STAND UP FOR HEALTH

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ARE WE SITTING OURSELVES TO DEATH?

• Sitting is more dangerous than smoking?
• Kills more people than HIV?
  (Levine 2015)

• Historic observations since the 1950s
  - Bus drivers were twice as likely to have heart attacks as their bus conductors
The dilemma of Sitting Duration

- 112% increase risk of diabetes
- 147% increase cardiovascular events
- 90% increase in death due to cardiovascular events

(Wilmsch et al. 2012)

Prolonged sitting is thought to slow the metabolism, which affects the body’s ability to regulate blood sugar, blood pressure and break down body fat.

Global recommendations to reduce Sitting Duration

What is the evidence?
Future directions

- Advance measurement methodology
  Posture discriminating methods and objective measures of sitting time

- Prospective evidence is needed (causality)

- Understand patterns of sitting duration – not all sitting is harmful

(Wijndaele and Healy 2016)

Exclusion of Sitting in ADL’s realistic?

Dilemma of Sitting Posture

- Spinal pain linked to sitting affects > 80% of people

- 1 Billion people affected worldwide

- In CT: 70% of school learners suffer from computer related pain
  >8 hours of computer usage per week associated with cervical pain

Is Sitting Posture related to pain?
Evidence that sitting is associated with pain

End range postural angles possible risk factors (South African and Australian)

What is good sitting posture?

"Subject of considerable debate in the literature"

Conventional good sitting posture

Characterised by an “erect back” and a “horizontal thigh.”

“Good sitting Posture” in context

1. Considerable effort would be expended in maintaining this position:
   - questions for validity in real work situations
     Fostervold (2003)

2. An erect posture can be held for only one to two minutes
   - questions suitability for human function
     Mandal (1997)

3. Static positions contribute to physical load and pain;
   Static loads reduce nutrition to disc, decrease proteoglycan production and a reduction of the pH of the disc leading to degeneration
Alternative Posture definitions

- Posture is dynamic and should be defined in 3D

- Moshe Feldenkrais (1904 – 1984) in the word “acture” which he simply defined as “posture in action”

- Decades later, Geldhof et al coined the term ‘postural dynamism’
  “continuous structural and functional relationships between all parts of the body in a given position”

Future directions

- Frequency of postural changes during sitting whilst using a desktop computer--exploring an analytical methodology.
  - Ergonomics.
  - Niekerk SM, Louw QA, Grimmer-Somers K.
Effect of chair on Postural Dynamism

Postural Dynamism

Posture related to the type of interaction with technology?

Head angles (ROM) in Sagittal plane

1. Warm-up exercise
2. Typing task
3. Mouse task
4. Reading
5. Typing
6. Cool down

The answer...Stand Up for health?

<table>
<thead>
<tr>
<th>Study</th>
<th>Musculoskeletal measurement tool</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Akhajah et al 2012</td>
<td>Nordic General Questionnaire</td>
<td>No significant improvements</td>
</tr>
<tr>
<td>Pronk et al 2012</td>
<td>Survey on health related outcomes (10 point scale)</td>
<td>No significant improvements</td>
</tr>
<tr>
<td>Healy et al 2013</td>
<td>Nordic General Questionnaire</td>
<td>No statistically significant within-</td>
</tr>
<tr>
<td>Neuhau et al 2014</td>
<td>Nordic General Questionnaire</td>
<td>No statistically significant</td>
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<tr>
<td>Throp et al 2014</td>
<td>Modified Nordic General Questionnaire</td>
<td>Significant decrease in the number of participants complaining of low back pain (32% (CI -0.3 to -0.9) (p=0.03))</td>
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</tbody>
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Take home message

1. Reduce your sitting time

2. Regularly vary your interaction with technology

3. Less focus on postural alignment, but rather focus on postural dynamism (regular movement of body segments)
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Reference


- Dr Levine