How to Care for Your Body as a Production Arborist

By Ed & Amanda Carpenter

imply put Ergonomics is "the study of work," but more importantly it is the study of how people interact with the tools they use every day for work. Ergonomics is becoming increasingly more common due to the amount of money spent on musculoskeletal disorders in today's health care market. Ergonomic equipment is becoming more readily available with technological advances in product development. There now exist many ergonomically advanced tools and techniques in the tree care industry to decrease the stresses leading to musculoskeletal disorders. In this article, you will learn some basic techniques to decrease your risk of developing a musculoskeletal disorder.

The National Institute of Occupational Safety and Health (NIOSH) has identified risk factors associated with developing musculoskeletal disorders. These risk factors include awkward postures, repetitive movements, forceful exertion, contact stress of the body against an object, vibration and extreme temperatures. Production tree work exposes the worker to each of these risk factors.

Tree work is without a doubt one of the most physically and mentally demanding occupations the body can endure. A production arborist is truly an industrial athlete.

Ergonomics is the applied science of designing and arranging things that people use so people and things interact most efficiently and safely. The ergonomist's job is to fit the tool or task to the person as opposed to making the person fit the tool or task.

In the tree care industry we have to adapt to the situation in order to maintain safety. When we are up in the tree getting ready to make a pruning or a removal cut, we have to adapt to where that branch is and to where we can safely tie in and position ourselves in our harness – we are adapting



Using the right equipment, such as the log arch shown here, can help reduce the stress on muscles and other soft tissues of your body. Proper lifting and pulling technique and form will also help avoid fatigue and injuries. TCIA file photo by Kathleen Costello, from a Massachusetts Arborist Association Dav of Service.

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constantly. However, the whole idea of ergonomics is to have things adapt to us.

So what is a musculoskeletal disorder, also known as a repetitive stress disorder or a cumulative trauma disorder? NIOSH defines it as an injury or condition of the soft tissue. These include injuries or disorders of the muscles, nerves, tendons, joints and cartilage caused by sudden exertion, repetition, forced vibration or awkward posture – or all of the above.

Arborists deal with all of these associated risk factors, leaving them susceptible to developing a musculoskeletal disorder. For example pulling on the rope, using a handsaw and foot locking are examples of repetition performed by arborists. Do you foot lock with the same lead leg all of the time? Can you switch it up and foot lock with the other leg? Being able to use right and left is important because dominance and habits lead to repetition. For example, do you prefer to sleep in one position? Try changing sides of the bed with your spouse; this will alter your repetitive sleeping habits, which is better for your body.

We spend a tremendous amount of time, effort and energy training to avoid traumatic injuries. The tree care industry is a dangerous business working with sharp objects at height and great sources of potential energy, and we tend to focus primarily on avoiding traumatic injuries. What we don't focus on or think about are the micro-traumatic injuries, the little aches and pains that we tend to ignore or pass off as just part of the job.

For the most part nobody thinks about a

musculoskeletal disorder as being disabling, however, carpal tunnel and elbow injuries in this industry are rampant. If you cannot grip a rope then you are not safe to climb. Could you imagine becoming disabled right now in your career? There are little things you can do now to prevent those injuries and be more in tune with your body. When you are in a tree you can never sacrifice safety for proper posture and body mechanics, but you can reposition yourself to make the cut without straining your back.

You have likely heard the term "cycles to failure." If you cycle something enough times, especially in a negative way, eventually it will fail (see Photo 1). We constantly replace our ropes and maintain our aerial lifts. These are mechanical devices and if they cycle enough times they are going to fail. We can think about our bodies the same way. If you consistently place your shoulders or back in a bad position over a long enough time, eventually they will fail and you will sustain an injury.

Production arborists are industrial athletes who also tend to play hard. The more physically active you are the more susceptible you are to injury. If you are working five or six days a week repetitively stressing your body, you need a day of rest for your tissues to have time to heal and rebuild. Give yourself at least one day of rest involving only light activity and no



Photo 1: Static break test, an example of Cycles to Failure. We think about this with our equipment, but we don't stop to think about cycling our bodies.



Photo 3: Arborist walking across a job site, demonstrating poor posture – forward head and rounded shoulders. This can easily be corrected by tightening the abdominal muscles and stabilizing the shoulder blades back and down. Just the way you carry brush or walk across the job site is very important.

climbing (including rocks) and make sure you hydrate and eat well.

Below is a list of symptoms of musculoskeletal disorders.

- ► Tingling
- ► Numbness
- ► Swelling
- Loss of motion
- ► Stiffness
- ▶ Weakness
- Decreased grip
- ▶ Painful grip
- ▶ Pain

If you have any of these symptoms lasting longer than three days you should seek medical attention. If they fluctuate, but last longer than seven to 10 days then you need to see a doctor. If your chipper is leaking oil and then it stops, do you just fire it up and keep chipping? If you have aches and pains lasting longer than seven to 10 days and they disappear, there is likely a biomechanical imbalance and it will likely rear its ugly head again only to be worse or even disabling. An evaluation by a physical therapist can identify your personal biomechanical imbalances and address them with a personalized program.

If you sustain a musculoskeletal disorder inform your supervisor and seek medical

attention. Avoid work-related duties and other activities that aggravate the symptoms. If you have been climbing all of the time, mix it up and do a little bit of ground work. If you are loading wood into the back of the truck, rotate that task to somebody else. If you are doing a task for longer than 45 minutes, you are predisposing yourself to a musculoskeletal disorder.

Prevention

Most of the musculoskeletal disorders that we are talking about can be prevented



Photo 2: Poor posture. Here is an arborist sitting in his truck in poor posture at the end of the workday. He is exhausted and his low back is rounded out, he is slouched and his shoulders are rolled forward. Not only is he putting stress on his low back, but he is also stressing his shoulder complex and cervical spine, which will eventually contribute to a low back, shoulder or neck injury or chronic pain.

through proper posture and body mechanics. A great way to prevent a musculoskeletal disorder is to practice good posture. This will decrease your risk of a shoulder, neck or back injury. You can work on your posture when you are driving to the job, between jobs and home at night.

Using your abdominal muscles is an



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Circle 19 on RS Card or visit www.tcia.org/Publications important part of practicing good body mechanics. Your reaction to being punched in the stomach is to tighten the stomach muscles. Your abdominal muscles are tightening as they try to protect your vital organs; at the same time they are stabilizing your low back. When you go to lift that piece of wood, imagine getting punched.

If we imagine getting punched, we stabilize the core and we can't twist our low back. The only thing that you have to remember about body mechanics is to engage those abdominal muscles. Just imagine getting punched.

If you are standing and your back is sore, engage your abdominal muscles because it puts the stress on your muscles and takes it off of the structures in the low back. This is an application to use throughout your day. Just by engaging your core muscles you will also notice improved balance when limb walking and, as you improve your core strength, ascent will also be easier.

The other key components to proper posture are the muscles between your shoulder blades. When you squeeze your shoulder blades together, you contract these muscles, but be cautious not to scrunch your shoulders up to your ears when you squeeze; keep your shoulders back and down.



Photo 2A: An arborist trying to multitask. Talking on the phone without a wireless headset places tremendous strain on the neck and shoulder.

Try this exercise: Slouch in your chair and then reach up. Do you feel pain, pressure or a pinch in the top of your shoulder? You are pinching the soft tissues in your shoulder, which can lead to a rotator cuff tear.

Now sit up nice and tall and position your shoulders back and down and raise your hands again. The pinch should be gone or less. When you are reaching way out for that limb and you feel that pinch in the shoulder, think cycles to failure – you can get away with doing that several times, but eventually the rotator cuff is going to develop a micro tear. It is important to reposition your shoulders back and down

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and reposition your body to make a better cut.

When you are sitting in the truck at the end of the work day exhausted, the tendency will be to slouch, rounding out your low back and rolling your shoulders forward. Add trying to get caught up with sales calls and multi-tasking and you leave yourself very vulnerable to terrible posture and cycles to failure (see Photos 2 and 2A). Not only are you putting stress on your low back and neck, but also you are straining your shoulder complex and pinching your carpal tunnel.

Walking across the job site or carrying brush is also an important time to address your posture (see Photo 3). Your vehicle's rearview mirror can be helpful to assist in the maintenance of good posture (see Photos 4 and 5).

To decrease your risk of a musculoskeletal disorder, plan your tasks, avoid repetitive movements and practice good posture and body mechanics. Remember the most valuable piece of equipment you



Photos 4 and 5. Good Driving Posture: The next time you are in your vehicle, adjust your rearview mirror in the following manner: Scoot your buttocks all the way to the back of the seat, to keep the pelvis balanced your legs should be equal rather than your right reaching out to drive with the opposite bent up. Now imagine being punched in the stomach to tighten the abdominal muscles, bring the shoulders back and down and imagine somebody is pulling you up from your head. Then reach up and adjust that rear view mirror. When you forget about your posture and fall out of alignment, you won't see clearly out the rear view and this will be your reminder to adjust your posture. Don't lean on your truck console or the door; rather sit up nice and tall with hands low on the wheel.

use everyday is your body – take care of it.

Ed and Amanda Carpenter operate COR Ergonomic Solutions, LLC in Douglas, Massachusetts. Ed Carpenter has been a production arborist for 14 years. Amanda Carpenter, DPT, is a doctor of physical therapy. Both Ed and Amanda are Ergonomic Assessment Specialists. This article is based on their presentation on the same subject at TCI EXPO 2010 in Pittsburgh.

