

SQUAT:



Classification

Utility:	Basic
Mechanics:	Compound
Force:	Push

Instructions

Preparation

Stand with arms extended forward.

Execution

Squat down by bending hips back while allowing knees to bend forward, keeping back straight and knees pointed same direction as feet. Descend until thighs are just past parallel to floor. Squat up by extending knees

Comments

Keep head facing forward, back straight, chest high, and feet flat on surface with equal distribution of weight through forefoot and heel. Knees should point same direction as feet throughout movement. Arms positioned forward allow torso to be positioned more upright. See [Squat Analysis](#).

and hips until legs are straight. Return and repeat.

Easier

Movement can be made easier by holding onto rails or back of chairs to each side. Alternatively, exercise can be performed by squatting down only part way. As strength increases, range of motion can be progressively increased.

Harder

For greater intensity exercise, light weight can be introduced. Alternately slightly more challenging bodyweight exercises can be performed.

- Split Squat
- Single Leg Split Squat
- Kettlebell Goblet Squat
- Weighted Front Squat
- Dumbbell Squat
- Barbell Squat

Muscles

Target

- Quadriceps

Synergists

- Gluteus Maximus
- Adductor Magnus
- Soleus

Dynamic Stabilizers

- Hamstrings
- Gastrocnemius

BARBELL SQUAT:



Classification

Utility:	Basic
Mechanics:	Compound
Force:	Push

Instructions

Preparation

From rack with barbell at upper chest height, position bar high on back of shoulders and grasp barbell to sides. Dismount bar from rack and stand with shoulder width stance.

Execution

Squat down by bending hips back while allowing knees to bend forward, keeping back straight and knees pointed same direction as feet. Descend until thighs are just past parallel to floor. Extend knees and hips until legs are straight. Return and repeat.

Comments

Keep head facing forward, back straight and feet flat on floor with equal distribution of weight throughout forefoot and heel. Knees should point same direction as feet throughout movement. At bottom of squat, crease at hips should be lower than top of knee cap.

Also see:

- [Squat mount and dismount](#)
- [Squat for Targeting Glutes](#)
- [Squat Analysis](#)
- [Squat Strength Standards](#)

Side view:

- [Side view A](#)
- [Side view B](#)

Spotting Technique:

- [Spotting technique](#)
- [Spotting assistance](#)

Muscles

Target

- [Quadriceps](#)

Synergists

- [Gluteus Maximus](#)
- [Adductor Magnus](#)
- [Soleus](#)

Dynamic Stabilizers

- [Hamstrings](#)
- [Gastrocnemius](#)

Stabilizers

- [Erector Spinae](#)

Antagonist Stabilizers

- [Rectus Abdominis](#)
- [Obliques](#)

PUSH-UP:



Classification

Utility:	Basic or Auxiliary
Mechanics:	Compound
Force:	Push

Instructions

Preparation

Lie prone with forefeet on floor and hands slightly wider than shoulder width. Raise body up off floor by extending arms with body straight.

Execution

Keeping body straight, lower body to floor by bending arms. Push body up until arms are extended. Repeat.

Comments

Both upper and lower body must be kept straight throughout movement. See [close grip push-up](#). Also see [push-up test calculator](#).

Easier

Resistance can be reduced by performing push-ups with knees bent on floor or placing hands on elevated horizontal bar, in between narrow doorway, or edge of elevated surface.

- [Bent knee](#)
- [Elevated Horizontal Bar](#)
- [Edge of Box or Bench](#)

Harder

Progress to Archer Push-ups, Self-assisted Chest Dips, or regular Chest Dips. Other methods to increase difficulty include pushing shoulders forward at top of movement, elevate feet, plyometric variations, or have partner hold weight on back.

- [Archer Push-up](#)
- [Self-assisted Chest Dip](#)
- [Chest Dip](#)
- [Push-up Plus](#)
- [Elevated feet](#)
- [Shoulder Tap Push-up](#)
- [Alternating Plyo Push-up](#) (on knees and Bosu)
- [Weighted Push-up](#)

Muscles

Target

- [Pectoralis Major, Sternal](#)

SLED SEATED LEG PRESS (MACHINE):



Comments

Adjust seat and back support to accommodate near full range of motion without forcing hips to bend at waist. Keep knees pointed same directions as feet. Do not allow heels to raise off of platform, pushing with both heel and forefoot. Placing feet slightly high on platform emphasize Gluteus Maximus. Placing feet slightly lower on platform emphasize Quadriceps.

Muscles

Target

- Gluteus Maximus

Synergists

- Quadriceps
- Adductor Magnus
- Soleus

Dynamic Stabilizers

- Hamstrings
- Gastrocnemius

Classification

Utility:	Basic
Mechanics:	Compound
Force:	Push

Instructions

Preparation

Sit on machine with back on padded support. Place feet slightly high on platform. Grasp handles to sides.

Execution

Extend knees and hips until knees are fully extended. Return until hips are completely flexed. Repeat.

CABLE CHEST PRESS (MACHINE):



Classification

Utility:	Basic or Auxiliary
Mechanics:	Compound
Force:	Push

Instructions

Preparation

Sit on seat and grasp stirrups to each side. Position elbows out to sides, slightly lower than shoulder height. Position hands slightly narrower than elbow width in front of upper arms.

Execution

Push stirrups out straight until arms are straight and parallel to one another. Return stirrups to original position, until slight stretch is felt in shoulders or chest. Repeat.

Comments

Stirrup should follow slight arch pattern, in front of upper arm between elbow and chest in stretched position, traveling inward in front of each shoulder at extended position. Also see Cable Chest Press performed on [older machine](#).

Muscles

Target

- Pectoralis Major, Sternal

Synergists

- Pectoralis Major, Clavicular
- Deltoid, Anterior
- Triceps Brachii
- Coracobrachialis

Dynamic Stabilizers

- Biceps Brachii, Short Head

LUNGE:



Classification

Utility:	Basic or Auxiliary
Mechanics:	Compound
Force:	Push

Instructions

Preparation

Stand with hands on hips or in front of body.

Execution

Lunge forward with first leg. Land on heel, then forefoot. Lower body by flexing knee and hip of front leg until knee of rear leg is almost in contact with floor. Return to original standing position by forcibly extending hip and knee of forward leg. Repeat by alternating lunge with opposite leg.

Comments

Keep torso upright during lunge; [flexible hip flexors](#) are important. Lead knee should point same direction as foot throughout lunge. A long lunge emphasizes Gluteus Maximus; short lunge emphasizes Quadriceps.

Weighted versions of this exercise would normally be considered auxiliary in context of other basic exercises (ie: Barbell Squat, Sled Leg Press). However, in the context of 'body weight' only program, this exercise can be considered basic.

Easier

For less intensity, perform [Split Squat](#).

Harder

Exercise can be made more challenging with additional weight. Also consider [Step-ups](#).

- [Dumbbell Lunge](#)
- [Barbell Lunge](#)
- [Step-up](#)

Muscles

Target

- [Quadriceps](#)

Synergists

- [Gluteus Maximus](#)
- [Adductor Magnus](#)
- [Soleus](#)

Dynamic Stabilizers

- [Hamstrings](#)
- [Gastrocnemius](#)

Stabilizers

- [Tibialis Anterior](#)
- [Gluteus Medius](#)
- [Gluteus Minimus](#)
- [Quadratus Lumborum](#)
- [Obliques](#)

BARBELL HIP THRUST:



Classification

Utility:	Auxiliary
Mechanics:	Isolated
Force:	Push

Instructions

Preparation

Sit on floor with long side of bench behind back. Roll barbell back and center over hips. Position upper back on corner of bench. Place feet on floor approximately shoulder width with knees bent. Grasp bar to each side.

Execution

Raise bar upward by extending hips until straight. Lower and repeat.

Comments

Use bench of lower height 16" to 18" (40 to 46 cm) allowing torso to be angled approximately 45°. Bench may need to be secured so it does not slide on floor.

Bar must be high enough to allow clearance over hips. If 45lb (22kg) plates are too heavy, lighter Olympic-style bumper plates can be used.

Bar should be positioned across upper hip flexors and lower abdomen. Thick bar padding or balance foam pad may need to be used if pelvis and hip flexor muscles do not offer enough natural padding.

Find comfortable contact hinge position on bench and avoid sliding. Keep bar from rolling back near top of movement with hands on bar.

Movement should occur through hip with torso rigid. Avoid chest arching upward and anterior pelvic tilt, both producing spinal hyperextension.

Muscles

Target

- Gluteus Maximus

Synergists

- Quadriceps

SEATED LEG CURL (MACHINE):



Classification

Utility:	Basic
Mechanics:	Isolated
Force:	Pull

Instructions

Preparation

Sit on apparatus with back against padded back support. Place back of lower legs on top of far padded lever. Secure lap pad on thighs just above knees. Grasp handles on lap support.

Execution

Pull far padded lever toward back of thighs by flexing knees. Return lever until knees are straight. Repeat.

Comments

Position back of seat so knees are aligned with fulcrum of lever. Position lever pad so it makes contact with lower leg just above ankles. Place leg closest to lever in machine first, followed by further leg. Dorsal flexion of ankle reduces active insufficiency of Gastrocnemius allowing it to assist in knee flexion. Also see Lever Seated Leg Curl machine with pad below knee.

Muscles

Target

- Hamstrings

Synergists

- Gastrocnemius
- Gracilis
- Sartorius
- Popliteus

Antagonist Stabilizers

- Tibialis Anterior

LEVER LEG EXTENSION (MACHINE):



Comments

Stabilizers may be used during heavy resistances to prevent body rising off of seat.

Muscles

Target

- Quadriceps

Synergists

- None

Stabilizers

- Trapezius, Upper
- Trapezius, Middle
- Levator Scapulae
- Brachioradialis
- Brachialis
- Biceps Brachii

Classification

Utility:	Auxiliary
Mechanics:	Isolated
Force:	Push

Instructions

Preparation

Sit on apparatus with back against padded back support. Place front of lower legs under padded lever. Position knee articulation at same axis as lever fulcrum. Grasp handles to sides for support.

Execution

Move lever forward and upward by extending knees until legs are straight. Return lever to original position by bending knees. Repeat.

LAT/CABLE PULLDOWN (MACHINE):



Classification

Utility:	Basic
Mechanics:	Compound
Force:	Pull

Instructions

Preparation

Grasp cable bar with wide grip. Sit with thighs under supports.

Execution

Pull down cable bar to upper chest. Return until arms and shoulders are fully extended. Repeat.

Comments

Range of motion will be compromised if grip is too wide.

Muscles

Target

- Latissimus Dorsi

Synergists

- Brachialis
- Brachioradialis
- Biceps Brachii
- Teres Major
- Deltoid, Posterior
- Infraspinatus
- Teres Minor
- Coracobrachialis
- Rhomboids
- Levator Scapulae
- Trapezius, Lower
- Trapezius, Middle
- Pectoralis Minor

Dynamic Stabilizers

- Triceps, Long Head

CABLE SEATED ROW (MACHINE):



Classification

Utility:	Basic or Auxiliary
Mechanics:	Compound
Force:	Pull

Instructions

Preparation

Sit on seat or bench. Bend forward and grasp cable stirrup with one hand. Position torso upright allowing shoulder to be pulled forward under weight on cable.

Execution

Pull cable attachment to side of torso while pulling shoulder back, arching spine, and pushing chest forward. Return until arm is extended and shoulder is pulled forward. Repeat. Continue with opposite arm.

Comments

If two high pulleys are available, consider using opposite pulley as arm exercised. If pulley is far away enough, it is optional to bend lower back forward during stretch and pull it upright during contraction. See [Cable One Arm Seated High Row](#). Quadratus Lumborum and Obliques are involved in spinal rotation if waist rotates. [Hamstrings](#) and [Gluteus Maximus](#) become stabilizers, if seated on bench with feet propped forward with no upper leg support.

Muscles

Target

- Back, General

Synergists

- [Trapezius, Middle](#)
- [Trapezius, Lower](#)
- [Rhomboids](#)
- [Latissimus Dorsi](#)
- [Teres Major](#)
- [Deltoid, Posterior](#)
- [Infraspinatus](#)
- [Teres Minor](#)
- [Brachialis](#)
- [Brachioradialis](#)
- [Pectoralis Major, Sternal](#)

Dynamic Stabilizers

PLANK:



Classification

Utility:	Auxiliary
Mechanics:	Isolated
Force:	Push

Instructions

Preparation

Lie prone on mat. Place forearms on mat, elbows under shoulders. Place legs together with forefeet on floor.

Execution

Raise body upward by straightening body in straight line. Hold position.

Comments

Muscles are exercised [isometrically](#). Exercise can also be performed with straight supporting arms in pushup stance. Also see [Spot Reduction Myth](#).

Easier

Movement can be made easier angling body up on elevated platform or bench. Exercise can also be performed on bent knees instead of forefeet.

Harder

Exercise could be made more challenging with added weight (eg: sandbags, partner) on hips or low back, although it is rarely performed in that manner. Raising one foot up off floor can also make holding this position more difficult. [Stability Ball Rollout](#) requires more shoulder strength.

Muscles

Target *(see comments)*

- [Rectus Abdominis](#)

Stabilizers

- [Obliques](#)
- [Iliopsoas](#)
- [Tensor Fasciae Latae](#)
- [Quadriceps](#)
- [Sartorius](#)
- [Pectoralis Major](#)

CABLE SHOULDER PRESS (MACHINE):



Classification

Utility:	Basic or Auxiliary
Mechanics:	Compound
Force:	Push

Instructions

Preparation

Stand between two low to medium height pulleys. Grasp cable stirrups from each side. Position stirrups to each side of shoulders with elbows down to sides and stirrups above or slightly narrower than elbows.

Execution

Push stirrups upward until arms are extended overhead. Return stirrups to sides of shoulders and repeat.

Comments

Wrists maintain their approximate position above each elbow throughout movement. Feet may be positioned apart to each side or one foot back as shown. Cable pulleys should be much closer together than what is typically found on standard cable cross over setup.

Muscles

Target

- Deltoid, Anterior

Synergists

- Deltoid, Lateral
- Supraspinatus
- Triceps Brachii
- Coracobrachialis
- Trapezius, Middle
- Trapezius, Lower
- Serratus Anterior, Inferior Digitations

Dynamic Stabilizers

- Triceps, Long Head

Stabilizers

- Trapezius, Upper
- Levator Scapulae

CABLE TWIST (MACHINE):



Classification

Utility:	Auxiliary
Mechanics:	Isolated
Force:	Pull

Instructions

Preparation

Grasp stirrup from shoulder height cable pulley with both hands. Step and turn lower body away from pulley until near arm is horizontal and straight. Position feet wide apart facing away from pulley, furthest foot further away from pulley. Raise heel of nearest foot off floor. Bend knees of both legs slightly. Place far hand over other hand or interlace fingers.

Execution

Keeping arms straight, rotate torso to opposite side until cable makes contact with shoulder. Return to original position and repeat. Continue with opposite side.

Comments

Both arms should be horizontal and straight. This movement arguably involves more hip [internal rotation](#) and [transverse adduction](#) than [spinal rotation](#). Although it is considered oblique movement, remarkably little rotation actually occurs through spine, although rotators of spine act largely as stabilizers except at very beginning and end of motion where resistance from cable is minimal.

A large part of rotational force actually occurs through rotation/transverse adduction of forward hip. Because rear leg is only supported by forefoot, hip of forward leg is utilized much greater than hip of rear leg since forward leg offers more secured base of support. Continued rotation would occur through spine except when cable makes contact with body precluding further movement and resistance would no longer be provided through cable since [line of force](#) is no longer perpendicular line of pull. Seated oblique exercises or those exercises where hips are stabilized allow for greater range of movement through spine. See [Spot Reduction Myth](#).

Muscles

Target (*see comments*)

- Obliques

Synergists

- Tensor fasciae latae
- Gluteus medius
- Gluteus minimus, anterior fibers

BARBELL BENCH PRESS:



Classification

Utility:	Basic
Mechanics:	Compound
Force:	Push

Instructions

Preparation

Lie supine on bench. Dismount barbell from rack over upper chest using wide oblique overhand grip.

Execution

Lower weight to chest. Press bar upward until arms are extended. Repeat.

Comments

Range of motion will be compromised if grip is too wide.

Also see:

- [Bench Press Analysis](#)
- [Bench Press Strength Standards](#)
- [Powerlifting Bench Press](#)

Muscles

Target

- Pectoralis Major, Sternal

Synergists

- Pectoralis Major, Clavicular
- Deltoid, Anterior
- Triceps Brachii
- Coracobrachialis

Dynamic Stabilizers

- Biceps Brachii, Short Head

BARBELL DEADLIFT:



Classification

Utility:	Basic
Mechanics:	Compound
Force:	Pull

Instructions

Preparation

With feet flat beneath bar, squat down and grasp bar with shoulder width or slightly wider overhand or mixed grip.

Execution

Lift bar by extending hips and knees to full extension. Pull shoulders back at top of lift if rounded. Return and repeat.

Comments

Target muscle is exercised [isometrically](#). Throughout lift, keep hips low, shoulders high, arms and back straight. Knees should point same direction as feet throughout movement. Keep bar close to body to improve mechanical leverage. Grip strength and strength endurance often limit ability to perform multiple reps at heavy resistances. Gym chalk, wrist straps, grip work, and mixed grip can be used to enhance grip. Mixed grip indicates one hand holding with overhand grip and other hand holding with underhand grip. [Lever barbell jack](#) can be used to lift barbell from floor for easier loading and unload of weight plates.

In powerlifting, do not squat down too deep and keep shoulder joint slightly behind bar for optimal leverage and mechanics (think 'teeter totter'). Upper body will move back as weight is pulled upward. On rep training, do not merely tap weight to ground, but instead, let barbell settle to ground each rep to sufficiently train range of motion through initial slack of heavy barbell. Heavy barbell deadlifts significantly engage [Latissimus Dorsi](#).

See [Deadlift](#) under Gluteus Maximus. Also see [Deadlift Analysis](#) and [Deadlift Strength Standards](#).

Muscles

Target (*see comments*)

- [Erector Spinae](#)

