

# Baby Ergonomics

## Nurturing Your Baby's Spinal Development



*Baby Ergonomics can influence the long term health of your child*

### Ergonomic advice for your infant

If your infant is showing preference for one side while breastfeeding or turning their head consistently to one side while sleeping, have them evaluated by a chiropractor.

When swaddling your infant, be sure to allow freedom of movement of their legs into the fetal tuck position (knees and hips bent), never swaddled straight down.

Minimize time spent in car seats and other bucket devices such as swings and bouncers.

Avoid the use of infant sitting devices, jumpers and walkers before your child has achieved the gross motor ability to support themselves naturally in these devices.

Choose a baby carrier that allows for fully supported hips in the seated position, ideally facing their carrier's body, not outward. Never allow a child to hang from their pubic symphysis.

Don't stress if your child dislikes tummy time; try doing it on a caregiver's chest or choose upright carrying instead.

Minimize excess time in any one position for your infant during this rapid stage of development.

Consult your chiropractor if you notice asymmetry of your child's face, skull or uneven pattern of hair loss.

Schedule regular milestone checkups with your chiropractor in their first year of life.

### Swaddling

While various physiological and emotional benefits exist with swaddling, one should be cognizant that babies should not be swaddled with their legs restricted and kept together in a straight position. Their lack of ability to move in this position, primarily for the hips to be open or the knees to flex up to the chest, can prevent the femoral head from sitting in the socket and contribute to development of hip dysplasia in early infant development.

### Car Seats

Car seats are a modern day necessity; however a child's time should be limited in these as well. Restrictive straps, which would be life saving in the event of a motor vehicle collision, prevent a wakeful child from developing muscle strength and necessary growth from the original C-shape of the child's spine. When not in a moving vehicle, a child should not remain in a car seat or other bucket devices such as swings and infant seats for prolonged periods of time.

### Baby carriers

Forward facing carriers where the legs are not supported in an abducted and flexed position are harmful to a developing infant's skeletal structure and puts a child at risk of developmental hip dysplasia. Unsupported legs (dangling from the genitals) in combination with weak abdominal muscles create a hollow back arching in infants (hyperextension of the lumbar spine). This is accentuated with every step the parent takes and contributes to a condition called spondylolisthesis (slippage of one vertebrae on top of another).

### Infant sitting chairs

Using a chair which falsely puts your child in a sitting posture for extended periods of time before they are physically ready to do so, because of lack of strength and coordination, can be harmful. Infant sitting chairs puts your child's lumbar spine in a position of flexion, creating rounding of the shoulders and forward head posture. Sitting, a gross motor development, will happen in an appropriate sequence when the child is developmentally ready. Some of the benefits these chairs claim to have such as aided digestion and breathing can be achieved much better through upright carrying.

*Baby Ergonomics are important for proper spinal development*

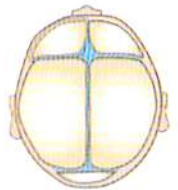
### Plagiocephaly

Positional plagiocephaly (play-gee-o-seff-ah-lee) is a term meaning flattening of the skull. While positional plagiocephaly *may not* affect how a baby's brain develops, it can affect a baby's appearance and can cause a baby's head and face to develop unevenly, potentially affecting their ability to talk and chew, as well as possibly causing sinus or vision problems.

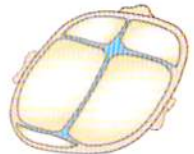
Up until about 12 months of age, the bones of your baby's head are thin and flexible. This makes your baby's head very soft and easy to mold. Because a baby's skull is soft, constant pressure on one part of the skull causes flattening. If your baby is always on their back or low incline, whether in a crib, stroller, car seat or swing, part of their skull may become flat due to the pressure of gravity

Infants were not meant to spend extended time in these devices; other negative physiological effects can be seen beyond aesthetics such as poor development of the cerebellum and vestibular system, inability to optimally regulate temperature, breathing and heart rate, emotional distress from lack of parent-baby attachment, reflux and ear infections.

Skull (Top View)  
Normal



Skull (Top View)  
Positional Flattening



### Tummy time

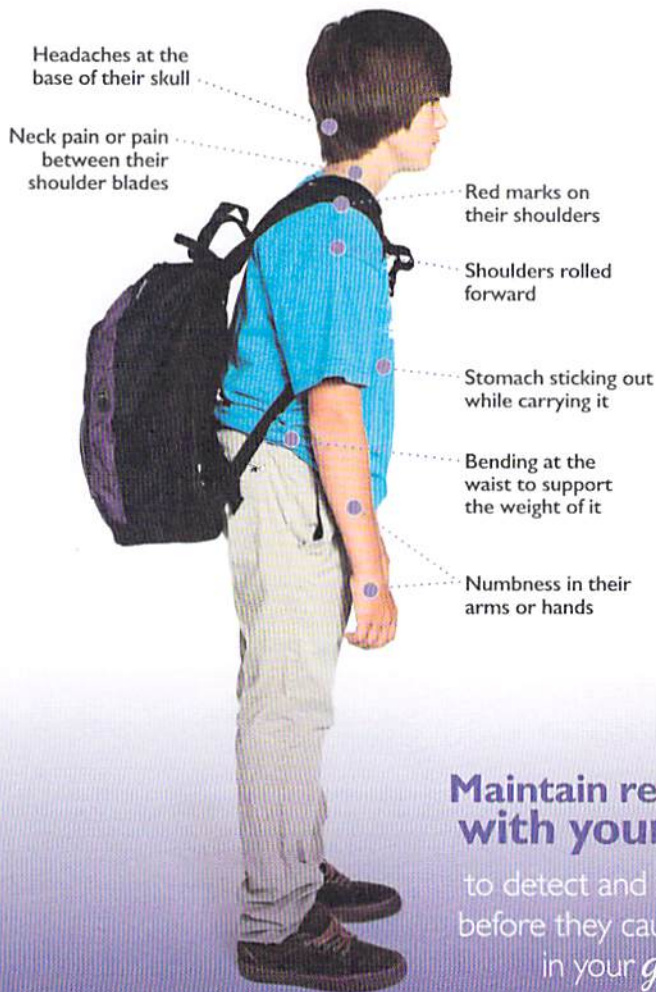
Many children greatly dislike tummy time unless they are on a caregiver's chest enjoying skin to skin or cuddle time. This is because they can't roll themselves onto their back and also do not have the muscle strength and coordination to get themselves off of their back either. This means that instead of feeling empowered by developing natural movements as their body grows, they feel helpless, scared and uncomfortable by being placed in a position which they can't move away from. Bottom line is that tummy time is ok if baby is content and well supervised, however not at all necessary and your child's spine, muscles and skull will develop optimally as long as you give them upright carrying time.

# Back Pack Ergonomics

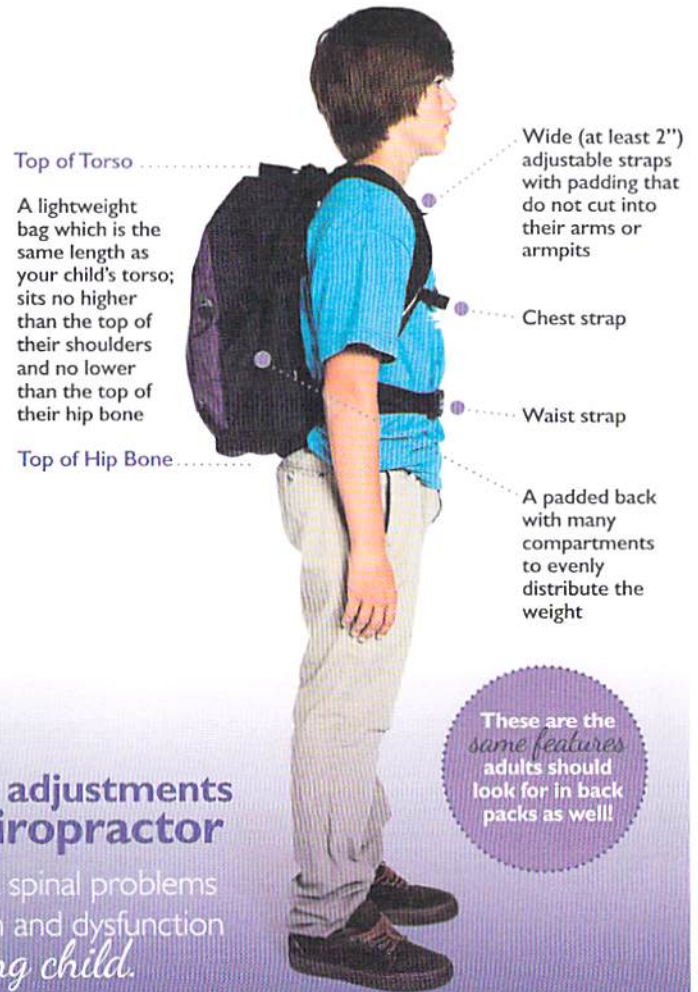
## A guide to *proper back pack use* for children

**Incorrect use of a proper back pack can be just as damaging as using an improper back pack.** Our growing children use their back packs for many years. Repetitive loading of heavy back packs combined with poor ergonomics can be a source of dysfunction in their body and can lead to chronic back and shoulder pain. Smart choices now are important to your child's health long after their school days are gone.

Signs that your child's **back pack is inappropriate** for them or that they are **wearing the pack incorrectly** include:



When **purchasing a new back pack** one should look for:



These are the *same features* adults should look for in back packs as well!

### Maintain regular adjustments with your Chiropractor

to detect and correct spinal problems before they cause pain and dysfunction in your *growing child*.

### Additional tips for proper back pack ergonomics

- Place heavy items closest to their back.
- Place odd shaped items outside to prevent poking into their back.
- Elementary students should not exceed 10% of their body weight.
- Junior and Senior High students should not exceed 15% of their body weight.
- Place the back pack on their back from table height or lift properly with their knees.
- Adjust the straps so bottom of the back pack lies in the curve of their low back.
- Have their back pack assessed with your local chiropractor for appropriateness.
- Check regularly for unnecessary items.
- Carry extra books or lunches in hand.
- Use the waist strap to redistribute 50-70% of the bag's weight off their upper body and onto their pelvis.



# Modern Day Ergonomics

Preserving Your Body While Using Modern Devices

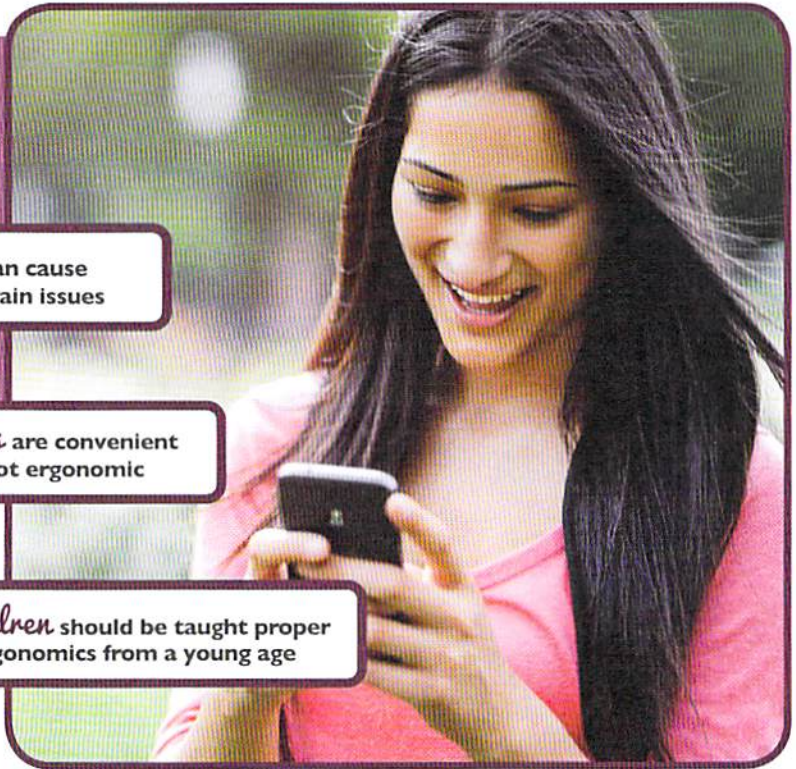
## Conditions commonly associated with poor posture / ergonomics:

- Headaches
- Chronic Neck and Low Back Pain
- Upper Crossed Syndrome
- Tennis Elbow
- Weakness of Core Muscles
- Sciatica
- Carpal Tunnel Syndrome

*Texting* can cause repetitive strain issues

*Laptops* are convenient but not ergonomic

*Children* should be taught proper ergonomics from a young age



## Smartphones & tablets

### The problem

- Repetitive strain injuries like tendonitis and carpal tunnel syndrome are increasing in adults, but also among college age and even younger students.
- Extended periods of looking closely at the screen can cause: fatigue, eyestrain, headaches, blurry vision, difficulty focusing, headaches and increased sensitivity to light.
- Thumbs, fingers and wrists are not designed to handle the thousands of small, repetitious tasks that occur with texting, resulting in repetitive strain over time.

### Solutions

- Keep your texts brief and when possible use the word prediction or auto complete tools on your phone.
- Your phone is still useful for talking! If you have a lot on your mind often a phone conversation works better than texting.
- Maintain a neutral grip (wrist straight, not flexed or extended) when holding your device.
- Maintain an upright posture while texting – try to avoid bending your head down constantly.
- When typing, use your phone in the vertical position vs. horizontal position to avoid excess strain on your thumbs.



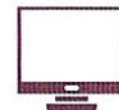
## Laptops

### The problem

- The design of laptops violate an ergonomic rule; since the keyboard is attached to the monitor it's nearly impossible to position both correctly at the same time.
- Due to the convenient size and portability, laptops are often used in awkward positions compared to desktop computers, leading to more muscle and joint irritation.

### Solutions

- Use your laptop more like a desktop when possible, with seated or standing posture instead of lying down.
- With extended periods of usage, consider using accessories such as a riser or a separate plug-in keyboard to minimize irritation.
- Close shades and blinds, and place laptop screen perpendicular to windows to avoid glare.



## Desktop computers & the workplace

### The problem

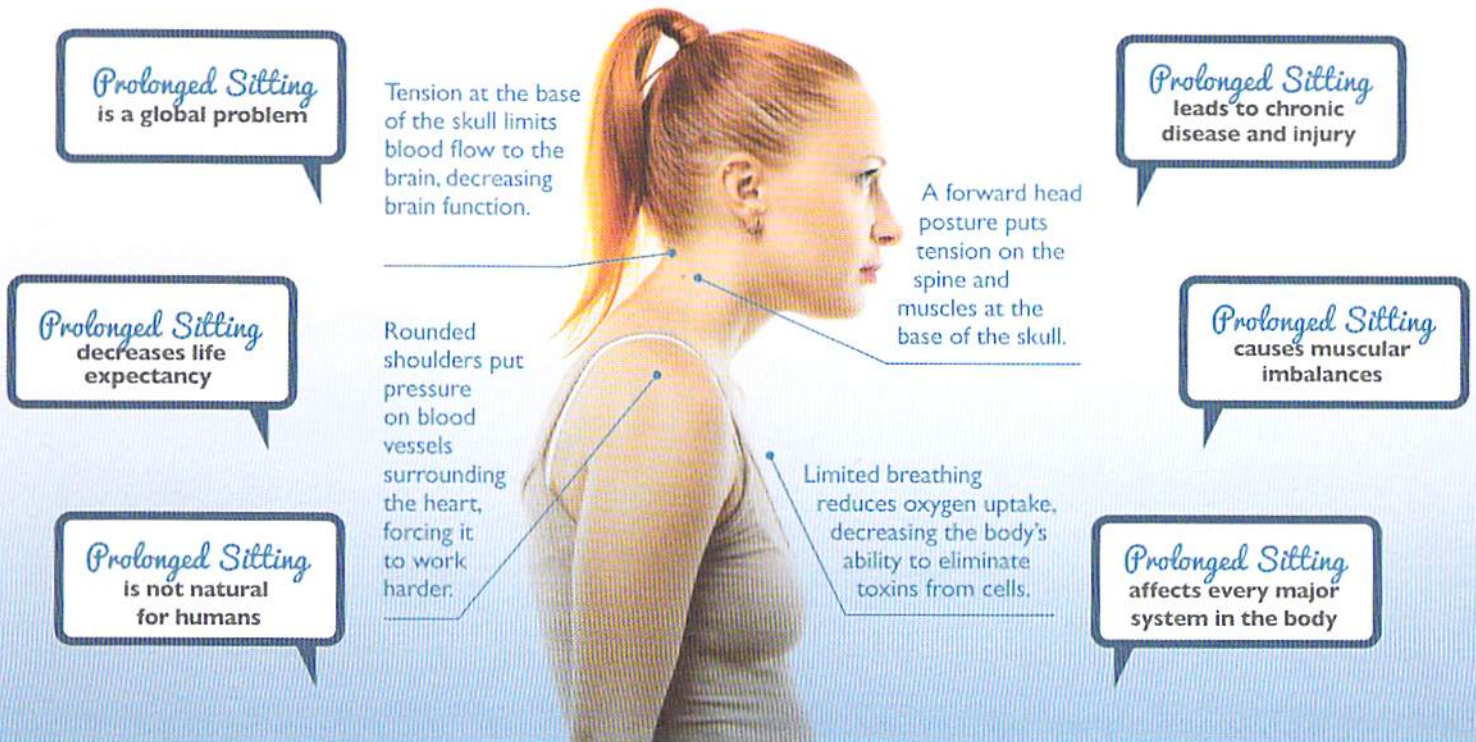
- 90% of the U.S. workforce uses computers to perform at least some aspects of their jobs.

### Solutions

- Position your body in a "neutral spine" position, with wrists straight, elbows and hips at 90 degrees or slightly more and feet flat on the floor or platform.
- Make sure your eyes are level with the top third of the screen, approximately 18 to 24 inches away.
- Vary your computer tasks – mouse-intensive tasks cause different stressors to your body compared to typing, so switching back and forth will avoid some irritation.

# The Dangers of *Sitting*

## Avoiding a Modern Day Hazard



### Why is sitting down so bad for my health?

Even though the human body is capable of remaining in a seated position, our anatomy was not designed to properly support this position long-term. Aside from the unnatural positions themselves, prolonged sitting often goes hand-in-hand with physical inactivity in general, which has numerous adverse health effects.

### Upper Crossed Syndrome

Prolonged sitting leads to a familiar pattern of tight / overactive muscles with other weak / inhibited muscles, collectively known as Upper Crossed Syndrome, characterized most notably by rounded shoulders and a forward head posture. Left unattended, this pattern becomes ingrained over time and results in unwanted stress to the spine, muscular system and nervous system.

### Solutions

- Ergonomic assessments and alterations to work stations at the office can help limit sedentary behavior while on the job.
- Get up! Limiting sitting to less than 3 hours each day may immediately increase your life expectancy by 2 years.
- Attend regular visits with your chiropractor, massage therapist and other wellness professionals to ensure the effects of sitting are being properly eliminated and prevented.



**Move!** Even those required to sit at work can incorporate a reminder to get up and stretch every hour, walk to the bathroom, grab a drink of water and walk a flight of stairs.

## The Effects of Prolonged Sitting

- Cardiovascular:** ↑ heart rate, ↓ cardiac output, ↓ capacity for exercise
- Muscular:** ↑ muscle fatigue, ↓ muscle strength, ↓ muscle mass
- Skeletal:** ↓ bone density, ↓ tendon stiffness, ↑ risk of tendon injury
- Metabolism:** ↓ oxygen uptake, ↑ insulin resistance, ↑ blood pressure, ↑ blood sugar, ↑ risk of diabetes and heart disease, ↑ risk of cancer
- Mental:** ↑ chance of mental disorder, ↓ self-esteem, ↓ body satisfaction (especially in kids)



# Posture

## Why it's important to your overall wellness.



### Why is posture so important?

The human spine houses and protects our spinal cord which connects our brain and central nervous system to the rest of our body. Under constant postural strain, the normal movement of the spine can be affected, which then places stress on the nervous system and how we interpret and interact with our environment. Therefore, the integrity of your spine is essential to how you heal, function and ultimately how healthy you are.



In *healthy posture*, the head is perfectly balanced over the shoulders and all four curves of the spine. With every inch of increased forward head posture, **you increase the weight that your spine must support by 10lbs**, thus increasing the tension in your spinal cord.

### Posture affects:



Breathing



Circulation



Digestion

**Due to our sedentary lifestyle,** conditions of poor posture are increasingly abundant and starting at earlier ages than ever before. These postural changes should not be ignored as they can lead to negative results throughout the body. The good news is that postural changes can be corrected and future changes can be prevented with care and advice from your chiropractor!



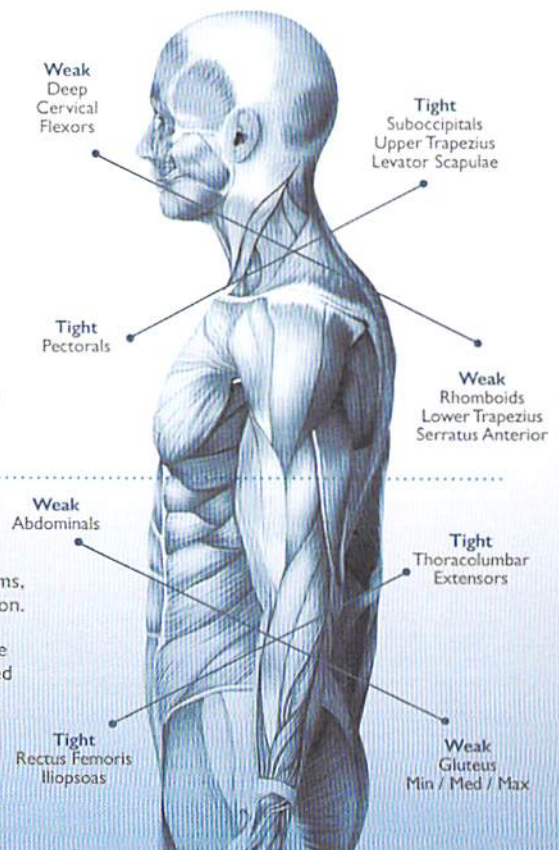
**Upper Crossed Syndrome** is one such condition where the muscles in our chest and posterior neck become increasingly tight while the muscles in our anterior neck and mid back become increasingly weak. This creates excessive stress through our muscular and skeletal systems, causing imbalances in the spine and increasing our propensity for chronic pain and spinal degeneration.

**Symptoms of Upper Crossed Syndrome** may include: tension at the base of the skull, forward head posture and rounded shoulders. These changes result in decreased blood flow to the brain, pressure on blood vessels surrounding the heart and reduced oxygen uptake in the lungs.



**Lower Crossed Syndrome** is another condition where the muscles in our anterior hip and mid to lower back become increasingly tight while our abdominal and gluteus muscles become increasingly weak. This once again creates excessive stress through our muscular and skeletal systems, causing imbalances in the spine and increasing our propensity for chronic pain and spinal degeneration.

**Symptoms of Lower Crossed Syndrome** may include: tension, stiffness or spasm in the lower back, hips and side of the leg. These changes can lead to joint pain, reduced flexibility, impaired range of motion, chronic back pain and increased susceptibility to lumbar disc injuries.



# Posture Perfect!

Your child's poor habits now could be setting them up for premature spinal damage and dis-ease in their future. Chiropractors are experts in detecting and correcting spinal and joint dysfunction before habits and deformities become permanent.



## Characteristics of **Poor** Posture that may contribute to dysfunction in children

**Anterior Head Carriage**  
 Headaches  
 Ear Infections  
 Sinus Infections  
 Poor Balance & Coordination  
 Allergies  
 Watery Eyes  
 Vision Trouble  
 Trouble Concentrating  
 Fatigue

**Rounded Shoulders**  
 Asthma  
 Difficulty Breathing  
 Back Pain  
 Digestive Issues

**Hip Unelevelling**  
 Growing Pains  
 Bedwetting  
 Low Back Pain  
 Hip Pain  
 Constipation/Diarrhea  
 PMS

**Pronation/Supination of Feet**  
 Achilles Tendonitis  
 Plantar Fasciitis  
 Knee Pain  
 Leg Pain  
 Uneven Wear of Shoes



## Characteristics of **Good** Posture that may help alleviate dysfunction in children

**Head**  
 is held up straight and ear is aligned with shoulders and hips

**Chin**  
 is tucked in slightly

**Shoulders**  
 are back and aligned with hips

**Chest**  
 is high, forward and perpendicular to ground

**Core Muscles**  
 are engaged so pelvis remains in neutral position

**Low Back**  
 has slight curve

**Knees**  
 are centered over ankles and slightly bent with achilles tendon perpendicular to ground (no bowing)

**Feet**  
 are forward facing and apart

## Contributing Factors to poor posture and improper spinal development:

