Stay Strong and Pump On

A TRAINING BLUEPRINT FOR LONGEVITY

By Jacquie Unruh | Photos by Alanna Pearson

Shotcreting is a physically demanding job! As a petite shotcreter standing 5 ft 5 in. (165 cm) at 122 lbs (55.3 kg), maintaining proper technique, peak physical fitness, and overall body balance are my top priorities. To keep my body functioning effectively, I prioritize mobility and strength training — I bend so I don't break.

Just as it's crucial to keep the moving parts of our equipment well-lubricated to prevent breakdowns, our bodies require similar care. A weak link in any system can fail under pressure, and our bodies are no exception. As a competitive bodybuilder with power yoga teaching credentials and experience working alongside top international coaches, I am excited to share my top exercise recommendations to help you stay pain- and injury-free throughout your career.

KEY INJURY RISKS FOR SHOTCRETERS

Shotcreters face significant injury risks due to the heavy weight and the thrust of the hose, as well as the potential for surges from hose plugs. Common injuries relate to musculoskeletal strain (back, arms, shoulders) and trauma from sudden hose movements.

- **Muscle Fatigue and Back Injury:** Improper handling techniques, such as holding the hose over the shoulder or fully extended, can lead to increased fatigue and a higher risk of back injury. Proper support is crucial to avoiding overexertion.
- **Injury from Hose Plugs and Surges:** Blockages can result in violent hose movements. If the hose is not properly secured, sudden motion can cause injuries.

SAFER SHOTCRETING TECHNIQUES

Improper hose handling technique puts excessive strain on the body and greatly increases the risk of injury. Here are recommendations for the safest placing techniques:

Straddle the Hose: Position the hose between your legs and trailing behind your body to act as a counterweight. This allows better control and reduces fatigue, preventing potential back injury while improving stability.

- **Maintain Perpendicular Position:** Keeping the hose perpendicular to your body while manipulating the nozzle with one hand allows for more efficient movement and reduces the chance of injury.
- **Training and Certification:** Participation in training and certification is essential for safe operation and injury prevention. Combine programs like the **American Shotcrete Association (ASA) Shotcreter** education and the American Concrete Institute (ACI) Shotcreter Certification (wet- or dry-mix), for full education and certification.

A COMPREHENSIVE STRENGTH AND MOBILITY PROGRAM

Because the body operates as a connected system, a comprehensive strength and mobility training program is recommended to achieve optimal physical performance. This article focuses specifically on exercises tailored to shotcreting.

If you're new to exercising, remember to start slowly and listen to your body. Aim for two training sessions per week to allow for adequate recovery time. As you grow more comfortable with the movements and increase your strength and mobility, you can gradually increase the frequency of your workouts.

The goal is to develop a body that is strong and balanced through all ranges of motion — a balance of both strength and mobility. While good mobility is essential, lacking sufficient strength can lead to injuries, just as having strength with limited range of motion can pose similar risks. In the event of a whipping hose or a sudden trip, for example, having good body mobility reduces the risk of injury by allowing for more fluid movement in unexpected situations. It's critical to address these weaknesses to help prevent injuries.

Wrist Active Stretch

MOBILITY TRAINING

Mobility training aims to increase your range of motion. It's crucial to build strength within that newly achieved range. Mobility exercises serve as excellent dynamic stretches before shotcreting, workouts, or in the morning to prepare your body for the day ahead. Here is a list of mobility exercises to try.

WRIST ACTIVE STRETCH

Begin by extending your arms out in front of you, parallel to the ground with palms facing up. Imagine pushing into a wall to engage your arms and wrists. Actively pull your fingers towards your face. (This will likely be a tight and weak position. It's advisable to linger and actively hold the stretch.) Turn your wrists and fingers down towards the ground. Move back and forth between these positions for 10 reps.

WRIST ROCKS

This exercise is done on a mat and on your hands and knees. In yoga, this is referred to as table top position. Place your palms on the mat with your fingers pointing toward 3 and 9 o'clock. While maintaining your palms on the mat, shift your body weight from left to right. Complete for 10 reps.

SHOULDER DISLOCATES

To complete this exercise, hold a stick or a light resistance band between your hands in front of your hips. (Your grip must be as wide as current mobility allows.) In one motion, lift the stick out in front of you, above your head and then behind your body. This is one repetition. Now complete the movement in the reverse order to bring it back in front. Complete for 10 reps.

THORACIC ROTATION

From table top position, shift the weight into your left hand, engage your core to maintain balance. Lift your right arm to the right side and then up towards the sky. Then sweep your right arm back down and underneath your left arm, reaching towards the left side of the room. Complete for 10 reps and then switch sides.

JEFFERSON CURLS

When first trying this exercise, use your bodyweight. Once you are familiar with the movement, you may add weights (to hands or wrists) to build strength throughout the spine. Start in an upright position. Begin the movement with the crown of your head. Pull your chin towards your chest and then lower your body down one vertebra at a time. Reverse this movement by rolling your spine up one vertebra at a time with your head coming up last. Complete for 10 reps.

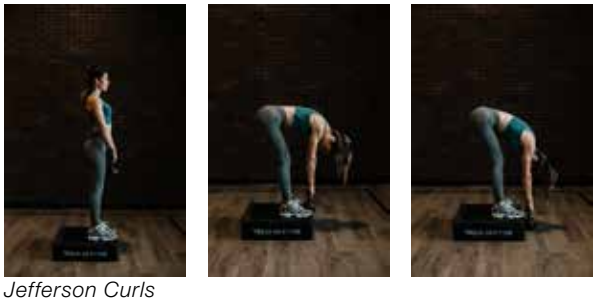
SCORPION TAIL

Lay on a mat, facedown, with your body in a T shape: your arms will be out to ether side and your legs straight along the ground. Try to keep your chest and shoulders on the ground while you take your left foot and reach it towards your right hand. Alternate the movement and complete 10 reps per side.

Wrist Rocks

Shoulder Dislocates

Thoracic Rotation



Jefferson Curls

Scorpion Tail

BALANCE AND STABILITY

Shifting strokes of the concrete pump challenges a shotcreter's balance. Site conditions may require navigating uneven terrain and/or working on scaffolding or slopes. These conditions can make maintaining balance more difficult. Having a strong core is more than just having chiseled abdominals — core strength is vital for preventing excessive pressure on the lower back and overall stability. Core activation and stability exercises include:

BIRD DOG CRUNCH

From a table top position, engage your core. Raise your right arm out in front of you parallel to the floor. Raise your left leg out behind you. Hold this position for a moment to challenge your core stability and then crunch the two limbs together. Complete for 10 reps and then switch sides.

Bird Dog Crunch

PLANK

Your body should be long and in a straight line from head to heel with your core engaged and toes touching the ground, shoulders, elbows, and wrists all in line. Hold this position for one minute to start and increase time to build deep core strength.

Plank

SHOULDER PROTOCOL

The goal of this exercise is to build strength in the small stabilizing muscles of the shoulders. There are three positions in this exercise completed back-to-back. Begin laying facedown on a mat with your palms facing up, close, alongside your body. Lift for 25 reps. Flip your grip so palms are facing down. Complete another 25 reps. Move your arms out to the 3 and 9 o'clock positions, palms down, and complete another 25 reps.

Shoulder Protocol

ONE LEG BALANCE (WITH EYES CLOSED)

From a standing position, shift the weight onto your left foot. Begin to lift your right foot off the ground. The higher you lift your leg, the more difficult it will be. Once you feel balanced, close your eyes for added challenge. You will feel the stabilizing muscles in your leg and foot keeping you upright. Switch sides.

One Leg Balance (with Eyes Closed)

Overhead Dumbbell Press

One Arm Dumbell Row

STRENGTH TRAINING

Concrete hoses are heavy! Ensuring equal strength between the left and right sides of the body is important, especially since certain muscles can become overworked while placing shotcrete. To correct any imbalances, consider doing an extra set of exercises for weaker muscle groups. If you notice a strength disparity between your dominant and non-dominant sides — perhaps due to consistently holding the hose with your dominant hand — try performing two repetitions with your non-dominant hand for every rep with your dominant hand. This can help bring both sides into balance. The exercises below focus on unilateral movements, helping to correct any imbalances:

PASSIVE HANG

The passive hang is excellent for shoulder health, decompressing the spine, and grip strength. From a chin up bar, grip the bar and hang for as long as you can. Work up to a cumulative hang time of 5 mins. Take 1-minute breaks in between sets.

OVERHEAD DUMBBELL PRESS

Hold a dumbbell in each hand with elbows bent at 90 degrees out to your side. Engage your core and press the dumbbells up over head. Lower the weights with control and complete for 8-10 reps.

ONE ARM DUMBBELL ROW

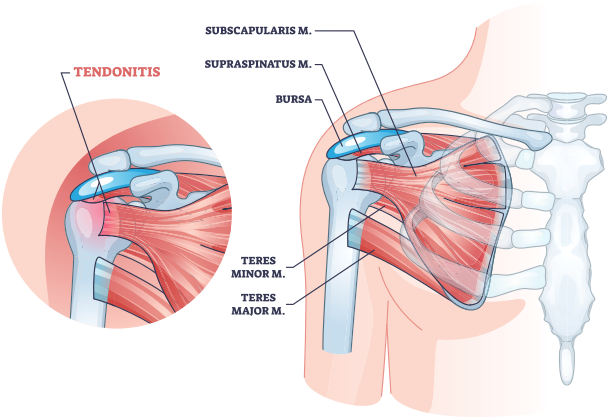
With your body bent over a bench or the weight rack, maintain a straight back and use your opposite arm to support you. Your other arm will be extended down holding the weight. Use a rowing motion, squeeze your back muscles and lift the dumbbell up towards your waist. Lower with control, and complete for 8-10 reps per side.

ONE ARM LAT PULLDOWN (CABLE)

Sit on the pulldown machine with the knee pad adjusted to prevent the body from being pulled out of position. Attach a single hand cable to the machine. Grab the cable and pull your elbow toward your hip. You should feel the exercise in your latissimus dorsi (back muscle).

One Arm Lat Pulldown (Cable)

COMMON REPETITIVE STRAIN INJURIES



Shotcreters often encounter repetitive strain injuries due to the demanding nature of the job. Common issues include:

1. Carpal Tunnel Syndrome: Caused by prolonged wrist flexion and repetitive gripping of the nozzle, leading to numbness and pain
2. Tendonitis: Inflammation of tendons in the wrist, shoulder, or elbow due to repetitive movements
3. Epicondylitis: Overuse of forearm muscles causing pain in the elbow
4. Shoulder Impingement Syndrome: Caused by repetitive overhead movements, leading to shoulder pain and reduced motion
5. De Quervain's Tenosynovitis: Pain and swelling affecting wrist tendons on the thumb side
6. Neck Strain: Resulting from holding fixed positions or tilting the head during operations
7. Lower Back Pain: Poor ergonomics while lifting equipment can lead to chronic strain

Implementing ergonomic practices and building a strong and mobile body can help reduce the risk of these injuries.

These exercises might sound like a lot, but when you consider the toil shotcrete placement takes on your body, it's worth investing some time in strengthening your body for the long haul. At the very least, I hope these exercises help you understand how your body is affected by your work and some measures you can proactively take to keep your body functioning well for your work.

POST-WORK STRETCHES

After a physically demanding day, you likely feel stiff. Here are a few effective stretches for shotcreters that can be done post-work or workout:

PALM PEELS

In a table top position, turn your palms so that your fingers are facing toward you. If this is too intense, shorten your stance so your knees are closer to your hands. Keep your fingers on the floor and pull your elbow towards the ground. You will feel a stretch in your hand, wrist and forearm.

FOREARM EXTENSION

Begin in a kneeling position. Make a fist with both hands and place them with knuckles facing together on the mat. With your knuckles touching, keep contact with the mat as you lift your body by straightening your arms. You will feel a deep stretch in your forearms.

SUPINE TWIST

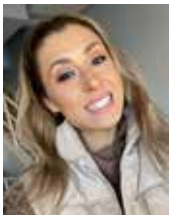
Lay face up on a mat, feet flat on the ground and knees towards the sky. You can put your hands out in a T shape. Take your knees over to the right and if it feels good in your body, take your gaze to the left. Breathe deeply and hold for 30-60 seconds per side.

Palm Peels

Forearm Extension

SEATED SIDE BODY STRETCH

From a seated position, raise both hands above your head. On an exhale, lean your body to the right. You can put your right hand or forearm to the ground to stabilize you. Breathe deeply and hold for 20-30 seconds per side.



Jacquie Unruh *was born and raised in Calgary, Alberta, where she grew into a multifaceted creative with a passion for art and fitness. From a young age, she thrived in drawing, sculpting, and painting, showcasing her artistic talents. She later completed a business degree online at DeVry University, blending creativity with a strong academic foundation. In her twenties, Jacquie discovered weightlifting, competing in fitness modeling competitions that highlighted her dedication and strength. Outside of her professional endeavors, she enjoys hot yoga, immersing herself in books, and exploring the great outdoors on nature walks.*

Supine Twist

Seated Side Body Stretch