



Knee maintenance for forestry workers



By Dr. Delia Roberts

Whether your work is field-based, in a machine, or at a desk, healthy knees seem hard to come by in the forest industry. Days of walking on uneven, unstable terrain, and carrying heavy and unbalanced loads take their toll and leave most of us with aching joints. Here are some tips on managing your knees and how to keep 'em functional for years to come.

Prevent knee injuries for pain-free retirement years

Knees are one of the most frequently injured joints, and in later years are very prone to further deterioration and painful osteoarthritis (OA). To understand why, it helps to consider that the joint has to both allow a lot of movement and support the body's weight. The forces inside the joint range from two to three times body weight during walking, up to an estimated seven to eight times body weight during running, and may even be higher with jumping. If you think about how many steps you take a day, and multiply that times your body weight including gear, the numbers are astounding. Especially when you realize that all that holds this structure together are the connective tissue ligaments and tendons. In comparison, other weight-bearing joints like the hip and ankle have more tightly structured bony projections to increase joint stability. That the knee has no bony supports makes the actions of the muscles that surround the knee critical. If the reflexes are working properly, as soon as the loads on the joint begin to increase, very sensitive sensors signal to the muscles to contract and shorten in order to stabilize the joint and help carry the load. Unfortunately, pain, swelling and vibration can impair the reflexes, either slowing them down or sometimes even making the wrong muscle contract at the wrong time to inadvertently increase the forces rather than decrease them.

Posture impacts the load on the knees

Another aspect of the joint that can create higher than normal loads is posture. Even

Knees have two functions:

1. Allow a lot of movement
2. Carry your body weight

Total loads on your knees:

- > 2 to 3 times body weight just walking
- > up to 7 to 8 times body weight when running and even more jumping

very small shifts in the alignment of the bones can create uneven loading inside the knee. Often, the shift is towards the inside of the joint, and because the force that would normally be distributed evenly across the whole knee is now directed towards one area, the cartilage and even bone can be damaged.

Cartilage is the smooth slippery material that lines the joint and allows the bones to glide over one another during movement. It's an amazing material, capable of withstanding very high forces, yet able to cushion repeated and heavy loads. In fact, in order for cartilage to remain healthy, it has to undergo cycles of compression and release, as this is the only way it can circulate joint fluid through the cells.

When the joint is not loaded regularly and appropriately the cartilage dies, this is why sedentary people develop OA – but it also explains why previous damage to a ligament or poor posture can also lead



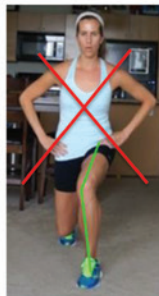
Fit to Log



Knee Stability

In addition to reducing knee injuries, supporting the knee joint with a strong core and neutral pelvis will reduce chronic knee pain.

1. Align your spine and activate your core.
2. Place your hands in your back pockets. With your weight even on both feet the muscle at the top of your hip should be soft. A shift to the right or left, should make the glute med on that same side tighten up. If it's not contracting, poke it until it does.
3. Tie elastic banding around your knees and do a half squat while pressing outward against the banding. Imagine you are doing this exercise when stepping down out of the truck or before walking through slash to activate your glutes.
4. Step forward into a lunge, the knee should stay in line with the center of the hip and foot, and not drop inward. The greater the load (as when carrying a planting bag, a saw, or landing a jump) the more important this is.



5. These exercises will build control of your knees at the hip. Work up to 3 x 15 reps each side, 3 days/week.

a) Stand in a balanced stance with a neutral spine and activated core. Step one foot out to the side while using the glute med to control the supporting knee. Do not let it fall inward (valgus). Add elastic banding around your ankles for resistance.

b) Clam walks, this can be done in boots while waiting for your ride. Add elastic banding for more resistance. Step sideways as shown in #3 above. Focus on controlling the pelvis and knee to stay in neutral.

c) Single leg ¼ or ½ squats. Stand sideways (shoulder touching a wall) with the inside leg pressed slightly into the wall for more glute activation. Do not hike your inside hip, keep perfect posture.

Footnote: See this poster for info on how to have a neutral spine and how to activate your core: http://www.bcforestsafesafe.org/files/ps_BackUpYourBack.pdf

to degeneration of the cartilage and the development of OA. If the forces exerted on the cartilage are not directed along the lines of the cells, they are damaged and eventually disappear.

Now that you understand how a healthy knee works, here are tips for keeping yours functioning for years to come:

1. Get regular exercise. Walking or riding a bike are ideal ways to refresh your cartilage by increasing the circulation of joint fluid. Maintaining a healthy body weight will also make a huge difference in keeping the load on your knees positive and not destructive. Remember that the force exerted on the cartilage is 2-3 times your body weight. With every step.
2. Make sure that your posture and

alignment are good. This begins with healthy feet in good boots and moves upward through your hip into your back. (See Fit to Log, Back up your Back poster here: http://www.bcforestsafe.org/files/ps_BackUpYourBack.pdf) In fact, the greatest predictor of knee injuries is the alignment of the hip. (see item 3).

3. Use the exercises provided in the poster (link below; screenshot on page 18) to wake up the muscles that support the knee. More than 50 high quality research studies have shown that doing these simple movements can decrease pain (including reducing the need for pain medications) and restore function in all people – right from the first signs of knee pain through to those who are waiting for joint replacement surgery. Even 10 minutes, two or three times a week will produce good results. To download the poster: http://www.bcforestsafe.org/files/ps_KneeStabilityPoster.pdf
4. See a physiotherapist that specializes in knees. Sometimes, knee pain can be caused by other imbalances. Spending a couple of hours with a professional who is trained to examine the way you move and who understands how to establish neutral posture and correctly activate the supporting muscles can go a long way to achieving pain free movement. 🙏

Explanation of terms/reminders:

The glute med/s are the muscles marked in red in the diagram beside.



How to find a neutral spine:

1. Stand tall as though a string is pulling out the top of your head.
2. Look straight ahead (don't drop or raise your chin).
3. Keep your shoulders and chest relaxed, just lengthen through your spine.
4. Put one hand on the back of your neck to check that your neck is lined up with your spine (if your head is forward, the knobby 7th vertebra will stick out. Correct this by pushing your chin straight back with the other hand until the vertebrae all line up).

How to activate your core:

1. Tighten your belly by drawing your lower abdomen in and up very slightly.
2. Make sure your upper body is still relaxed, only your lower belly is tight.
3. Tighten the pelvic floor (lift your testicles slightly to activate this core muscle) and hold for a count of 10, then do 10 contractions in a row.

Fit to work trumps everything

October 17, 2018 might have been the big day for legalized marijuana sales in Canada, but for safety sensitive workplaces like forestry, it was just another business day – safety first!

Why? Because fit to work means zero tolerance for any kind of impairment, whether achieved by legal or illegal means. There can be no compromise.

Every worker has to be fit for work; every supervisor has to ensure every crew member is fit for work. Every workplace needs a fit to work, drug and alcohol policy, and needs to make sure all workers are aware of it, understand it and value why it is important to uphold the policy to keep themselves safe and be surrounded by colleagues who are all fit to work – not impaired by fatigue, by emotional stress, by alcohol or any form of drugs – whether prescription, legal or otherwise.

Here is a safety alert that the BC Forest Safety Council issued on October 18 to remind employers and workers of their obligations and responsibilities and to provide additional links to sample policies and other tools that can be used in the workplace, and how best to support workers who need help: <http://www.bcforestsafe.org/node/3198> 🙏



Keep moving this holiday season

Having a wonderful, safe holiday season requires discipline. Indulge, but in moderation, and no matter what, keep moving – go for walks in the snow or rain, climb that hill, stroll that neighbourhood; walk the dog, explore a new park. Keep moving, and enjoy. 🙏

One air to breathe

As 2018 comes to a close, and announcements in October saw some mills temporarily closed due to lack of logs and/or lumber prices, others moved into rotating strike positions with a focus on collective bargaining agreements; one cannot ignore the increasing pressures – worry about lost jobs, lay-offs, further stressed bottom-lines and increased production pressures, that result in an additional cost to both the mental and physical well-being of people. One culprit that impacts wood scarcity and messes with allowable annual cuts and proper sustainable forest management is of course, wildfires and wildfire response. Some 2018 media headlines have challenged all of us to properly consider and address climate change and also to better spend money on the appropriate prevention side of wildfire management so that industries like forestry, cattle ranching, fruit farms/wineries, tourism and other operators can survive but prosper

through the next 50 years and sustain employment and economic contributions to our communities and our province. A little less talked about is on the health and wellness side – the total cost of mental, emotional and physical ailments as a result of continued wildfire smoke exposures, firefighting, evacuations, and the long-term healthcare costs. And finally, an increasing concern by several industry observers that a “new normal” is being discussed as somehow making this all ok, when it isn't. As industry publications and upcoming industry conferences continue to cover stories on the need for better fireproofing, a reader sent in this link to a recent video posted by the Vernon Morning Star on what we were breathing during wildfire season. We have one air to breathe: <https://www.vernonmorningstar.com/news/video-a-close-up-look-at-what-you-were-breathing-during-the-wildfire-season/> 🙏