

In-service education presentation designed for a county-wide Department of Health staff meeting. June 2016.

I've included my colleagues' slides introducing exercise and sleep. I created slides 4-14 and the matching references at 16. Notes for the oral presentation added.

# **EXERCISE AND SLEEP**

**2011 STUDY: JOURNAL OF MENTAL HEALTH AND PHYSICAL ACTIVITY**

**EXAMINED ASSOCIATION BETWEEN PHYSICAL ACTIVITY AND  
SELF-REPORTED SLEEPING**

MENTAL HEALTH AND PHYSICAL ACTIVITY. VOLUME 4, ISSUE 2, DECEMBER 2011, PAGES 65–69

## **EXERCISE AND SLEEP**

- **150 MINUTES OF MODERATE TO VIGOROUS PHYSICAL ACTIVITY PER WEEK MAY PROVIDE:**

- **65% IMPROVEMENT IN OVERALL SLEEP QUALITY**
- **45% DECREASE IN DIFFICULTY CONCENTRATING**



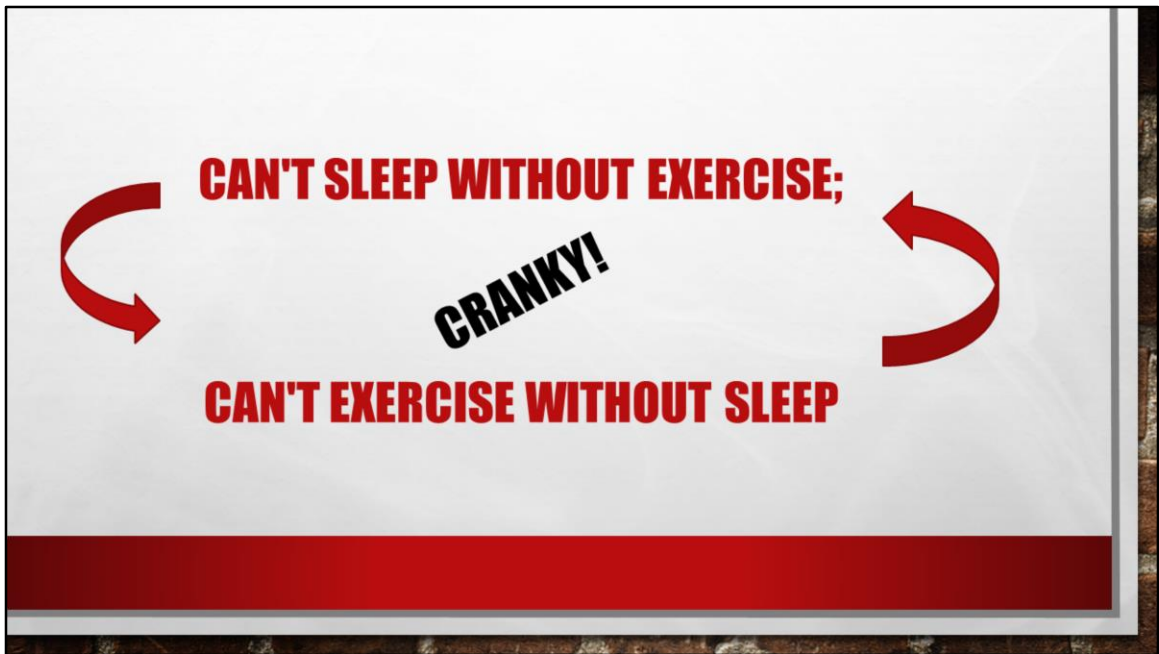
# LESS SLEEP MAKES HEALTH HARDER

- IMPATIENT
- PESSIMISTIC
- IRRITABLE
- STRESSED
- TIRED



**Less willpower to follow exercise or diet programs**

NATIONAL SLEEP FOUNDATION, "SLEEP IN AMERICA" POLL, 2002



## **PROLONGED SITTING**

### **RISKS**

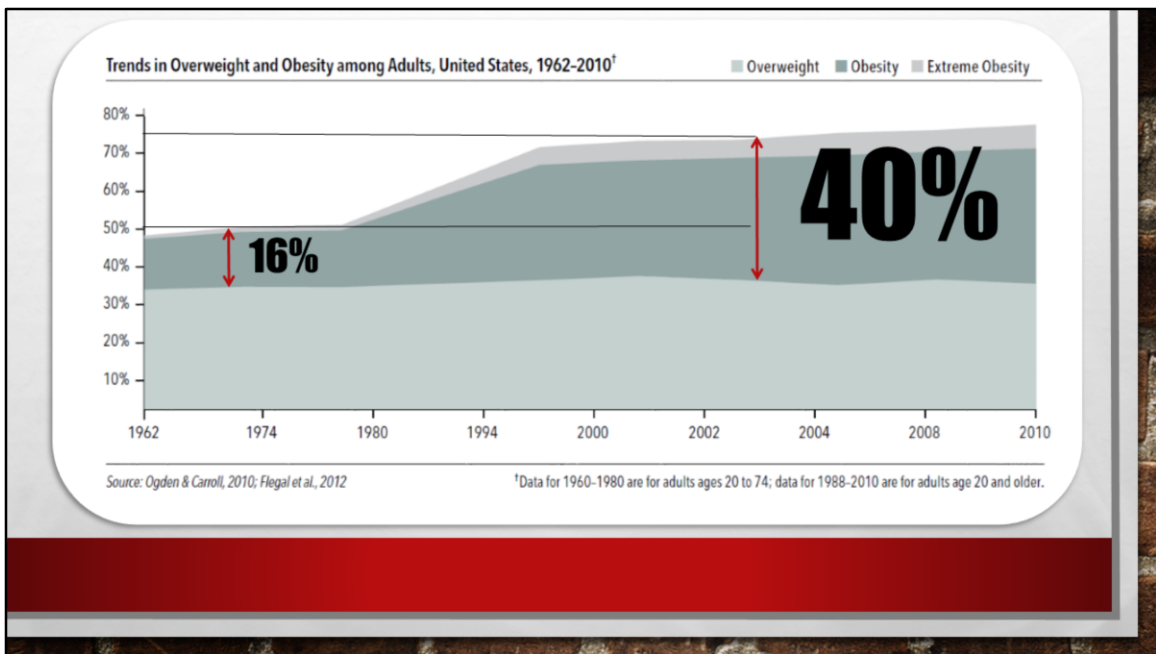
- **HEART DISEASE**
- **TYPE 2 DIABETES**
- **OBESITY**
- **COLON AND BREAST CANCERS**

**INDEPENDENT OF TIME  
SPENT EXERCISING**

• **1970: 2 OF 10 AMERICANS  
WITH "DESK" JOBS**

• **2003: 6 OF 10**

CDC Physical Activity and Health  
Owen et. al *Sedentary Behavior: Emerging Evidence for a New Health Risk* 2010



In 1970, 16% of US adults with obesity or extreme obesity. By 2003, this proportion increased to 40%.

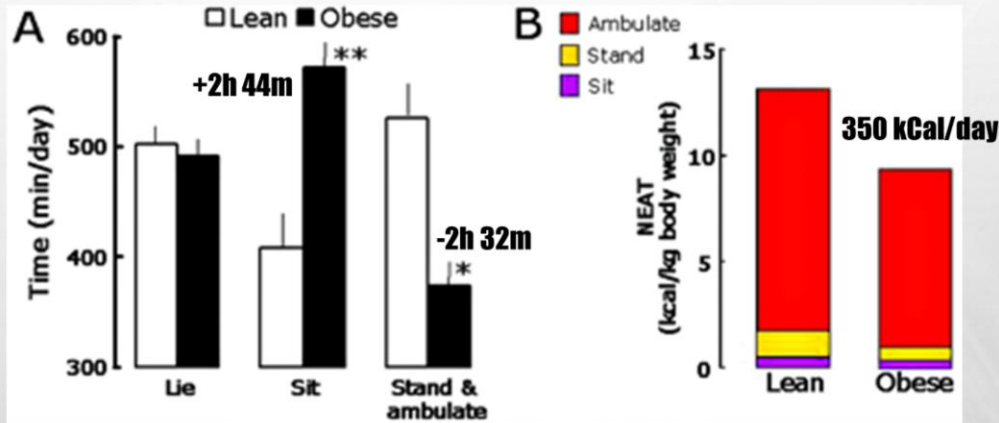
It is important to note that association does not imply causation, and this study doesn't demonstrate computer use and desk jobs are factors of obesity. However, data from studies similar to the previous slide about prolonged sitting appear to match.

**NOT ENOUGH JUST TO EXERCISE!**

# **NEAT: NON-EXERCISE ACTIVITY THERMOGENESIS**

**"THE ENERGY EXPENDITURE OF ALL PHYSICAL ACTIVITIES OTHER THAN  
VOLITIONAL SPORTING-LIKE EXERCISE"**

Non-Exercise Activity Thermogenesis: The Crouching Tiger Hidden Dragon of Societal Weight Gain, Levine et. al



Non-Exercise Activity Thermogenesis: The Crouching Tiger Hidden Dragon of Societal Weight Gain, Levine et. al

The participants wore micro-sensors tracking movements every ½ second. The chart on the left shows the group of obese sedentary clients sat 2 hours 44 minutes more per day and stood or walked 2 hours 32 minutes less per day than their lean participant counterparts.

The chart on the right shows calories used in different activities. Lean participants used more kilocalories per day standing and walking (yellow and red, respectively) than obese participants. The authors estimate if obese participants stood and walked more like lean participants, they could burn an additional 350 kCal per day. Over 10 days, this may be enough energy to lose one pound of fat.\*

\*Mayo Clinic. Counting calories: Get back to weight-loss basics.

<http://www.mayoclinic.org/healthy-living/weight-loss/in-depth/calories/art-20048065>. Published April 11, 2015. Accessed June 28, 2016.

## TAKE MORE BREAKS

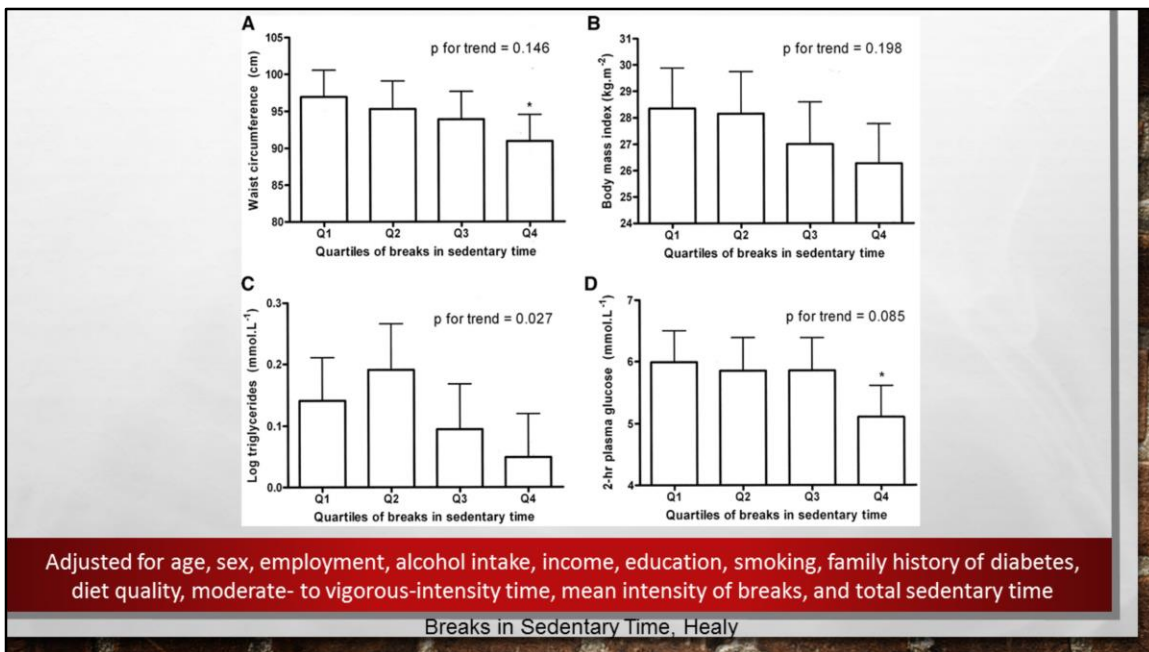
- **57% SEDENTARY, 39% OF TIME SPENT LIGHT-INTENSITY, 4% MODERATE- TO VIGOROUS- INTENSITY**
- **LIGHT-INTENSITY: STANDING UP, OR WALKING A STEP FOR AT LEAST ONE MINUTE, AVERAGE 4 MINUTES 30 SECONDS.**
- **INCREASED BREAKS ASSOCIATED WITH SMALLER WAIST, INDEPENDENT OF TOTAL SEDENTARY TIME AND MODERATE-TO-VIGOROUS INTENSITY ACTIVITY TIME.**

**TOP 25% WITH THE MOST BREAKS HAD WAISTS 2.3  
INCHES SMALLER THAN 25% WITH LEAST**

Breaks in Sedentary Time, Healy

This NEAT study observed participants with accelerometers for 7 days, exploring associations between activity and waist circumference, body mass index, triglycerides, and blood glucose. It found that more frequent interruptions in sedentary time were associated with decreased risk factors, independent of activity intensity, mean intensity of breaks, and total sedentary time.

The authors cite a study noting changes in triglyceride and blood glucose metabolism during short periods of inactivity. They state their study suggests a chronic metabolic adaptation to inactivity.



The data show that despite controlling for several factors, the frequency of breaks is largely associated with lower waist circumference, BMI, triglycerides, and 2-hour plasma glucose. Usually, those who took more breaks had lower severity of notable health risk factors.

The 2<sup>nd</sup> quartile of breaks in sedentary time had an interesting anomaly in triglyceride reading compared to other data.

# **GET NEAT AT WORK AND HOME**

- **VISIT INSTEAD OF CALLING**
- **WALK DURING LUNCH BREAK**
- **DRINK MORE WATER – INCREASE BATHROOM BREAKS**
- **FAMILY WALK AFTER DINNER**
- **LIMIT TV TIME**
- **USE PEDOMETER**

# **INSTANT RECESS!**

Instant recess exercise video: [https://www.youtube.com/watch?v=tMuZ0\\_-Y7n4](https://www.youtube.com/watch?v=tMuZ0_-Y7n4)

## REFERENCES

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