

# TO SIT OR NOT TO SIT: *THAT IS THE QUESTION*

Presented by:

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## Sitting: a “head to toe” problem

- **Compromised brain function**
  - Lack of blood & oxygen gets pumped
  - Release of brain & mood **enhancing** chemicals is slowed down (results in “foggy brain”)
- **Strained neck/shoulders**
  - Awkward neck postures increase strain on cervical vertebrae
    - “hunched over” keyboard / desk work
    - Cradling of telephone
  - Static muscle contraction leads to stiffness / pain
    - particularly in trapezius muscles

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## What Has Been Said ...

“Sitting is the new smoking, and it’s time to quit”  
*The Globe and Mail (Apr. 13.2014)*

“Sitting for too long can kill you, even if you exercise”  
*CBC News (Jan. 19.2015)*

“Sitting will kill you, even if you exercise”  
*CNN (Jan. 22.2015)*

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## Sitting: a “head to toe” problem

- **Low back issues**
  - Spine becomes inflexible
    - Hardening of collagen around supporting tendons & ligaments
  - Uneven force distribution across lumbar discs
    - Increased risk for disc herniation
  - More susceptible to damage in mundane activities
    - Reaching / bending / twisting
- **Muscle Degeneration & Imbalances**
  - Slouching = weak abdominals + tight back muscles
  - Tight hips & weak glutes
    - Hip flexor muscles don't get extended
    - Leads to poor balance and stability (falls in the elderly)

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## Sitting: a “head to toe” problem

### What exactly goes wrong in our bodies?



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## Sitting: a “head to toe” problem

- **Heart disease**
  - Muscles burn less fat & blood flow is reduced
    - Allows fatty acids to clog the heart
  - Researchers have linked prolonged sitting to:
    - High blood pressure, elevated cholesterol
    - Twice the risk of cardiovascular disease
- **Over productive pancreas**
  - Pancreas produces insulin (carries glucose for energy)
  - But idle muscles don't respond as readily to insulin
  - So the pancreas produces more and more
  - Twice the risk of type-II diabetes

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### Sitting: a "head to toe" problem

- **24% increased risk of colon cancer**
- **32% increased risk of endometrial cancer**
- **21% increased risk of lung cancer**

*Journal of the National Cancer Institute*

**Theories as to how:**

- Excess insulin encourages cell growth
- Regular mov't boosts natural antioxidants that kill cell damaging free radicals

- **Leg disorders**
  - Poor circulation & pooling of fluid in legs
    - Swollen ankles, varicose veins, blood clots (thrombosis)

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### Individual SIT times

- Calculate your SIT time
- Let technology do it for you
  - Fitness Trackers & software
  - More than just an exercise tool



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### Sitting: a "head to toe" problem

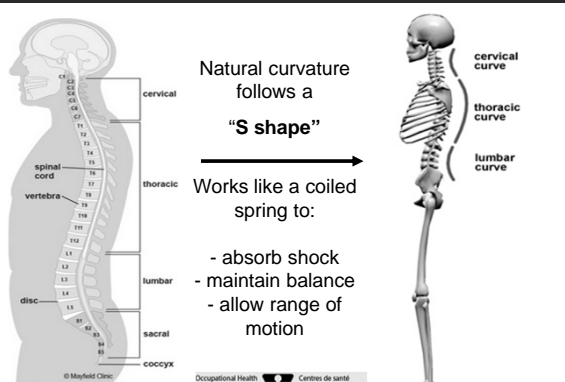
Prolonged sitting causes the body to go into a type of

# SLEEP MODE

Metabolic activity & caloric consumption slows down  
1 calorie/min (approx. 70% less than walking)

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### Biomechanics Overview



Natural curvature follows a "S shape"

Works like a coiled spring to:

- absorb shock
- maintain balance
- allow range of motion

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### How long do we really sit for ?

Activity	Sit Time (hrs)
Breakfast	(15min) = 0.25
Travel to work *Stats Canada*	(25.4min) = 0.4
Office Workday	(80% of 8hrs) = 6.4
Lunch	(30min) = 0.5
Travel home *Stats Canada*	(25.4min) = 0.4
Dinner	(30min) = 0.5
"Leisure" time	1
<b>TOTAL</b>	<b>9.45 HRS</b>

\*\*\* Stats Canada Avg. 9.7 hrs \*\*\*  
Adults (20-79yrs) spend 69% of their waking hrs sedentary

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### Biomechanics Cont.

#### Importance of Maintaining our Natural Curvature

\*\* a.k.a. PROPER POSTURE \*\*

- Keeps bones and joints in correct alignment
- Decrease abnormal wearing of joint surfaces
- Decreases stress on ligaments
- Ensures that muscles are being used most efficiently
- Prevents fatigue
  - muscles are being used efficiently, allowing the body to use less energy

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### What Happens Next ...

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### Lumbar Support

Common "flat back" chair

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- Supports the upper body, easing neck tension and offering relief for the vertebral disks.
- Supports each vertebral disk in the lumbar region, providing relief for the spinal column and relaxation of back muscles.
- Supports the pelvis and provides balance for the spinal column.

### What Happens Next ...

- Sitting causes *immediate flexion* in the spine
- Forward curvature of the lumbar section is gone
  - Muscles are forced to stabilize
  - Lack of movement results in static muscle contractions
  - Leads to tense / sore muscles & low back pain
- Remember gravity is always pushing down
  - Discs are being compressed while in an unnatural and static position

Standing Right angle sitting position

90° chair angle  
30° flattening of the lumbar region  
80° bending in the hip joint

### Sitting While Driving

Poor Correct

### Making the Best of the Worst

- Ensure "Good Sitting Posture"
  - 3 natural curves are present
  - Elbows at the sides and shoulders are relaxed
  - Avoid slouching
    - sit all the way back in your chair
    - "relax" into your chair
- Must have LUMBAR SUPPORT
  - And must be adjustable
  - Use the "rocker" feature (office chairs)

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### Additional Points on Sitting

- Did you know:**
  - Spine stability is compromised following prolonged sitting
  - Strenuous exertions (such as lifting) should be avoided following prolonged sitting
    - Need to incorporate "stand time" or "dynamic time"
    - Delivery and/or irregular MMH jobs
- Did you notice:**
  - Workers recovering from back injuries are often placed on "light duties" that commonly involve prolonged sitting
  - Why do we associate "sitting" with "light duty" ??

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## TAKE A STAND Against Sitting

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### Workplace Change

- Change the type of desks we use
  - Individual sit/stand options
  - Standing height tables for meetings

Example:  
Sit / Stand desk

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### Taking a Stand

- Not saying
  - “Never sit down” ... or that “standing all day is the answer”
- Understand that **POSTURAL VARIETY** is key
  - No single, ideal sitting posture exists
  - Changing lumbar postures shifts the load from one tissue to another
  - Only way to minimize the risk of tissue overload
- Must develop strategies to ensure **VARIETY**
  - Sit, stand, walk .... how can we incorporate all of these?
    - Workload Planning
    - Workplace Change
    - Purposeful Breaks

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### Workplace Change

Example:  
Individual “pop-up” style

Sit or Stand in seconds!  
18" instant height adjustability with pneumatic-assist

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### Workload Planning

- What tasks can we do “**on the move**”?
  - phone / conference calls (wireless headset)
  - use face-to-face dialogue instead of email
- Job rotation ... think “task rotation”
  - between sedentary & non-sedentary task

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### Workplace Change

- Office meetings ...
  - Why do we have to sit and what are we sitting in?
  - “fancy” leather chairs = ZERO lumbar support

– Why not stand?

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## Workplace Change

- Think about your proximity to ...
  - Office equipment
    - printers / photocopiers / shredder
  - Personal items
    - water / snacks / restrooms
  - Do we need everything “within arm’s reach” ?
  - Further is better ... forces us to get up and move
- Stairwell access
  - Do people use the stairs? If not ... ask why?

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## Resources

- Sitting “a head to toe problem” (summary chart)  
[www.washingtonpost.com/wp-srv/special/health/sitting/Sitting.pdf](http://www.washingtonpost.com/wp-srv/special/health/sitting/Sitting.pdf)
- Free downloadable rest reminders  
[www.workrave.org](http://www.workrave.org)  
[www.davidevitelar.com/software/breaker/](http://www.davidevitelar.com/software/breaker/)  
[www.dejal.com/timeout/](http://www.dejal.com/timeout/)
- Sit / Stand Office Desks / Devices  
[www.ergonow.com](http://www.ergonow.com)  
[www.myupdesk.com](http://www.myupdesk.com)
- Ergonomic Seating  
[www.ergocentric.com](http://www.ergocentric.com)

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## Purposeful Breaks

- A true “rest break” consists of the **OPPOSITE** activity to reduce the imposed stressors
- For sedentary or stationary individuals, the emphasis should be on a **DYNAMIC** break not **REST** break
- Recommendations:
  - Periodic posture breaks (set reminders if needed)
  - Develop a “walking group” with coworkers

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## Dynamic Break

- **STAND & STRETCH** when tired  
\*\*\* make this automatic every time you yawn \*\*\*
- Stand up ... maintain a relaxed standing posture for 10–20 sec.
- Raise both arms & push towards the ceiling
- Inhale deeply & slowly
- What have you done?
  - Physically:  
extended your low back through a **gentle** and **progressive** lumbar extension
  - Mentally:  
fired neurons in the brain that enhance alertness (actually increased your productivity)

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