The front squat

1. List some of the common technique errors observed in beginners when instructing proper exercise technique for the front squat exercise.

Weir: The most common errors are not maintaining a vertical torso, loss of heel contact with the floor and letting the elbows drop. Dropping the elbows is related to loss of vertical posture in the torso; it may lead to a rounding of the back and loss of balance to the front. Editor's note: All of Weir's responses assume the clean technique.

Larson: When racking the bar on the front deltoids, it is common for beginners to have their elbows pointed downward, creating a situation where poor control of the bar may exist. This usually occurs when they use a clean style method of gripping the bar. This may produce poor balance and a subsequent loss of control of the bar. To remedy this problem it is necessary that the exerciser place the humerus segment of his or her upper arm in a position parallel to the ground. Individuals experiencing chronic problems with this technique may experience greater success by using a cross-arm grip, which consequently forces the bar to be held higher on the frontal deltoids, thus preventing any forward/downward slipping of the bar.

Some individuals have a tendency to shift their weight forward toward the balls of the feet, thus producing a loss of balance and control. Instructing the exerciser to shift his or her center of balance back toward the heels will help to remedy this error in technique.

Martin: Common technique errors include:

a. Rounded back causing excessive amount of stress on the supportive structure of the back (ligaments) instead of on the musculature system of the lower back. Back should be tight and arched.

b. Elbows low and behind the bar or flared out to the sides. Both of these improper positions can cause a poor rack of the bar, thus causing the bar to actually slip out of the hands of the athlete. The error may be caused by poor flexibility of the shoulder and/or wrist. Also, check to see if the hand grip on the bar is too wide. This can prevent the athlete from achieving the proper position of getting his or her elbows high and in front of the bar.

c. Bouncing out from the bottom position of the lift. This can cause undue stress to
**Coaches’ Checklist**

**The Front Squat**

**Before You Begin**
- Wear a lifting belt to perform the exercise
- Use one or more spotters

**Grip and Stance**
- Power clean grip
- Hands slightly wider than shoulders
- Elbows up and arms parallel to the floor
- Bar rests in the indentation of the shoulders
- Hold elbows up

**Cross-arm Grip**
- Use if athlete lacks wrist flexibility to hold elbows up during power clean grip
- Cross arms in front of the chest
- Place hands on shoulders
- Press lightly against the neck
- Bar rests in the indentation of the shoulders
- Push elbows up, arms parallel to the floor

**Stance**
- Feet shoulder-width apart
- Toes pointed slightly outward
- Feet flat on the floor
- Chest up, back arched
- Look slightly upward
- Elbows up

**Descent**
- Descend slowly and under control
- Keep knees lined up in the direction the toes are pointing
- Place the hips “between the feet”
- Descend until hip joint is parallel with the knee joint
- Settle into bottom position without bouncing
- Back straight
- Chest up
- Elbows up
- Look slightly upward or straight ahead
- Weight is over middle of the foot or heels, not over the toes

**Ascent**
- Push feet into the floor
- Drive hips forward and up
- Push elbows up
- Look slightly up or straight ahead
- Back straight
- Chest up
- Do not jam or accelerate the bar at the top of the lift

**Avoid**
- Rounding of back
- Bouncing at bottom position
- Pulling knees together

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supportive tissues of the knee. Lift should be smooth and controlled at all times.

d. "Jamming" the bar near top of lift and possible hyperextension of the knee at top of lift. Lift should be smooth and controlled at all times.

e. Knees pulling together, causing excessive wear on knee joint. Knees should be over the same plane as feet. Feet should be at shoulder width and can be pointed out slightly to help open the hip joint so the athlete can achieve the parallel position.

f. Coming to toes during ascent of lift. Poor distribution of weight could cause the athlete to fall due to faulty base. This may be due to inadequate hip flexibility. Feet should always be flat. Weight should be distributed over mid-foot/heel of foot.

g. Hyperextension of the cervical spine. Head should be in neutral position or slightly up.

one person spots, his or her attempt to assist the lifter may produce a loss of control or balance that may injure the lifter.

Do not bounce in the bottom position. This may place critical levels of stress on the ligamentous structures supporting the knees.

Keep the trunk erect and lower back arched at the base. Do not round the lower back.

Attempt to prevent the knees from coming together. This should not occur if the lifter keeps the weight centered over the heels. This may be more common in female lifters due to their increased pelvic width.

**Martin:** I recommend these safety considerations:

a. The athlete can be predisposed to injury, because of a lack of base strength/flexibility or a previous injury. Notice any misalignment in body structure, abnormal curvature of spine or unevenness of hips due to limb length differences. Any deviation from the normal posture will be magnified by the addition of weight, thus causing possible injury.

b. Use collars.

c. If power racks are wide enough inside, the athlete can learn techniques inside the power rack. A power rack offers adjustable positions.

d. Use spotters, one in back and/or one on either side. Spotters should be familiar with proper technique along with the number of reps the athlete is attempting.

e. Spotting technique should be controlled but deliberate in manner. A sudden lift from a spotter on one side of the bar can misalign the athlete and cause injury.

f. If exercise is not done in the power rack, bumper plates can increase safety if the weight is dropped.

**Weir:** It is vital that each beginner start with a light weight and increase weight slowly. It may be appropriate to start many athletes with just the olympic bar. It should be noted that the front squat is a novel task for most athletes, even for many experienced back squatters. Consequently, seemingly light loads may be a significant stress.

In terms of spotting, it is most desirable to have a spotter at each end of the bar, assuming that the spotters are alert and understand proper technique in the front squat. If the spotters are inexperienced, it is possible that one may decide to intervene either too early or too late, causing the bar to become unbalanced, and potentially leading to injury. If this is a concern, use just one experienced spotter. With one spotter, it is important that he or she keep his or her forearms just under the lifter's chest and follow the lifter down and up on each repetition. Also, with beginners, a legitimate concern is being able to prevent the bar from rolling off the shoulders. This is something that the spotters need to focus upon during training, as they may need to assist the lifter in catching the bar.

2. Are there any special safety and/or spotting considerations for the front squat exercise?

**Larson:** Spotting procedures should consist of two individuals positioned at each end of the bar. If failure occurs in the raising phase of the movement, it is essential that each spotter provide equal amounts of assistance in helping the lifter raise back to an upright position. If one spotter were to grab the bar and raise prematurely, it could lead to severe injury to the lifter. Alertness and communication are critical in preventing this from occurring. I would not recommend spotting with one person; when

3. Are there any prerequisite strength or skill requirements before athletes should include the front squat in their workouts?

**Martin:** If starting from the floor, the athlete must be familiar and competent with power clean/hang clean movements in order to bring the bar up to the rack position to perform the front squat.
Flexibility of the wrist and shoulder joints is necessary in order to keep the bar secure in the rack position. Flexibility of the hip is necessary for the exercise to be properly performed with a straight/arched back.

The athlete needs a strong midsection (abdominal/lower back). Due to the weight being so far from the body’s center of gravity, the mid-section must be strong in order to properly support the lift.

Weir: My own opinion is that any healthy athlete is ready to learn to squat, whether front or back, as long as appropriate technique is stressed throughout, and light weight is used as a beginning load. There are, however, some flexibility requirements that may facilitate proper technique. These include flexibility in the wrist flexors, iliopsoas, hip extensors, gastrocnemius/soleus and the erector spinae.

Simultaneous with learning proper technique, developing strength in the abdominals and erector spinae should be emphasized in the beginner. This will aid injury prevention and will facilitate proper technique development.

Larson: All lifters should develop sufficient back squatting proficiency before attempting this movement. As a supplemental exercise to the back squat and a source of training variation, I recommend the athlete possess the ability to back squat at least one and one-half times his or her body weight before incorporating this movement into the regimen.

All lifters should adopt either the clean style rack positioning on the front deltoids or the cross-arm grip, which places the bar even higher up toward the clavicles. This should be done according to comfort and/or personal preference. The cross-arm grip may produce discomfort with breathing, as this technique tends to position the bar closer to the throat and may interrupt normal air exchange.

4. Are there any particular instructional methods you have found helpful when teaching the front squat to your athletes?

Larson: Wrist flexibility—wrist flexion and extension stretches should be regularly included in the warm-up procedures prior to any workout involving the front squat.

Grip—as noted above, according to comfort/personal preference.

Elbows—positioned parallel to the floor.

Descent—slow and controlled; do not bounce at the bottom. Eyes directed straight ahead. Weight positioned over the heels. Trunk straight and arched at base. Toes directed slightly outward at approximately 30 degrees.

Ascent—drive feet into floor, thrust elbows upward and drive hips forward and upward. Eyes remain focused ahead or slightly up.

Weir: There are several critical cues that need to be focused upon when teaching/learning the front squat. The first is that the elbows need to be held high (“elbows up”). This is related to adequate flexibility in the wrist flexors. A drop in the elbows leads to forward lean in the ascent. Second, the lifter needs to either look straight ahead or slightly upward at all times (“head up”). Finally, it is important that the back be arched as opposed to rounded, and that the lifter lead with the chest (“chest out”).

Tips that are helpful include placing a two-by-four or some type of block under the lifter’s heels, as this helps maintain heel contact and an upright torso. Also, have the lifter wear a thick sweatshirt to provide padding across the clavicles. Avoid wrapping thick towels or bulky commercial pads, if possible, as the bar will be more likely to roll.

Martin: I use the following methods:

a. Video. We use a video camera and monitor in the weightroom. By this process, the athletes can see themselves right after the completion of the lift. The use of water soluble markers can be used to draw right onto the monitor’s screen in order to correct improper form and to acknowledge good technique.

b. There are products that come over the shoulder and hold the weight in the racked position for the athlete. This is helpful if the athlete lacks the necessary flexibility, has been recovering from a shoulder injury or is presently rehabilitating from shoulder surgery.

c. I also use dumbbells in order for the athlete to learn the necessary mechanics of the lift. The athlete holds the dumbbells along the side of his or her body and proceeds to do the squat exercise, concentrating on the proper back alignment, feet width and position and form. Once this has been accomplished, the coach and athlete can concentrate on the placement of the bar and the proper positioning of the upper body.
5. What have you found to be the main benefit of using this exercise with your athletes?

**Weir:** The front squat may allow more quadricep stress, as opposed to back squats, in some athletes. This is especially true for lifters who cannot maintain an upright torso during back squats. Also, the front squat adds variety to training, as individuals may become bored with long-term back squatting.

**Larson:** This movement incorporates variations into normal back squatting routines. The lower back is stressed to a lesser degree, thus helping to prevent overtraining in an area that is susceptible to fatigue and injury. As a variant it is useful in breaking up the monotony of training and helps to develop the lower quadriceps and hamstrings. This is an excellent exercise to use on moderate or light leg training days in lieu of conventional back squats.

**Martin:** This exercise is beneficial because:

- It applies more stress to the front of the thighs (quadriceps group).
- The athlete can put his or her legs through a high-intensity exercise while using substantially less weight than in the back squat or hip sled exercise.
- The front squat helps develop the athlete’s confidence in doing cleans. The athlete feels more comfortable getting under the bar in order to perform the rack after the second pull during the clean exercise.
- This exercise adds variety to a hip/leg routine.

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