help me train these muscles?

- Bicep curls
- Concentration curls
- Incline dumbbells curls
- Hammer curls (target all 3 bc forearm is supinated)
- Preacher curls
- Machine curls
- Etc…

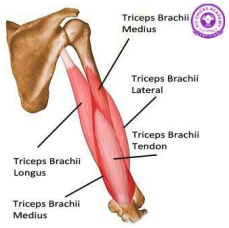


Equipment needed

- Dumbbells
- Resistance bands
- Barbells
- Cables
- E-Z curl bar

Triceps Brachii

Action
- All heads – Extend the elbow
- Long head – Extend the shoulder
  - Adduct the shoulder



Origin
- Long head – Infraglenoid tubercle of the scapula
- Lateral head – Posterior surface of proximal half of the humerus
- Medial head – Posterior surface of distal half of the humerus

Insertion
- Olecranon process of the ulna

What exercises would help me train this muscle?

Triceps Brachii

What exercises would help me train this muscle?

- Triceps extensions
  - Skull crushers
  - Overhead (seated or standing)
- Kickbacks
- Dips
- Push-downs

Equipment needed:

- Dumbbells
- Barbells
- E-A curl bar
- Cables
- Bench

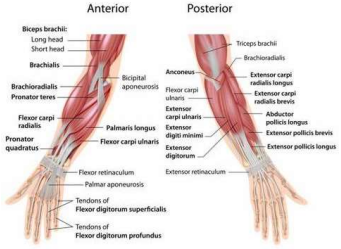
Wrist Flexors and Extensors

Wrist Flexion

- Pronator teres
- Flexor carpi radialis
- Palmaris longus
- Flexor carpi ulnaris
- Flexor digitorum superficialis
- Flexor digitorum profundus
- Flexor policis longus

Wrist Extension

- Extensor carpi ulnaris
- Extensor carpi radialis longus
- Externsor digitorum
- Externsor carpi radialis brevis
- Extensor digiti minimi



What exercises would help me train these muscles?

Wrist Flexors and Extensors

What exercises would help me train these muscles?

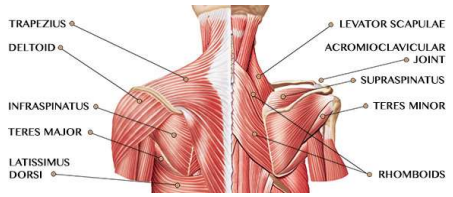
Wrist flexors

- Wrist curls

Wrist Extensors

- Reverse wrist curls

Muscles of the Posterior Shoulder



Trapezius

Action

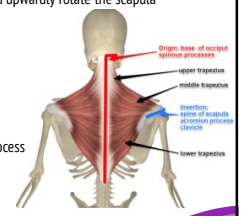
- Upper fibers
  - Bilaterally - Extend the head and neck
  - Unilaterally – Laterally flex the head/neck to the same side, rotate the head/neck to the opposite side, elevate and upwardly rotate the scapula
- Middle fibers
  - Adduct the scapula
  - Stabilize the scapula
- Lower fibers
  - Depress the scapula
  - Upwardly rotate the scapula

Origin

- Base of occiput, ligamentum nuchae, spinous process of C-7 through T-12

Insertion

- Clavicle, acromion, and spine of the scapula



What exercises would help me train these muscles?

Trapezius

What exercises would help me train these muscles?

Upper fibers

- Barbell shrug
- Dumbbell shrug

Middle fibers

- Row
  - Seated
  - Bent over
  - T-bar

Lower fibers

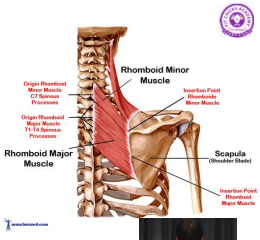
- Face pulls
- Wall slides
- Low trap punch
- YTWL's
- Pull up shrug

Rhomboids

Action
- Adduct the scapula
- Elevate the scapula
- Downwardly rotate the scapula

Origin
- Major – Spinous processes of T2-T5
- Minor – Spinous processes of C7-T1

Insertion
- Major –Medial border of the scapula between the spine of the scapula and inferior angle
- Minor – Upper portion of medial border of the scapula, across from the spine of the scapula



What exercises would help me train this muscle?

Rhomboids

What exercises would help me train this muscle?

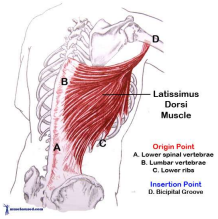
- Rows
  - Bent over
  - Seated
  - Single arm
  - Inverted
- Lat pull downs
- Band pull aparts

Latissimus Dorsi

Action
- Extend the shoulder
- Adduct the shoulder
- Medially rotate the shoulder

Origin
- Inferior angle of scapula, spinous processes of T6-T12, last three or four ribs, thoracolumbar aponeurosis, and posterior iliac crest

Insertion
- Intertubercular groove of the humerus



**Teres major also perform these three actions but has a different O&I.

What exercises would help me train these muscles?

Latissimus Dorsi

What exercises would help me train these muscles?

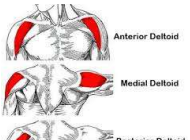
- Lat pull down
- Straight arm lat pull down
- Dumbbell pull overs
- Chin ups
- Pull-ups
- Rows

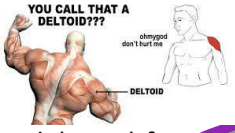
Deltoids

Action
- All fibers – Abduct the shoulder
- Anterior fibers – Flex, medially rotate, and horizontally adduct the shoulder
- Posterior fibers – Extend, laterally rotate, and horizontally abduct the shoulder

Origin
- Lateral on third of clavicle, acromion, and spine of scapula

Insertion
- Deltoid tuberosity





What exercises would help me train these muscles?

Deltoids

What exercises would help me train these muscles?

- Shoulder press
- Arnold press
- Lateral raises
- Front raises
- Upright row
- Rear delt raise
- Push press

Muscles of the Rotator cuff

Supraspinatus
Action
- Abduct the shoulder
- Stabilize the shoulder

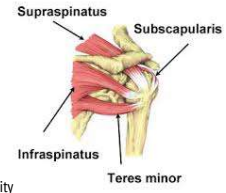
Origin
- Supraspinous fossa of the scapula

Insertion
- Greater tubercle of the humerus

Subscapularis
Action
- Medially rotate the shoulder
- Stabilize the head of the humerus in glenoid cavity

Origin
- Subscapular fossa of the scapula

Insertion
- Lesser tubercle of the humerus



Muscles of the Rotator cuff

Infraspinatus and Teres Minor
Action
- Laterally rotate the shoulder
- Adduct the shoulder
- Stabilize the head of the humerus in glenoid cavity

Origin
- Infraspinatus – Infraspinous fossa of scapula
- Teres Minor – Upper two thirds of lateral border of the scapula

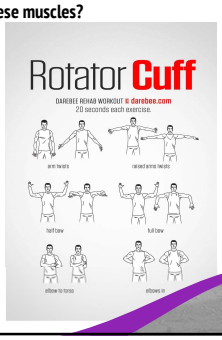
Insertion
- Infraspinatus and Teres Minor – Greater tubercle of the humerus

What exercises would help me train these muscles?

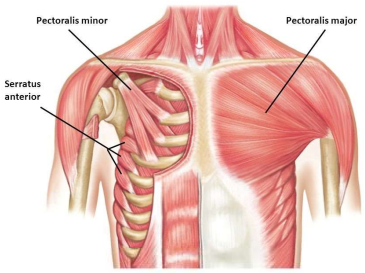
Muscles of the Rotator cuff

What exercises would help me train these muscles?

- Face pulls with external rotation
- External arm rotations
  - Dumbbell
  - Band
  - Cable
- Lateral raises



Muscles of the Anterior Shoulder

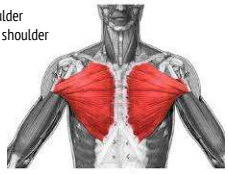


Pectoralis Major

Pectoralis Major
Action
- All fibers – Adduct and medially rotate the shoulder
- Upper fibers – Flex and horizontally adduct the shoulder
- Lower fibers – Extend the shoulder

Origin
- Medial half of clavicle, sternum, and cartilage of ribs 1-6

Insertion
- Crest of greater tubercle of humerus



What exercises would help me train these muscles?

Pectoralis Major

What exercises would help me train these muscles?

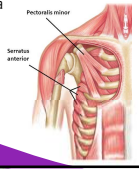
- Chest press
  - Barbell
  - Dumbbell
  - Single arm
- Push-ups
- Parallel bar dips
- Chest flys

Pectoralis Minor and Serratus Anterior

Pectoralis Minor
Action
- Depress the scapula
- Abduct the scapula
- Downwardly rotate the scapula

Origin
- Third, fourth, and fifth ribs

Insertion
- Medial surface of coracoid process of the scapula



Serratus Anterior
Action
- Abduct the scapula
- Upwardly rotate the scapula
- Depress the scapula
- Hold the medial border against the rib cage

Origin
- External surface of ribs 1-8/9

Insertion
- Anterior surface of medial border of the scapula

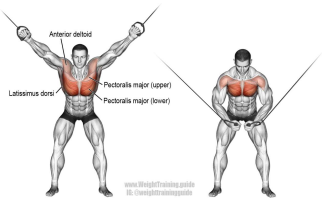
What exercises would help me train these muscles?

Pectoralis Minor and Serratus Anterior

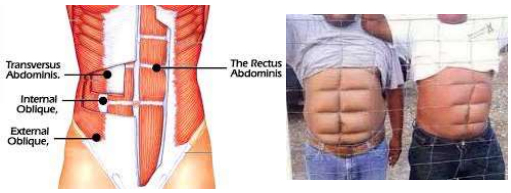
What exercises would help me train these muscles?

Pectoralis Minor
- High cable cross over
- Chest flys

Serratus Anterior
- Push-ups
- Scapular push-ups
- Forearms wall slides



Muscles of the Anterior Torso



Rectus abdominis

Action
- Flex the vertebral column
- Tilt the pelvis posteriorly

Origin
- Pubic crest, pubic symphysis

Insertion
- Cartilage of ribs 5,6,7 and xiphoid process

What exercises would help me train these muscles?

Rectus abdominis

What exercises would help me train these muscles?

- Crunches
- Sit-ups
- Leg raises

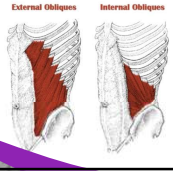
Obliques

External Oblique

Action
- Unilaterally – laterally flex the spine to the same side and rotate to the opposite side
- Bilaterally – Flex the spine

Origin
- External surfaces of ribs 5-12

Insertion
- Anterior part of iliac crest, abdominal aponeurosis to linea alba



Internal Oblique

Action
- Unilaterally – Laterally flex and rotate the spine to the same side
- Bilaterally – Flex the spine

Origin
- Lateral inguinal ligament, iliac crest, and thoracolumbar fascia

Insertion
- Internal surface of lower three ribs, abdominal aponeurosis to linea alba

What exercises would help me train these muscles?

Obliques

What exercises would help me train these muscles?

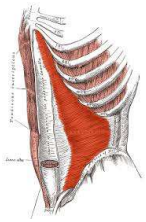
- Trunk rotations
- Dumbbell side bends
- Roman chair side bends
- Russian twist
- Side plank
- Side plank with twist

Transverse Abdominis

Action
- Compress abdominal contents

Origin
- Lateral inguinal ligament, iliac crest, thoracolumbar fascia, and internal surface of ribs 6-12

Insertion
- Abdominal aponeurosis to linea alba



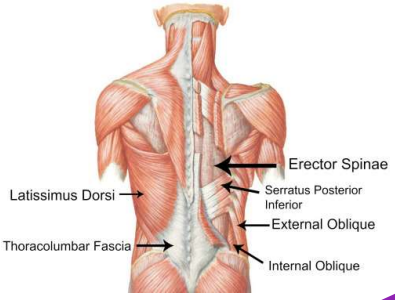
What exercises would help me train these muscles?

Transverse Abdominis

What exercises would help me train these muscles?

- Dead bug
- Birddog
- Plank
- Hollow holds
- Heel slides
- Flutter kicks

Muscles of the Posterior Torso

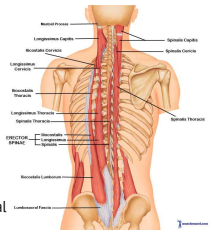


Erector Spinae

Action
- Unilaterally – Laterally flex the spine to the same side
- Bilaterally – Extend the spine

Origin
- Common tendon that attaches to the posterior surface of sacrum, iliac crest, spinous processes of the lumbar and last two thoracic vertebrae

Insertion
- Various attachments at the posterior ribs, spinous and transverse processes or the thoracic and cervical vertebrae, and mastoid process of temporal bone



What exercises would help me train these muscles?

Erector Spinae

What exercises would help me train these muscles?

- Back extensions
- Supermans
- Glute bridge
- Bird dog
- Good mornings
- Bent over rows
- Deadlifts
- Rack pulls

Muscles of the Hip

* Adductors not shown

Hip Adductors

Action
- All – Adduct and medially rotate the hip
- Except Gracilis – Flex the hip –
  - Flex and medially rotates the flex knee
- Posterior fibers of adductor magus – Extend the hip

Origin
- Various attachments on pubic bone

Insertion
- Various attachments along femur
- Except Gracilis – tibia

What exercises would help me train these muscles?

Hip Adductors

What exercises would help me train these muscles?

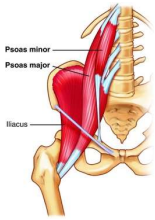
- Power squats/sumo squats
- Plie squats
- Resisted adduction
- Lateral lunges

Hip Flexors

Action
- Flex the hip
- Flex the trunk
- Tilt pelvis anteriorly

Origin
- Anterior lumbar vertebrae (Psoas) and iliac fossa (Iliacus)

Insertion
- Lesser trochanter of the femur



What exercises would help me train these muscles?

Hip Flexors

What exercises would help me train these muscles?

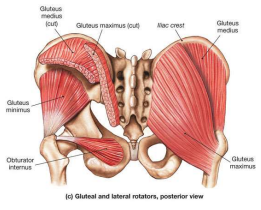
- High knees
- Leg raises
- Resisted hip flexion
- Lunges

Gluteal Muscles

Glute Max
Action
- Upper fibers - Extend, laterally rotate and abduct the hip
- Lower fibers – Adduct the hip

Origin
- Coccyx, edge of sacrum, posterior iliac crest

Insertion
- Iliotibial band and gluteal tuberosity



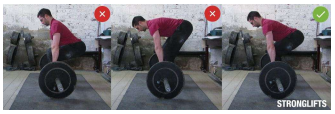
(c) Gluteal and lateral rotators, posterior view

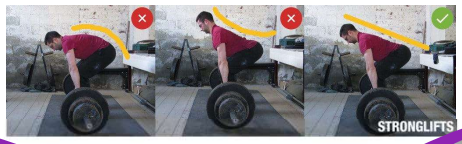
What exercises would help me train these muscles?

Gluteal Muscles

What exercises would help me train these muscles?

- Deadlifts
- Glute bridge
- Hip thrust
- Resisted hip extension





Gluteal Muscles

Glute Medius

Action
- All fibers – Abduct the hip
- Anterior fibers – Flex and medially rotate the hip
- Posterior fibers – Extend and laterally rotate the hip

Origin
- Gluteal surface of ilium,

Insertion
- Lateral aspects of greater trochanter

Glute Minimus

Action
- Abduct the hip
- Medially rotate the hip
- Flex the hip

Origin
- Gluteal surface of ilium

Insertion
- Anterior aspect of greater trochanter

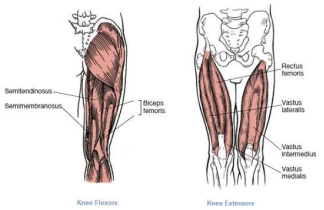
What exercises would help me train these muscles?

Gluteal Muscles

What exercises would help me train these muscles?

- Resisted hip abduction
- Clamshells
- Lateral lunges
- Lateral step ups
- Monster walks

Muscles of the Knee

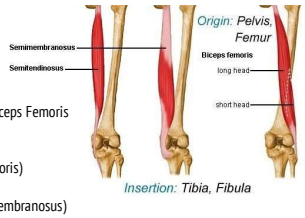


Hamstring Group

Action
- Flex the knee
- Extend the hip
- Tilt the pelvis posteriorly

Origin
- Ischial tuberosity
- Lateral lip of linea aspera (Biceps Femoris short head)

Insertion
- Head of the fibula (Biceps femoris)
- Medial tibia (Semitendinosus)
- Posterior/medial tibia (Semimembranosus)



What exercises would help me train these muscles?

Hamstring Group

What exercises would help me train these muscles?

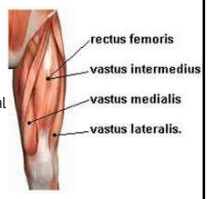
- Leg curls
  - Stability ball
  - Sliders
  - Nordic
  - Lying
  - Seated
  - Standing
- Good mornings

Quadriceps

Action
- All – Extend the knee
- Rectus Femoris – Flex the hip

Origin
- Rectus Femoris – AIIS
- Vastus Medialis – Medial lip of linea aspera
- Vastus Lateralis – Lateral lip of linea aspera, gluteal tuberosity, and greater trochanter
- Vastus Intermedius – Anterior and lateral shaft of femur

Insertion
- Tibial tuberosity (via the patella and patellar ligament)



What exercises would help me train these muscles?

Quadriceps

What exercises would help m train these muscles?

- Squats
- Lunges
- Split squats
- Knee extensions
- Step ups

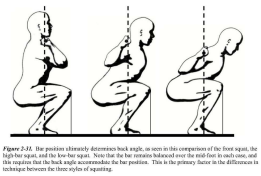
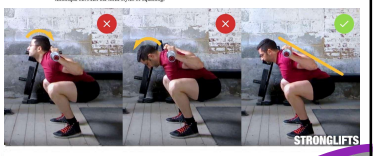


Figure 3-31. Bar position ultimately determines back angle, as seen in this comparison of the front squat, the high-bar squat, and the low-bar squat. Note that the bar remains balanced over the mid-foot in each case, and this requires that the back angle accommodate the bar position. This is the primary factor in the differences in technique between the three styles of squatting.



Muscles of the Ankle

Gastrocnemius and Soleus

Gastrocnemius
Action
- Flex the knee and plantar flex the ankle

Origin
- Posterior condyles of the femur

Insertion
- Calcaneus via calcaneal tendon (Achilles tendon)

Soleus
Action
- Plantar flex the ankle

Origin
- Soleus – Soleal line (posterior tibia and fibula)

Insertion
- Calcaneus via calcaneal tendon (Achilles tendon)

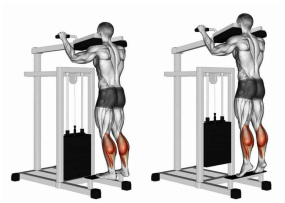
What exercises would help me train these muscles?

Gastrocnemius and Soleus

What exercises would help me train these muscles?

Gastrocnemius
- Calf raises
  - Flat on ground
  - Step

Soleus
- Seated calf raises



Tibialis Anterior

Action
- Invert the foot
- Dorsi flex the ankle

Origin
- Lateral condyle of tibia, lateral surface of tibia, and interosseous membrane

Insertion
- Medial cuneiform and base the first metatarsal

What exercises would help me train these muscles?

Tibialis Anterior

What exercises would help me train these muscles?

- Heel walking
- Toe taps

Benefits of doing resistance training

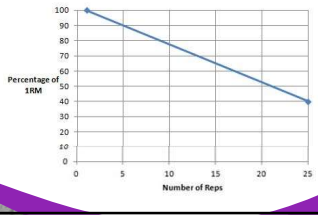
- Helps in body composition in creating lean muscle mass with a higher metabolic resting rate
- Protects bone density and muscle mass, reducing the risk of premature aging
- Improved performance for sport or daily living
- Elevates endorphins, creates a sense of well-being

FITT for Strength Training

Frequency

- 2 to 4 days a week
- Rest is critical (most of the gains happen during your recovery day!)
- Approximately 48 hours needed before you train that body part again
- More rest is better than not enough rest!

Intensity



FITT Continued…

Time

- Rest
  - Between 30 secs (beginner) - 2 mins (Power lifter)
- Tempo
  - 2:0:2:0 or more
  - The more time under tension, the harder it is

Type

- Beginners
  - Free weights, Machines, Bodyweight, Bands, Resistance Balls
- Intermediate-Advance
  - Free weights, TRX, Kettlebells, etc

Recap

DIFFERENT TYPES OF MUSCLES

MUSCULAR ANATOMY

- Muscle Function and Structure
- Special characteristics of muscle tissue
- Muscle contraction and muscle mechanics

THE NERVOUS SYSTEM AND ITS CONNECTION TO STRENGTH

MAJOR MUSCLE GROUPS

- Action and Attachment points
- How to train each Major Muscle Group!

THE FITT PRINCIPLE FOR STRENGTH TRAINING

- Benefits of resistance training
- Recommended strength training guidelines

Any questions or inquiries, please email:

fne@fitchicks.ca