Move or Die . . .
New Rules for the Seated Worker

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The Sit/Stand Controversy

Where did it start?

- London Bus Driver Study, JN Morris – 1953
The Sit/Stand Controversy

**London Bus Driver Study:**
- Historical examination of 31,000 men aged 35-64, employed as drivers or conductors for rates of coronary heart disease (CHD) during 1949-52.
- Results showed a CHD rate of:
  - 2.7 per 1,000 for drivers
  - 1.9 per 1,000 for conductors
- Link between physically active work and lowered rate of CHD.
The Sit/Stand Controversy

London Bus Driver Study:

- Important Observation –
  - Drivers tended to be overweight
  - Conductors tended not to be
- This early research eventually led to further study focusing on occupational activity, due to the rising rates of obesity.
Prevalence of Self-Reported Obesity Among U.S. Adults by State and Territory, BRFSS, 2018
25-Year Comparison

Source: Behavioral Risk Factor Surveillance System, CDC.
The Sit/Stand Controversy

Dr. James Levine, Mayo Clinic
Dr. James Levine, Mayo Clinic

- Began a series of studies in 1999 by posing the question: Why do some people who consume the same amount of food as others gain more weight?
- Answer: They sat more and moved less than others.
- General finding was that the *occupational sitting population* was likely to die years earlier, due to *cardiovascular disease* and *metabolic syndrome*.
- Reaction to these results was widespread in the media – “*sitting is the new smoking*”.

The Sit/Stand Controversy
The Sit/Stand Controversy

- Those who work out in the gym for an hour every day were no better off.
The Reaction
The Equipment Fix?
Neutral Positions

Standing

*Photo Courtesy of Caretta Workspace*

Seated
Dr. James Levine Speaks . . .

To stand or not to stand . . . that is the question
Dr. James Levine Speaks . . .

To stand or not to stand . . . that is the question

- Prolonged standing is harmful:
  - Varicose veins
  - Increases thickening in the carotid arterial walls
  - Strong correlation with increased low back pain

- Standing doesn’t put an individual into activity mode

- **Static posture** is the true enemy here
The Effects of Static Posture

- Static posture means a lack of movement, even to just some area of the body.
- Movement promotes blood flow, which brings oxygen to all our cells.
- When a certain area of the body is static, blood flow is decreased to that area and less oxygen is delivered.
- When this cycle is repeated often, cellular damage can occur.
Static Loading
Metabolic Syndrome

Is a cluster of conditions:

- Increased high blood pressure
- High blood sugar level
- Excess body fat around the waist
- Abnormal cholesterol levels

Leading to –

- Obesity
- Type 2 Diabetes
- Coronary artery disease and stroke
Metabolic Syndrome

- Can calculate your RMR (resting metabolic rate) using a downloadable app.
- The result is based on age, gender, height, and weight. Mine = 1,525
- Recommended caloric intake per day:
  - Male = 2,500 calories
  - Female = 2,000 calories
- My RMR is about 61% of energy burned.
Metabolic Syndrome from Sedentary Work

When you are sitting, the large postural muscles of your legs and back are not contracting. Animal studies suggest that fewer muscle contractions mean that the pancreas secretes less insulin and that fats and sugars take longer to get cleared out of the blood, instead becoming more likely to be stored as body fat or to clog arteries.*

The Solution?

- Don’t use a standing workstation if no additional movement will be incorporated.
- Sitting requires the will to move, in some manner, frequently.
- Alternating between sitting and standing incorporates some movement, but requires self-discipline – and more movement.

Alternatives . . .
Stand-Biased Workstations
Jerome Congleton / Mark Bendon – Texas A&M
Stand-Biased Workstations

- Most sit/stand workstation users have a 6-week atrophy rate – then just back to sitting.
- With stand/biased workstations, users will choose to stand more often than at sit/stand desks.
- Stand-biased workstations may also require the use of articulating keyboard trays and monitor arms to create a neutral fit.
- Results show 40% increase in productivity.
How to Sit?

Use 5 to 1 – sit to stand time ratio

Saddle Chair

Muvman

Locus
Dr. Levine Speaks Again . . .

He says “MOVE”
Movement Conquers Static Posture

- Practice **Active Sitting** at work
- Stay active during leisure hours – stronger link to CHD than when at work
- Incorporate **NEAT** lifestyle (**Non-Exercise Activity Thermogenesis**)
- Avoid extended periods of non-movement
NEAT in Practice

- **Thermogenesis** is the production of heat, especially in a human body – either movement or dietary induced.
- NEAT equals any kind of movement.
- The eventual goal is 135 minutes per day of non-exercise movement.
- By taking a 15-minute stroll after each meal, you can cut in half the spike in blood sugar that normally occurs after eating.
NEAT in Practice

Treadmill Workstation
NEAT in Practice

Desk Stair Stepper
NEAT in Practice

Cubii Underdesk Elliptical
NEAT in Practice

Foot Fidget Bar
Why Do We Sit?

- “Please have a seat”
- Devices that make our lives more efficient results in less reason for us to move:
  - Computers, smart phones, remote controls
- Sitting improves fine motor task performance
- 50 years ago there were virtually no health clubs in US, now there are more than 30,000, yet:
  - The average American is now 26 lbs heavier
Practice the 20-20-20 Rule

- Take a 20-second break
- Every 20 minutes
- And look at something at least 20 feet away
- Ideally, get up and walk around – increases blood flow to the extremities
- Incorporate an occasional stretch
- Remembering to do this is the hard part
Conclusion

- Metabolic Disease appears to be linked, in part, to the sedentary population we have become.
- Movement = Optimal Health Potential
  - Strive for 135 minutes of non-exercise movement per day
  - Begin/continue aerobic exercise to stay fit
  - Avoid sugar-containing food products
  - Enjoy net energy gain and clearer focus
Conclusion

- In the evolution of our species, we are still at the hunter/gatherer or agrarian stage.
- Create reasons to move: park further away, take the stairs, have walking meetings, fire your gardener.
- Move because your life may depend on it.