

# Performance Point

## The King of Lifts: Squats

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The cornerstone exercise of any effective strength training program designed for sports with lower body demands is the squat. Successful squat training not only reduces the risk of injury, but also maximizes performance benefits. The squat is a multi-joint exercise that emphasizes the movement chain commonly known as **triple extension** (extension of the ankles, knees and hips). This is an important movement in sport as it needs to be efficient and well coordinated if athletes are to run faster, jump higher and throw further. This *Performance Point* covers the key technical requirements for excellent parallel back squats.

The squat incorporates many muscle including the largest and potentially most powerful muscle in the body: the Gluteus Maximus (glutes).

The Prime Movers of the parallel back squat are:

- The Gluteus group
- The Hamstrings group
- The Quadriceps group

The Assistors are:

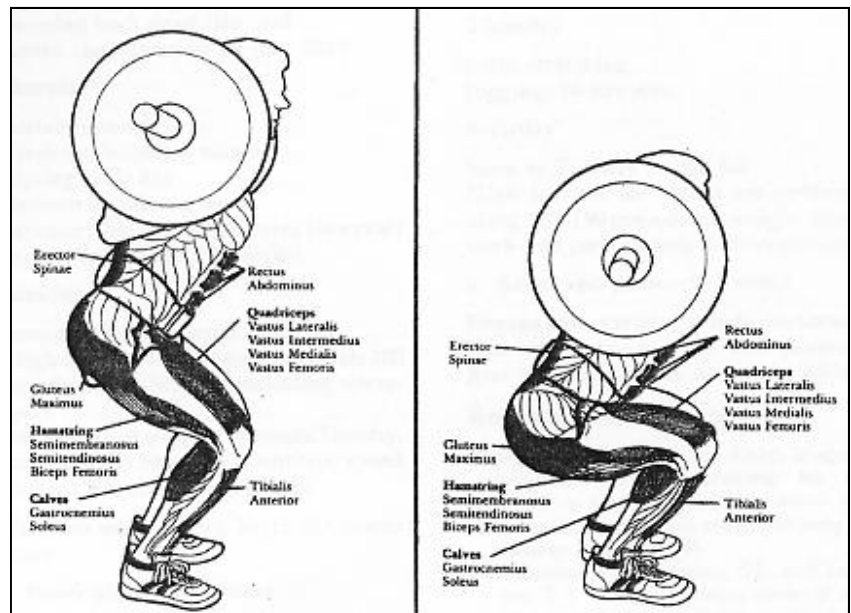
- Erector Spinae (Back)
- Abdominals
- Calf

The Stabilizers are:

- Gluteus Medius
- Vastus lateralis oblique
- Deep abdominal and back musculature (transversus abdominus, multifidus, the diaphragm, and the pelvic floor)

The parallel back squat has three phases:

1. The Eccentric / Decent Phase
  - Downward movement ceases
  - Thighs are parallel to the floor
  - Upward movement is initiated
3. The Concentric / Ascent Phase



Poor squat technique increases the risk of an acute or chronic low back or knee injury. A few key technique points are listed below:

- Flexibility of all joints involved is essential
  - One must be able to squat to parallel without “breaking” at the waist or having the heels lift from the floor
  - This comes from proper flexibility of the posterior chain musculature and the ankle joint
- The core musculature must be in place before heavy squatting can commence otherwise there will be too much torque on the back and too much anterior translation in the knee
- Dynamic warm-up emphasizing range of motion, specifically the anterior chain, and activations of the triple flexors / extensors will ensure the benefits of the squat exercise are maximized

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## The Squat Checklist

### 1. Squat Set-up

- ✓ Rack bar at mid-chest height (a heavy lift requires a lower bar position)
- ✓ Support bars should be placed at the bottom position
- ✓ Evenly load the bar and secure the plates with collars

### 2. Move into Position

- ✓ Step under the bar and place the bar on upper trapezius / posterior deltoids
- ✓ Hands are slightly wider than shoulder width with a closed grip
- ✓ Before unracking the bar, pull the shoulders blades together, elevate the chest, keeping the head and spine neutral
- ✓ Lift the bar off the rack by straightening your legs
- ✓ Step back from the rack
  - Go far enough back to perform the movement effectively and close enough for easy racking at the end of the lift

### 3. Eccentric Phase

- ✓ Keep your torso rigid using the stabilizer muscles and inhale
- ✓ Drop the hips back as if you were to sit in a chair
- ✓ Bend the knees after hip flexion has been initiated
- ✓ Work to keep a vertical trunk posture while allowing hip flexion to occur
- ✓ Knees should be kept in alignment with the second toe
- ✓ Keep your weight balanced between the mid-foot and the heels
- ✓ Maintain neutral spine posture
- ✓ Descend in a controlled manner until the thighs are parallel to the floor
- ✓ Keep your gaze forward and your chest open

### 4. Concentric Phase (Lowering)

- ✓ Ascend to start position by first initiating hip extension driving the hips forward and up allowing the thighs to extend as the hips drive up and slightly forward
- ✓ Hip extension can be ensured by forcefully contracting the glutes and by pushing outward with the feet, attempting to "spread the floor" beneath you
  - This will help to ensure a proper hip drive and tracking of the knees throughout the concentric portion of the lift
- ✓ Avoid lateral and medial movement of the knee (keep the knee cap aligned with the second toe)
- ✓ Exhale as you pass through the sticking point
- ✓ Maintain neutral spine posture

### 5. Completion of Exercise Set (Raising)

- ✓ Take small controlled steps to the rack
- ✓ Bend knees to rack the bar on the bar supports
- ✓ Step out from under the bar

For more information on squat technique, consult your Canadian Sport Centre Pacific Strength and Conditioning Coach.

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