A Tutorial on Being More Physically Active

Nicole Hafner, Exercise Science Faculty

Spring 2016 Wellness Series- February 23, 2016
Objectives

• Discuss the changes in the levels of physical activity
• Discuss “Sitting Disease”
• Discuss how sitting impacts the body in a negative way
• Discuss does exercise impact this “Sitting Disease” in a positive way or not?
• Discuss what to do to combat the “Sitting Disease”
• Talk about our Stand MORE- Sit Less initiative here at NCC
Consider the amount of time YOU sit each day:

- During your commute
- At your desk
- In meetings
- At meals
- During your evening commute
- Relaxing in front of the TV
- Helping kids with homework
Avg. American Day

How Sedentary is the Typical American Each Day?

Sedentary 21 Hours
Active 3 Hours

- Sleeping 8 Hours
- Sitting at Work 7.5 Hours
- Watching TV 1.5 Hours
- Leisure Time 1.5 Hours
- On Home Computer 1.5 Hours
- Eating 1 Hour
- Active/Standing 3 Hours

Adapted from www.juststand.org
Is This Bad?

• Recent research finds strong correlations between long periods of sitting and elevated risk of illness or injury
  – “Sitting Disease”
    • Direct correlation to all cause mortality...
    • We are essentially moving from chair to chair
Prolonged Sitting and Disease Risk
Cardiovascular Disease

• Muscles burn less fat and blood flows more sluggishly during a long period of sitting, allowing fatty acids to more easily clog the heart
  – Low levels HDL
  – Elevated cholesterol
   • Hypertension
• People with the most sedentary time are more than twice as likely to have cardiovascular disease than those with the least
Metabolic Disorders

• Pancreas produces insulin
  – Hormone that allows glucose to enter cells for energy
  – When sitting, our cells are idle
    • Muscles don't respond as readily to insulin
      – Pancreas produces more and more
        » Diabetes Type II

• 2011- study found a decline in insulin response after just one day of prolonged sitting.
Cancer

• Greater risk of colon, breast and endometrial cancers with sitting
  – Unclear
  – Two theories:
    1. Because of excess insulin secretion from pancreas → increased cellular growth
    2. Regular movement increases antioxidants in body
       – Kill cell-damaging/cancer causing free radicals
Cancer

- 2015 Inaugural Active Working Summit also found that sitting increases:
  - Lung cancer by 54%
  - Uterine cancer by 66%
  - Colon cancer by 30%
    - Linked to weight gain and associated biochemical changes
Musculoskeletal Disorders

- Those who spend a lot of time sitting rarely extend the hip flexor muscles
  - Become short and tight
    - Limited ROM and stride length
- Gluteal muscles are not used when sitting
  - Decreased:
    - Stability
    - Ability to push off
    - Ability to maintain a powerful stride

- Studies have found that decreased hip mobility is a main reason older adults tend to fall
  - Much higher sedentary time in older adults
Musculoskeletal Disorders

• Prolonged sitting $\rightarrow$ slow blood circulation
  - Pooling
    • Ankle edema
    • Varicose veins
    • Deep vein thrombosis (DVT)
Musculoskeletal Disorders

• Increased prevalence of osteoporosis due to lack of weight bearing

• If sitting at a desk:
  – Craning your neck forward
    • Strain the cervical vertebrae and lead to permanent imbalances

• Lose flexibility in spine
  – Discs are squished unevenly
    • Collagen hardening around tendons and ligaments
Psychological Disorders

• Movement triggers muscles to pump blood and fresh $O_2$ to the brain
  – Release of mood enhancing chemicals
    • With excessive sitting, everything slows
      – Less mood enhancing chemicals released
        » Greater feelings of depression, anxiety, stress, etc.
So what does all of this mean?

Mortality of sitting
People who watched the most TV in an 8.5-year study had a 61 percent greater risk of dying than those who watched less than one hour per day.

- 4% 1-2 hours
- 14% 3-4 hours
- 31% 5-6 hours
- 61% 7+ hours

Hours of TV per day
Will I lower these risks if I exercise?

For Overall Cardiovascular Health:

At least 30 minutes of moderate-intensity aerobic activity per week for a total of 150 minutes

or

At least 25 minutes of vigorous aerobic activity per week for a total of 75 minutes

or a combination of the two

Based on: ACSM Guidelines and AHA Recommendations
Adapted from AHA
Will I lower these risks if I exercise?

An Average Day as an "Active Coach Potato"

- Sitting at Work: 50%
- Activities of daily living: 19%
- Leisure-time running, swimming, or cycling: 25%
- Other leisure-time (mostly sedentary): 6%
What can I do to lower my risk?

STAND UP AND DON'T SIT DOWN
Cardiovascular Disease

Adopted from Hamilton et al., 2007
Metabolic Disorders

Adopted from Dunstan et al., 2012
Cancer

Television Viewing and Time Spent Sedentary in Relation to Cancer Risk: A Meta-Analysis

Daniela Schmid, Michael F. Leitzmann

Manuscript received September 3, 2013; revised February 6, 2014; accepted March 14, 2014.

• 43 studies included
  – Colon cancer- RR 1.24
  – Endometrial cancer- RR 1.32
  – Lung cancer- RR 1.21
Musculoskeletal Disorders

Low back pain is the most common cause of job-related disability; associated estimated healthcare and lost income and productivity costs are in excess of $85 billion.

MORE MOVEMENT = LESS PAIN

Study found a statistically significant reduction in reports of current low back pain and current neck pain.

SIT-STAND MOVEMENT MAY REDUCE PAIN

The probability of reporting a pain-free day was 78% for participants using sit-stand workstations by the conclusion of the study.

STANDING IMPROVES FOCUS

Participants using the sit-stand workstations reported that their pain interfered less with general activity and ability to concentrate.

Remain in a static position for a prolonged period of time, such as sitting all day, may not be conducive to a healthy back.

Research.ergotron.com

Psychological Disorders

- 87% felt more energized
- 87% felt more comfortable
- 75% felt healthier overall
- 71% felt more focused
- 66% felt more productive
- 100% felt better! 2 out of 3 reported feeling much better
- 38% felt a reduction in fatigue
- 50% felt reductions in pain (upper back, neck, shoulder)

1 HOUR increase in daily non-sitting time

Adopted from: Take a Stand Project 2011
STAND MORE – SIT LESS

DO

CARDIOVASCULAR DISEASE
- Decrease risk of all-cause mortality
- Lower blood pressure
- Increased good cholesterol
- Lower triglycerides

PULMONARY DISEASE
- Increase lung function

METABOLIC DISORDERS
- Weight loss
- Blood sugar control
- Lower risk for diabetes

CANCER
- Lower risk for breast, lung, colon cancer

MUSCULOSKELETAL DISORDERS
- Increased bone density
- Decreased low back pain
- Increased strength

PSYCHOLOGICAL DISORDERS
- Reduced depression
- Increased self-esteem
- Decreased anxiety

DON’T

CARDIOVASCULAR DISEASE
- #1 killer
- High blood pressure
- High cholesterol
- Plaque buildup

PULMONARY DISEASE
- COPD and asthma

METABOLIC DISORDERS
- Overweight
- Obesity
- Diabetes

CANCER
- Increased risk for breast, lung, colon cancer

MUSCULOSKELETAL DISORDERS
- Low back pain
- Arthritis
- Osteoporosis

PSYCHOLOGICAL DISORDERS
- Depression
- Anxiety
- Mood

*Diseases listed in hierarchy of prevalence according to the CDC

DESIGNED BY VALENTINA SITANDIS
How To Be More Physically Active During the Workday

2-4 hours of standing/light activity per day

– Stand-up when on the phone
– Have walking meetings
– Use stairs instead of elevator
– Park farther away in parking
– Exercise in your office
Conclusion

https://www.youtube.com/watch?v=fTqqN0V7Lxl
Questions?