

Welcome to Wellness
420 Crawford Street
Whitby, ON L1N 3R5
905-665-0123
www.welcometowellness.ca



REAL HEALTH ON THE JOB

Your nerves and joints

From head to toe, your every action depends on the commands of your nerves and the mobility of your joints. If either is damaged or obstructed, simple actions become difficult, and pain and illness can develop.

The way we treat our joints and soft tissues at work can be quite dangerous. In 2011 alone, there were 2,986,500 reported nonfatal injuries and illnesses that occurred in the workplace. Of those, 523,140 were cases involving muscles, ligaments, tendons and joints.

A host of other workplace-related issues are costing employers millions and causing employees to suffer. To name a few, these injuries include:

- TMJ (the jaw joint) issues
- Spinal disc problems in the neck and low back
- Strain-induced headaches
- Carpal tunnel syndrome (as well as other neurological and vascular problems)

Predominantly caused by joint problems in the spine that inhibit the function of the nervous system, these injuries result in lost wages and lost work days.

Most ergonomic issues, like spinal injuries, are repetitive in nature. Ergonomics must be considered not only while lifting heavy loads, but also when you repeatedly lift something lightweight.

You must also be aware of the position you're in while typing, writing or performing any other work-related tasks. These repetitive positions challenge your musculoskeletal system week after week, to the point where these frequently stressed areas become a problem. Sitting, standing, typing or slouching at your work area every day can actually be hundreds of times more damaging than jobs typically considered to be more perilous (e.g., heavy lifting, construction, police work, or fishing for crab in the Pacific).

*McGill S. The biomechanics of low back injury: implications on current practice in industry and the clinic. *Journal of Biomechanics* 1997;30:465-475

*Kumar S. Cumulative load as a risk factor for back pain. *Spine* 1990;15:1311-1316

Protecting your spine

The spinal cord and nerves carry important chemical and physical messages from the brain to the body. They also transmit physiological demands from the body back to the brain. If this communication is able to flow uninterrupted, then the body functions optimally and manages all ongoing healing and repair.

For this to occur, the brain, spinal cord and nerves must be protected. The skull, of course, protects the brain, and the spinal column protects the three key areas that supply life to your limbs, organs and tissues.

The brain stem/spinal cord intersection

The first and second vertebrae of your neck (the atlas and axis, respectively) guard the single most important section of your entire nervous system. This area protects the meeting point of your brain and spinal cord. Even the slightest amount of damage to this area can shut down vital organs and tissues.

The best known example is the unfortunate case of actor Christopher Reeve.

Reeve, best known for his portrayal of Superman in the late-1970s and early-80s, was also an equestrian (horseback riding) enthusiast. In 1995, Reeve was thrown from his horse, suffering a small but devastating injury to the atlas/axis area of his spine.

The neurosurgeons who wired these two bones together said the amount of damage to the spinal cord was actually so small that it could be covered by a pinky finger. Sadly, because that area is extremely sensitive and critical to life, Reeve was paralyzed. He also needed a pacemaker for his heart to beat, a respirator for his lungs to breathe, suffered blood disorders, and people had to massage his abdomen to aid his digestive processes. Ultimately, he died nine years later from the complications of this neck injury.

Only a centimeter's worth of damage in the neck was enough to shut down vital organ function. Though it was an injury at the top of the neck, even bowel and leg function were lost.

The spinal cord

The spinal cord is literally your lifeline. It transmits every bit of vital information from your brain to the rest of your body—and vice versa—all day, every day.

The spinal nerves

Spinal nerves branch off the spinal cord to bring information from the brain to all organs, cells and tissues in your body. Information also travels back to the brain via these nerves. This is how we are able to perceive our environment through sight, smell, sound, touch and taste.

Unfortunately, it is common for the spine to move out of place. When this happens, the spine actually begins interfering with your nervous system instead of protecting it. This interference drastically diminishes the nerve supply to your body. It can cause pain and—if allowed to persist untreated—can damage your nerves and organs.

Even the lower portion of the skull, the occiput, frequently shifts out of place. The longer a spinal misalignment is present, the greater the amount of damage to the spinal cord, nerves, organs and bodily tissues.

In order to know whether you have any damage or interference to your nervous system, you must evaluate the spine carefully from the front (anterior) and side (lateral) views. This is called posture analysis. Though a seemingly simple procedure, it can be very revealing and may lead to significant improvements in your comfort level in the workplace.

Evaluating the spine

From the front

When your spine is aligned correctly, your vertebrae will form a straight vertical line when viewed directly from the front or the back, without any rotation of the individual bones.

Unwanted curvature to the side is known as scoliosis. Because of the severe pressure this condition places on the nervous system and organs, an excessive degree of scoliosis is considered a medical emergency. Any curves to the side are incredibly damaging and should be resolved as quickly as possible. People with scoliosis have been shown to experience up to a 14-year reduction in life expectancy.

HEALTHY SPINAL ALIGNMENT

NORMAL SPINE A-P VIEW



FRONT



BACK

From the side

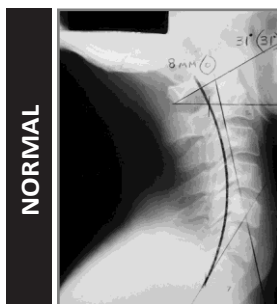
Evaluating the spine from the side, three distinct curves must be observed: the neck (cervical), mid-back (thoracic), and low back (lumb-pelvic).

Of particular importance is the curve in the neck (it should look like a curve in a banana).

SIDE

Because life flows from the brain along this curve to the rest of the body, it is often called the "arc of life." Losing the curve in your neck actually stretches the spinal cord like a rubber band. As a result, the spinal cord actually shrinks and your brain struggles to communicate with the rest of your body.

This creates pathological tension, which causes the stretched nerves and damaged spinal cord to lose their conductivity—the ability to carry the nerve impulses to and from the brain.

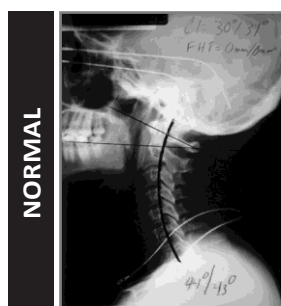


NORMAL

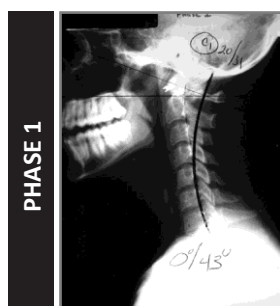


ABNORMAL

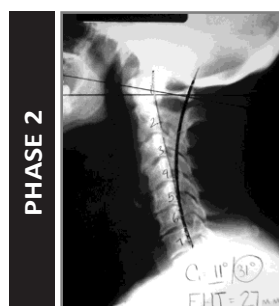
This stretching can lead to deterioration of the spinal cord and nerves. It may also cause both moderate and severe neurological symptoms, as well as diseases of the nervous system. Unfortunately, if you've had trauma, there is a 98 percent chance you will have lost some or all of the curve in your neck.



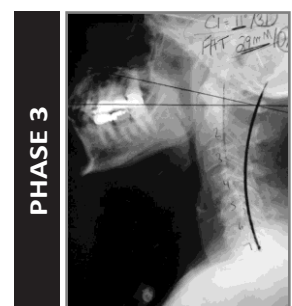
NORMAL



PHASE 1



PHASE 2



PHASE 3

Due to the prevalence of sedentary jobs and lifestyles, the low-back/lumb-pelvic curve is often lost as well. The loss of the low-back curve leads to degenerative disc disease, chronic low-back pain, and a host of illnesses related to organs of the lower body.

Similarly, constant hunching and the resulting poor posture can cause the mid-back to increase in curvature, forming a hump. Studies have connected this condition (kyphosis) to increased mortality. Practicing proper posture at all times can help maintain all the natural curves in your spine.

Correcting the spine

Start with the neck. The cervical curve is—and needs to be—the top priority. There's an overwhelming amount of scientific evidence dating back to the 1960s that shows how critical the cervical curve is in preventing degenerative disease and maintaining long-term function.

The research

In 1960, a study published in the *Journal of Neural Neurosurgery Psychiatry* found that when the curve in your neck moves forward and out of its normal position, your spinal cord experiences up to 40 pounds of pressure.

A 2006 study by the the Liberty Safe Work Research Centre at the University of Aberdeen showed that losing the curve in your neck shrinks the spinal cord. A German study from 1998 found that, due to the resulting tension and pressure, losing your cervical curve can shrink the diameter of your spinal cord as much as 24 percent. This stretching, narrowing and shrinking of the cord leads to severe neurological compromise.

Researchers in Japan found that when the spine loses its natural curve, the spinal cord actually begins to flatten, which leads to the degeneration of spine tissue. Other Japanese research has shown that this degeneration may lead to the demyelination of the spinal cord – similar to what is seen patients with multiple sclerosis.

On a positive note, a study of 100 patients revealed that if you have a normal curve in your neck, you have no chance of spinal stenosis (pathological loss of spinal canal space). However, the study also showed that if you've had a trauma, there is a 98 percent chance you will have lost the vital curve in your neck (and are most likely headed toward stenosis).

A study conducted at the University of Chicago's Comprehensive Hypertension Center showed that a special spinal correction technique targeting the top bone in the spine can significantly reduce high blood pressure.

"This procedure has the effect of not one, but two blood pressure medications given in combination," study leader George Bakris, director of the hypertension center, explained in an interview. "And it seems to be adverse-event free. We saw no side effects and no problems."

The actual results are astounding. Patients experienced an average of 14 mm Hg greater drop in systolic blood pressure (the top number in a blood pressure count), and an average 8 mm Hg greater drop in diastolic blood pressure (the bottom blood pressure number).

With proper alignment and normal curves, the spine is 26 times more resistant to outside forces that may cause injury. Healthy posture, supported by intelligent ergonomics, can reduce the rate of spinal injury and its resulting conditions.

Causes of spinal problems

Birth trauma

Physical trauma can start literally from birth because newborns are often removed by their extremely fragile head and neck.

Learning to walk

As a child learns to walk, he or she falls enough times in a single day to hospitalize an adult.

Injuries and accidents

Sports injuries, auto accidents, slips, falls, and repeating the same motions over and over again can cause microtraumas.

Poor posture

Computer work, video games, incorrect sleeping habits, and constant slouching stress the spine and ruin healthy posture.

Your spine controls all of the function and healing in your body. If you are experiencing any symptoms (headaches, high blood pressure, digestive problems, thyroid issues, immune system problems, menstrual problems, etc.), they are likely stemming from nerves that are not functioning. Look at the "Chart of the Effects of Spinal Damage" below to determine which nerves could be involved with your condition. Think of it this way: Your spinal cord sits inside your spinal column. Your spinal cord controls every single function in your body. If the spinal column is damaged or misaligned, then your spinal cord struggles to control those functions. As a result, pain and illness are able to develop.

	Vertebrae	Areas it controls	Effects of misalignment
CERVICAL SPINE	1C	Blood supply to the head, pituitary gland, bones of the face, brain, inner and middle ear, sympathetic nervous system.	Headaches, nervousness, insomnia, head colds, high blood pressure, migraine headaches, nervous breakdowns, amnesia, chronic tiredness, dizziness
	2C	Eyes, optic nerves, auditory nerves, sinuses, mastoid bones, tongue, forehead.	Sinus trouble, allergies, pain around the eyes, earache, fainting spells, certain cases of blindness, crossed eyes, deafness
	3C	Cheeks, outer ear, face bones, teeth, tri-facial nerve	Neuralgia, neuritis, acne or pimples, eczema
	4C	Nose, lips, mouth, eustachian tube.	Hay fever, runny nose, hearing loss, adenoids
	5C	Vocal cords, neck glands, pharynx.	Laryngitis, hoarseness, throat conditions such as sore throat or quinsy
	6C	Neck muscles, shoulders, tonsils.	Stiff neck, pain in upper arm, tonsillitis, chronic cough, croup
	7C	Thyroid gland, bursae in the shoulders, elbows.	Bursitis, colds, thyroid conditions
THORACIC SPINE	1T	Arms from the elbows down, including hands, wrists and fingers; esophagus and trachea.	Asthma, cough, difficult breathing, shortness of breath, pain in lower arms and hands
	2T	Heart, including its valves and covering; coronary arteries.	Functional heart conditions and certain chest conditions
	3T	Lungs, bronchial tubes, pleura, chest, breast.	Bronchitis, pleurisy, pneumonia, congestion, influenza
	4T	Gall bladder, common duct.	Gall bladder conditions, jaundice, shingles
	5T	Liver, solar plexus, circulation (general).	Liver conditions, fevers, blood pressure problems, poor circulation, arthritis
	6T	Stomach	Stomach troubles, including nervous stomach; indigestion, heartburn, dyspepsia
	7T	Pancreas, duodenum	Ulcers, gastritis
	8T	Spleen	Lowered resistance
	9T	Adrenal and supra-renal glands	Allergies, hives
	10T	Kidneys	Kidney troubles, hardening of the arteries, chronic tiredness, nephritis, pyelitis
	11T	Kidneys, ureters	Skin conditions such as acne, pimples, eczema or boils
LUMBAR SPINE	12T	Small intestines, lymph circulation	Rheumatism, gas pains, certain types of sterility
	1L	Large intestines, inguinal rings	Constipation, colitis, dysentery, diarrhea, some ruptures or hernias
	2L	Appendix, abdomen, upper leg	Cramps, difficult breathing, minor varicose veins
	3L	Sex organs, uterus, bladder, knees	Bladder troubles, menstrual troubles such as painful or irregular periods, miscarriages, bed wetting, impotency, change of life symptoms, many knee pains
	4L	Prostate gland, muscles of the lower back, sciatic nerve	Sciatica, lumbago, difficult, painful or too frequent urination, backaches
	5L	Lower legs, ankles, feet	Poor circulation in the legs, swollen ankles, weak ankles and arches, cold feet, weakness in the legs, leg cramps
	Sacrum	Hip bones, buttocks	Sacro iliac conditions, spinal curvatures
	Coccyx	Rectum, anus	Hemorrhoids (piles), pruritus (itching), pain at end of spine on sitting

Posture in the workplace

Sitting posture

The right posture imposes the least structural stress. When the joints are in the correct position, muscles must work to counteract the effects of gravity and other forces as the body stands or moves through space.

1. **Posture biomechanics** – the proper position of the spine while you're sitting upright.
 - a. Viewed from the right side, a healthy spine will contain three distinct "C" curves.
 - A reverse "C" curve in the neck, or cervical spine.
 - A standard "C" in the mid back, or thoracic spine.
 - A reverse "C" in the low back, or lumbar spine.
 - b. These "C" curves protect the spinal joints and discs while keeping pressure off the spinal cord and nerves. Sitting, standing, or lifting with these Cs in mind is the most fundamental definition of safety.
 - c. **Improper posture at the desk**
 - **Neck:** The head is pointing down and/or extended forward. This removes the neck's natural and shifts pressure to stress points at the skull, lower neck and upper back/shoulder area.
 - **Mid-back:** Arms are overextended forward and/or shoulders are hunched. This position exaggerates the mid-back "C" curve.
 - **Low back:** Pelvis rotated backward, so the low back curls. There should always be a space between the low back and chair that is either empty space or is filled by support from the chair or lumbar designed pillow.
 - **Pelvis:** Rotating the top of the pelvis forward, increases the lumbar lordosis. Unless someone is dealing with too much curvature in the low back—"hyper-lordosis"—then this is the position to focus on. If the top of the pelvis is rotated backward, the low back curve is lessened, putting enormous pressure on the lumbar discs.

Setting up the desk

1. Seat height: Optimum seat height is a source of argument. Traditional seat height yields a knee angle of 90 degrees. This is to support circulation. If the seat is too high, it increases pressure behind the knee. Too low, and there's increased weight applied to the bottom of the pelvis, causing it to rotate forward.
2. Seat cushions should be firmer and thicker under the backside, while less firm and thinner beneath the thighs. While comfortable at first, too much cushion can cause the body to sink down, causing discomfort. Seats should be angled 5-10 degrees upward from back to front.
3. Backrests: the optimal angle ranges from 100 to 110 degrees. Higher backrests give better trunk weight support. Three categories:
 - a. **Low-level backrest:** Supports the lumbar region only. Depth of the lumbar curve of the backrest should be 0.6 - 2.0 inches. Backrest heights of 5, 7, and 9 inches seem equally effective.
 - b. **Medium-level backrest:** Gives full shoulder support (e.g. car's drivers seat, office chair) and will accommodate about 95 percent of people if about 26 inches high.
 - c. **High-level backrest:** Fully supports the head and neck (e.g. plane seat) and may need to be about 36 inches high to accommodate the 95th percentile man.



The mouse

Wrong: the mouse is on a flat platform, level with the base of the keyboard and with the mouse off to the right side. This causes the shoulder to go into abduction (rotate away from the body) and the wrist into extension (bends upward).

To improve: Use a mouse pad with a built-in wrist support that takes the wrist out of extension, or use an ergonomic keyboard to prevent the shoulder from rotating away from the body.



IDEAL



HARMFUL POSITION

