

Optimizing biomechanics of the production arborist

Climbers Corner Presentation

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The tree worker in conducting a pre-job hazard survey evaluates tree biomechanics. Tree biomechanics can be influenced by cracked limbs, hollow trunks, and decaying root systems and are red flags to the tree worker indicating the tree may be unsafe or unstable. Pain, tingling, weakness and cramping are indicators that the tree worker's musculoskeletal system has been compromised, altering the biomechanics of the worker and increasing the risk of an injury. This talk will focus on the tree worker's biomechanics and common abnormalities seen in the industrial athlete.

Optimizing the tree worker's biomechanics can increase productivity and reduce injury risk. Below you can find descriptions and basic instruction in exercises and stretches to enhance the biomechanics of the tree worker.

Foot locking

Primary Muscles used:

- Latissimus Dorsi ("lats")
- Biceps
- Hip Flexors
- Gluteus maximus ("gluts")
- Quadriceps ("quads")
- Hip Rotators

SRT

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- Latissimus Dorsi ("lats")
- Biceps
- Hip Flexors
- Gluteus maximus ("gluts")
- Quadriceps ("quads")
- Hamstrings

Optimizing efficiency of ascent, while reducing risk of injury

- Warm-up by increasing heart rate while performing the tree risk assessment and job hazard survey.
- Adequate hydration. (Hydration begins the day before)
- Adequate nutritional intake. (fill glycogen stores with carbohydrates, the day prior to activity or in the a.m.)
- Strengthen the primary muscles used for your chosen ascent technique.
- Address flexibility to reduce risk of injury and optimize muscle strength.
- Use gloves to aide in gripping the rope.
- Strengthen your abdominals and core.

Bridges

Lie on your back with your knees bent. Put your feet flat on the floor about waist distance apart, and position your arms at your sides. Tighten your deep lower abdominal muscles. Squeeze your buttock muscles and lift your hips off the floor, while keeping your abs tight. Do not allow your lower back to arch or sag. If you get a cramp in the back of the thigh, lift your toes off the ground and concentrate on tightening your buttocks more. Repeat until your buttock muscles fatigue. Do 2 sets as tolerated. If you experience low back pain, focus on keeping your abs tight. If it continues, discontinue the exercise and consult a physical therapist or spinal specialist.



Crunches with a focus on the lower abdominal muscles

Lay on the floor with your hands behind your head to support your neck, cradle your head and avoid pulling on your neck. Keeping your eyes focused 10 degrees behind your direct line of sight, raise your head and shoulders from the floor until you feel a stabilizing shake in your abdominal muscles; hold 2 seconds. Do not curl your head up, and make sure your lower does not lift off the floor. Repeat until your abdominals are fatigued working toward a long-term goal of 200 total repetitions per day.



Hip Rotation stretches

Sitting up straight, position one ankle over opposite knee as shown in picture. You may feel the stretch anywhere around the hip, groin or buttock of the hip that is rotated. If you do not feel a stretch, gently push your knee down until a mild stretch is felt. Hold the stretch for a minimum of 30 seconds, and then lean forward over your hip to feel a greater stretch in the buttock, again hold for a minimum of 30 seconds. Repeat stretch on opposite side. If you find one hip is tighter than the other, spend a greater amount of time stretching on that side. Make sure to keep your back straight. If you experience low back pain, tighten your abdominals when doing this stretch. If pain continues avoid the stretch and consult a medical professional.

