

Master of Public Health Thesis Research and Field Experience Presentation

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B.S. Human Nutrition , Kansas State University, 2012

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Master of Public Health Thesis Defense

August 1, 2014



Outline of Presentation

Thesis Research Presentation

- Background
- Research Question
- Methods
- Results
- Discussion

Public Health Field Experience Presentation

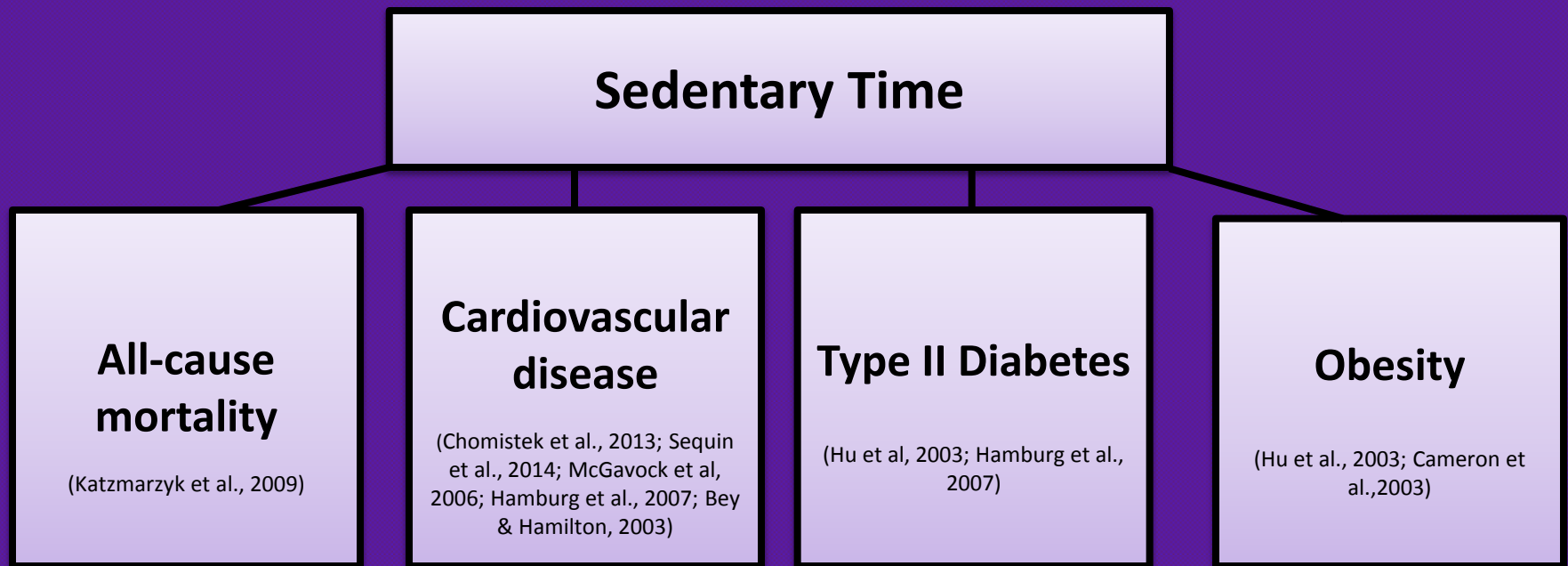
Questions

The Seated Inactivity Trial (S.I.T.): Physical Activity and Dietary Outcomes Associated with Eight Weeks of Imposed Sedentary Behavior

Brooke J. Cull, Richard R. Rosenkranz, Mark D. Haub,
Thomas Lawler, Sara K. Rosenkranz
Kansas State University, Manhattan, KS

Sedentary Behavior Background

- Americans spend approximately 8.4 hours per day engaged in sedentary behaviors (Healy et al., 2011)



Sedentary vs. Inactivity

- Sedentary \neq Inactive (Tremblay et al., 2010)
- Sedentary behaviors: ≤ 1.5 metabolic equivalents (METs) (Sedentary Behaviour Research Network, 2012)
- Inactivity: not meeting physical activity guidelines
 - 150 minutes moderate-to-vigorous physical activity (MVPA) per week (How Much Physical Activity, 2013)

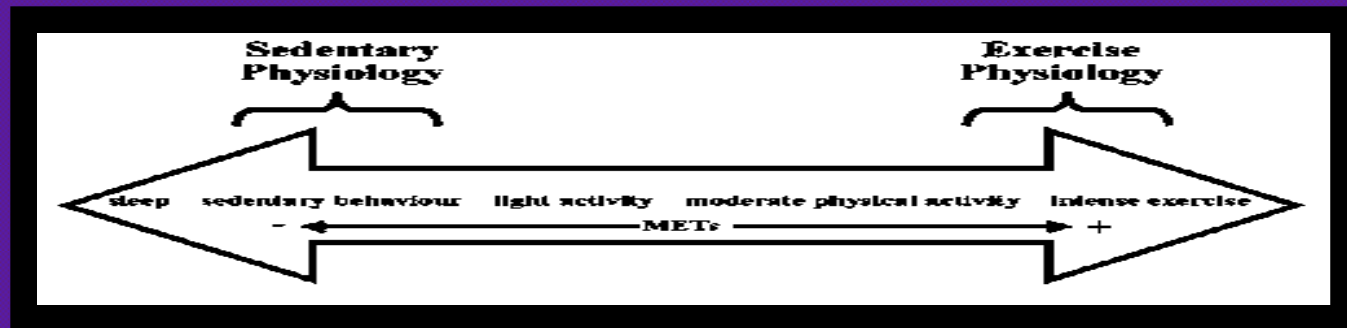
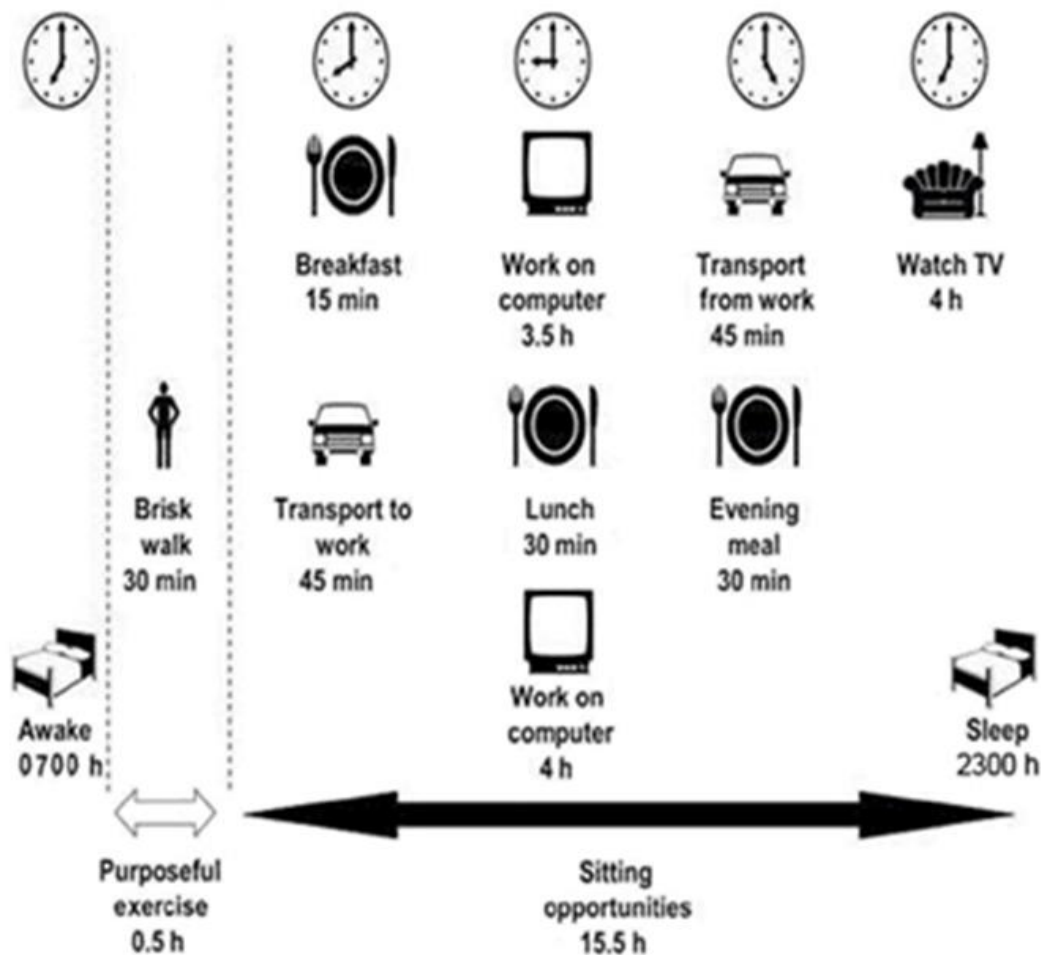
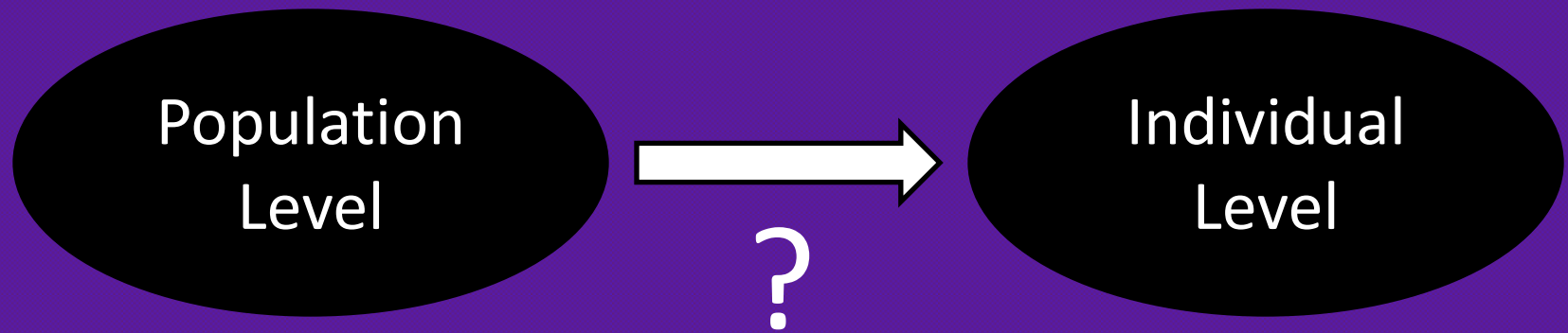


Fig. 2. Major contexts for sedentary behaviour and their distribution over a typical adult's waking hours. (From Dunstan et al. 2010a, reproduced with permission of Touch Briefings, European Endocrinology, Vol. 6, p. 20, © 2010.)



Sedentary Behavior Research

- Sedentary behaviors associated with negative health outcomes



- Will individuals change physical activity or dietary behaviors to attenuate their risk?

Previous Research

Epstein and colleagues (2002)

- Sedentary time alterations and energy balance in children
- Cross-over study with 3x 3-week phases
 - Baseline
 - 3 weeks of increased sedentary time
 - 3 weeks of decreased sedentary time
- Physical activity: accelerometers
- Dietary intake: 24-hour recall

Previous Research

Epstein et al.

- Increased sedentary time phase
 - Significant increase in positive energy balance
 - Increase in energy intake
 - Decrease in energy expenditure
 - +350 Calories per day= 0.7 pound gain per week

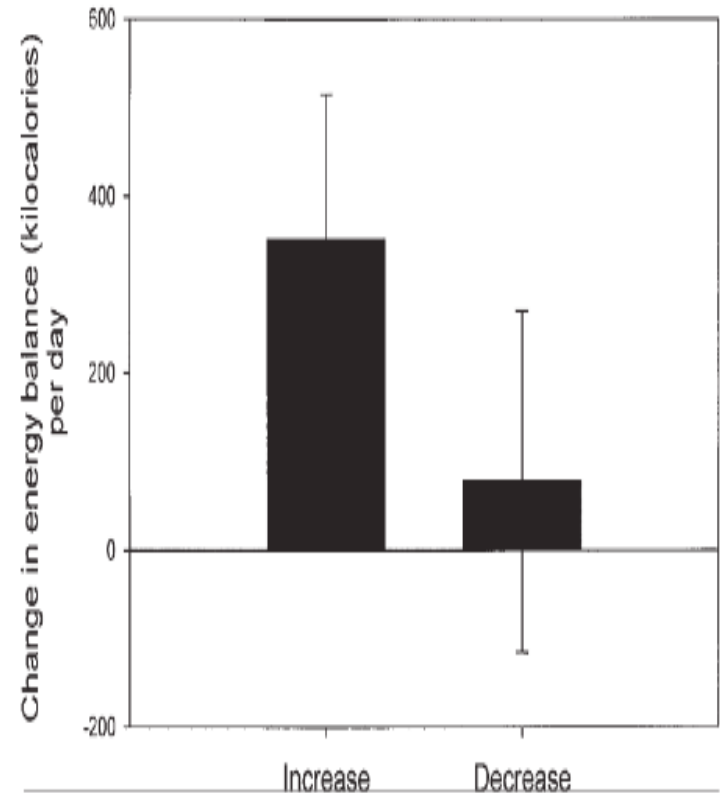


Figure. Changes from baseline in minutes spent in targeted sedentary behaviors per day during increase and decrease phases (top graph) and energy balance per day associated with targeted sedentary behaviors during increase and decrease phases (mean ± SEM).

Previous Research

Dale, Corbin, & Dale (2000)

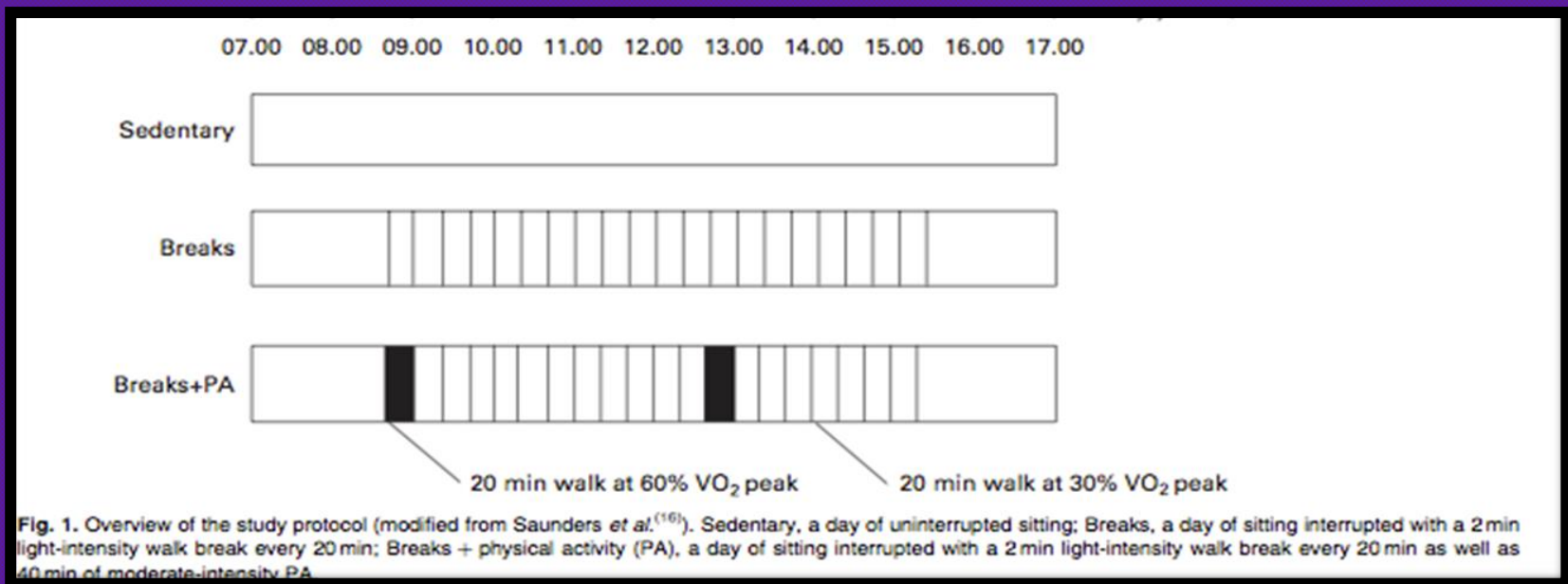
- Analyzed four separate days
 - Two “restricted” days- no PE or recess
 - Two normal days- PE and recess
- Accelerometers worn each day
- Children did not increase PA levels outside of “restricted” school day



Previous Research

Saunders and colleagues (2014)

- PA and dietary intake responses following different levels of imposed sedentary time in children



Previous Research

Saunders et al. (continued)

- Food intake (buffet) following intervention
- Accelerometers for 24 hours following intervention
- No significant differences in dietary intake or physical activity



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Children and youth do not compensate for an imposed bout of prolonged sitting by reducing subsequent food intake or increasing physical activity levels: a randomised cross-over study

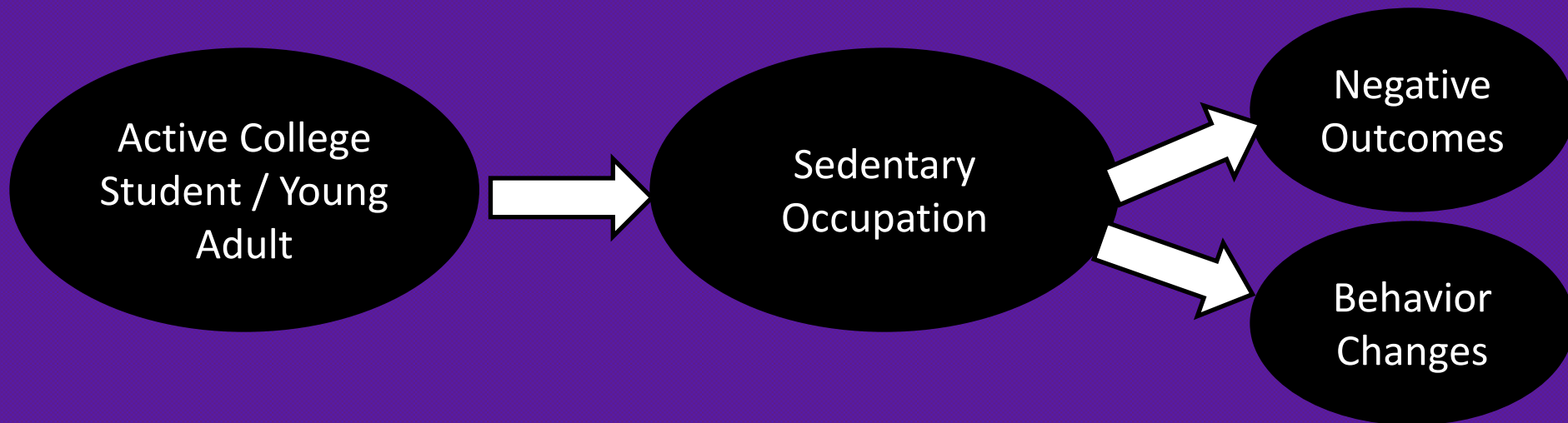
Travis J. Saunders^{1,2*}, Jean-Philippe Chaput^{1,2}, Gary S. Goldfield^{1,2}, Rachel C. Colley^{1,2}, Glen P. Kenny², Eric Doucet² and Mark S. Tremblay^{1,2}

Missing Information in Literature

- Majority of studies involve children
- Most studies have short-term interventions
- How much sitting is too much?
- Active participants
- Will adults make behavior changes in response to imposed sedentary time to attenuate their risk

Research Question

Do active adults make physical activity and/or dietary behavior changes in response to 10 hours of imposed sedentary time per week for 8 weeks?



Methods

16 Young Adults
(Physically active and healthy)

CON Group
N=8



SIT Group
N=8



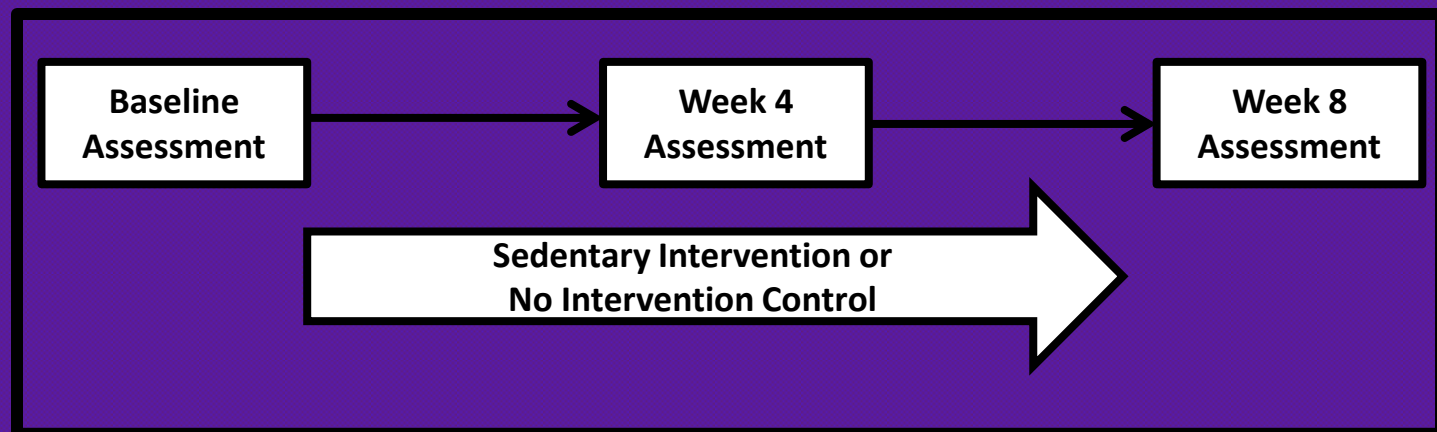
No
intervention
provided

10 hours/week
imposed
sedentary
time for 8
weeks

Methods

Assessments at baseline, 4 weeks and 8 weeks

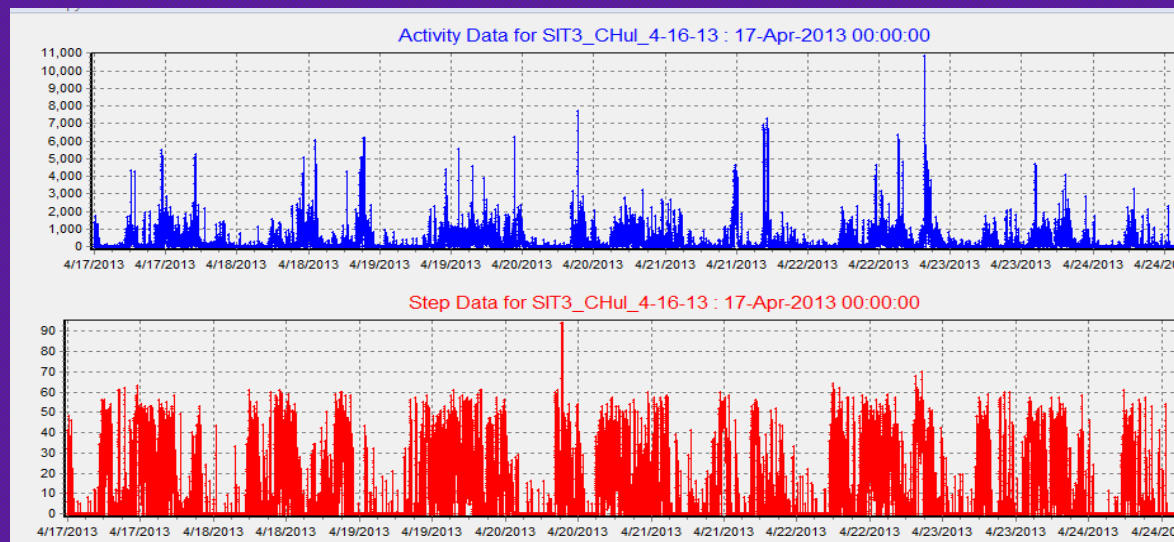
- Diet: 3-Day Food Record
- Physical Activity: Accelerometry
- Markers of CVD and inflammation
- Body Composition: Dual Energy X-ray Absorptiometry
- Height
- Weight



Physical Activity Assessments: Accelerometry



| | | AvgEE(mod) | AvgEE(vig) | Time(sed) | Time(light) | Time(mod) | Time(vig) | %Time |
|---|------|------------|------------|-----------|-------------|-----------|-----------|-------|
| 1 | 1.09 | 3.45 | 9.46 | 582 | 501 | 333 | 22 | 40.4 |
| 2 | 1.06 | 3.76 | 8.93 | 689 | 462 | 257 | 32 | 47.8 |
| 3 | 1.16 | 3.55 | 8.3 | 541 | 474 | 413 | 12 | 37.5 |
| 4 | 1.07 | 3.48 | 11.98 | 528 | 608 | 298 | 6 | 36.6 |
| 5 | 0.99 | 3.94 | 10.82 | 708 | 505 | 178 | 49 | 49.7 |
| 6 | 1.13 | 3.64 | 9.2 | 518 | 501 | 371 | 50 | 35.9 |
| 7 | 1.12 | 3.49 | 8.43 | 643 | 522 | 265 | 10 | 44.6 |
| 8 | 1.04 | 3.37 | 7.0 | 1185 | 170 | 84 | 1 | 82.3 |



Dietary Intake: 3-Day Food Records



3-Day Food Record

NAME: Example

DATE: _____

| Meal B Breakfast L Lunch D Dinner S Snack | Time | Place H Home R Restaurant (List Name) O Other | Food <i>Be very specific, include name brands</i> | Preparation • How did you cook it • What did you add to it | Serving Size |
|---|------|---|--|--|------------------------|
| B | 8am | H | Cheerios | | 1.5 cups |
| | | | Skim Milk | | 1 cup |
| L | 12pm | H | Chicken Breast, skinless | Grilled (with Mrs. Dash) | 1 Medium Breast (4 oz) |
| | | | Green Leaf Lettuce | Salad | 2 cups |
| | | | Cherry Tomatoes | In Salad | 4 |
| | | | Cucumber | In Salad | ½ cup |
| | | | Italian Dressing, Kraft Light Done Right | In Salad | 2 Tbsp. |
| | | | Pineapple | Canned, in juice | 1 cup |
| S | 3pm | H | Blueberry Yogurt, Yoplait Light | | 6 oz container |
| D | 6pm | H | Orange Roughy | Baked | 1 filet (5 oz) |
| | | | Sweet Potato | Baked | 1 Medium |
| | | | Margarine, Promise | On Sweet Potato | 1 tsp. |
| | | | Broccoli, Frozen | Steamed | 1 cup |
| | | | Strawberries | Fresh | 1 cup |
| S | 7pm | H | Almonds, unsalted | Unsalted | 10 whole |

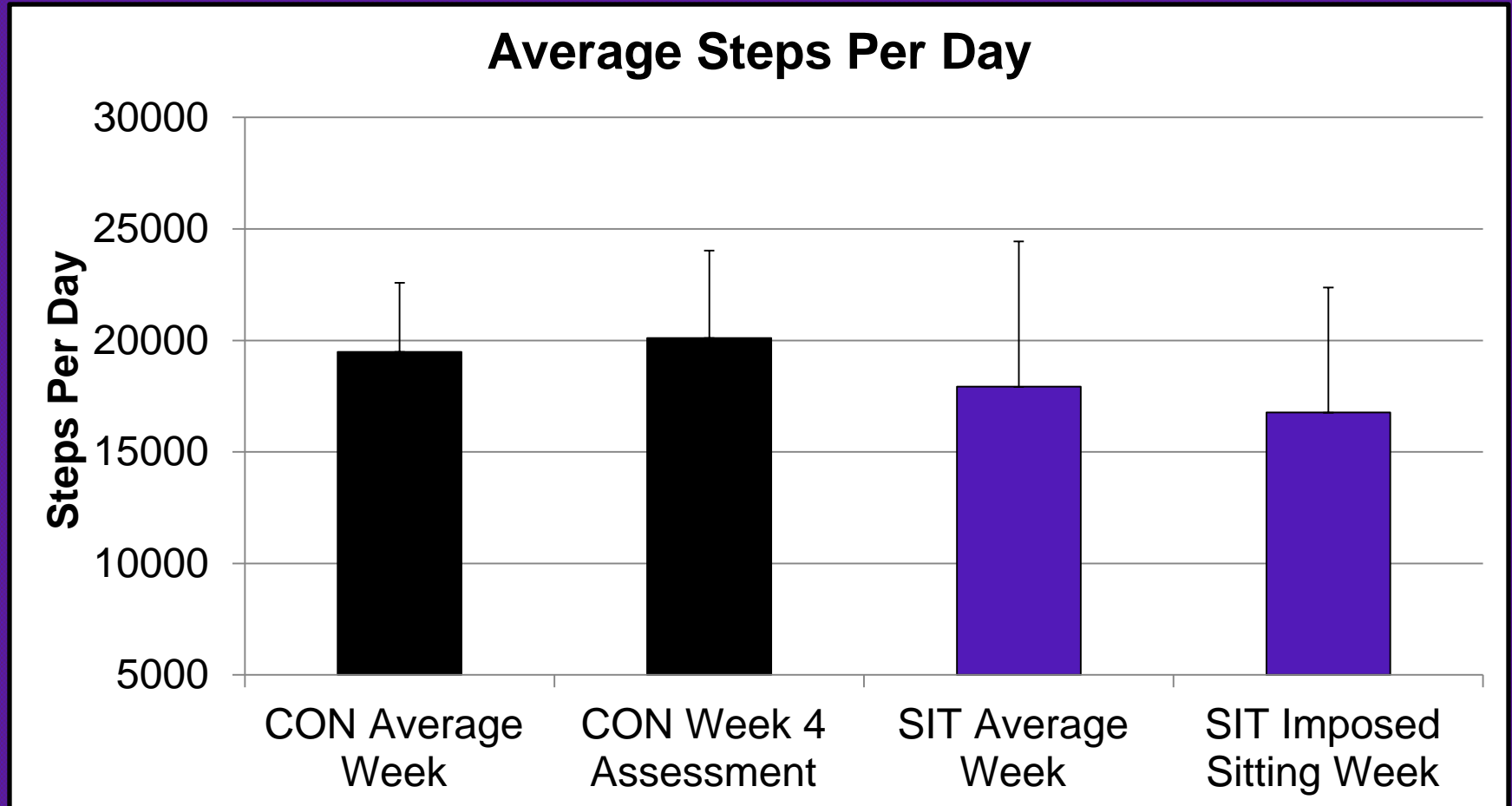
Statistical Analyses

- SPSS Version 19.0
- Repeated measures mixed ANOVA
 - Changes in physical activity and dietary behaviors between and within groups across assessment periods
- Chi-squared tests
 - Association between group membership and changes in physical activity and dietary intake
- Statistical significance set at $p < 0.05$

Baseline Demographics

| | CON Group (n=8) | | SIT Group (n=8) | | |
|---------------------------------|--------------------|-----------------|--------------------|-----------------|-----------------|
| | mean \pm SD | range | mean \pm SD | range | <i>p</i> -value |
| Age (yr) | 21.6 \pm 1.4 | 19 – 24 | 22.4 \pm 3.4 | 18 – 29 | 0.575 |
| Body Mass (kg) | 69.6 \pm 12.4 | 55.3 – 86.6 | 73.5 \pm 13.3 | 50.2 – 87.7 | 0.547 |
| Height (cm) | 171.5 \pm 12.9 | 152.0 – 187.6 | 173.6 \pm 12.3 | 155.5 – 188.5 | 0.743 |
| Body Fat % | 20.6 \pm 10.3 | 8.8 – 35.6 | 17.5 \pm 7.4 | 7.9 – 32.8 | 0.490 |
| MVPA (min/day) | 155.8 \pm 111.0 | 10.0 – 333.0 | 185.9 \pm 60.9 | 119.1 – 284.4 | 0.512 |
| Average Steps (per day) | 18,526 \pm 3,714 | 14,853 – 26,222 | 17,816 \pm 5,117 | 11,238 – 27,902 | 0.755 |
| Sedentary Time (min/day) | 789.5 \pm 322.3 | 469.4 – 1,309.4 | 684.1 \pm 91.0 | 542.6 – 837.9 | 0.388 |
| Kilocalories per day | 2,501 \pm 1,087 | 1,098 – 4,459 | 2,734 \pm 894 | 1,593 – 4,381 | 0.648 |
| % Carbohydrate | 47.2 \pm 6.0 | 38.7 – 56.4 | 46.5 \pm 10.0 | 30.9 – 63.9 | 0.858 |
| % Protein | 17.1 \pm 3.0 | 13.0 – 21.1 | 19.7 \pm 7.5 | 12.1 – 32.3 | 0.371 |
| % Fat | 34.5 \pm 6.0 | 27.4 – 46.0 | 29.7 \pm 6.0 | 20.8 – 38.1 | 0.129 |

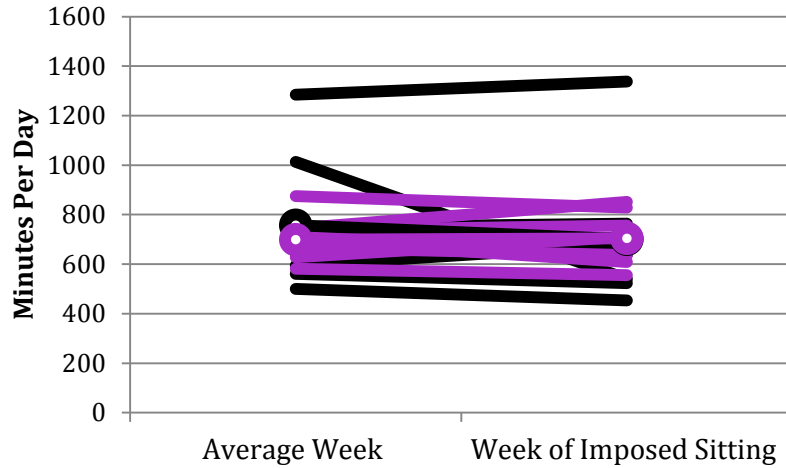
Physical Activity Results



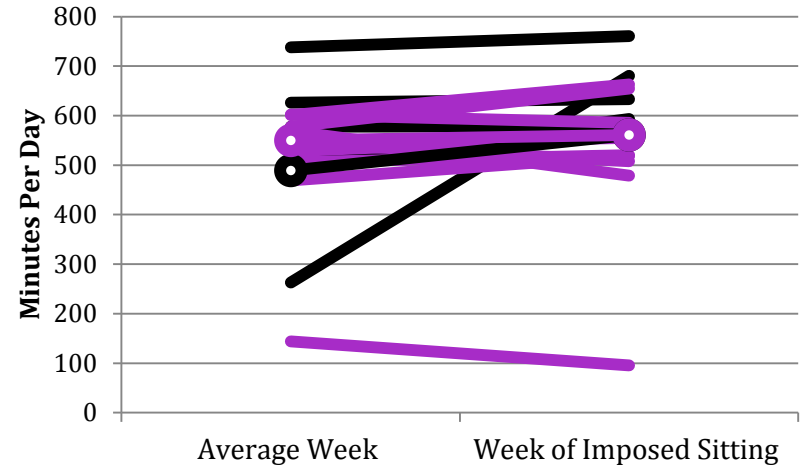
There were no differences in average steps between or within groups when comparing an average week to a week of imposed sitting ($p > 0.05$).

Physical Activity Results

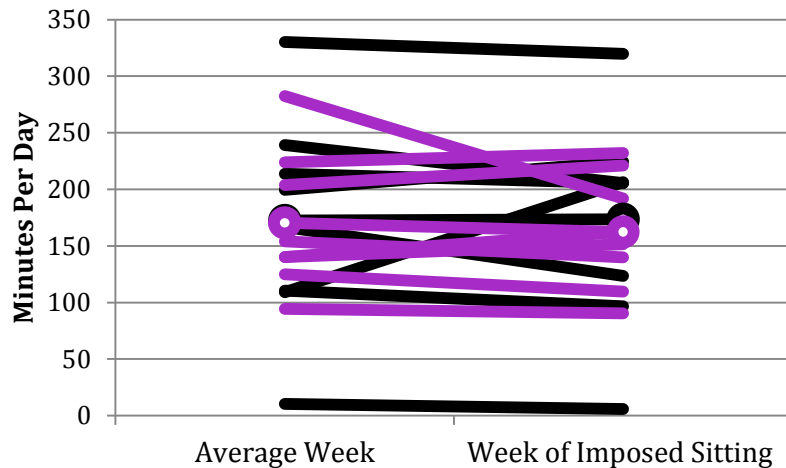
Sedentary Time



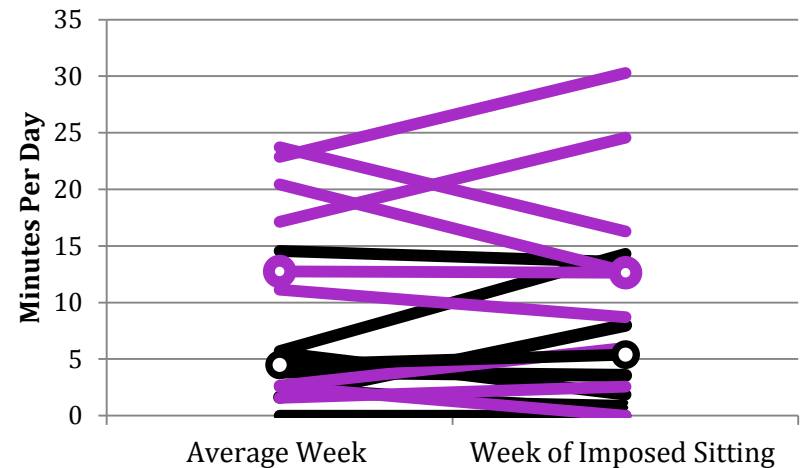
Light Time



Moderate Time



Vigorous Time

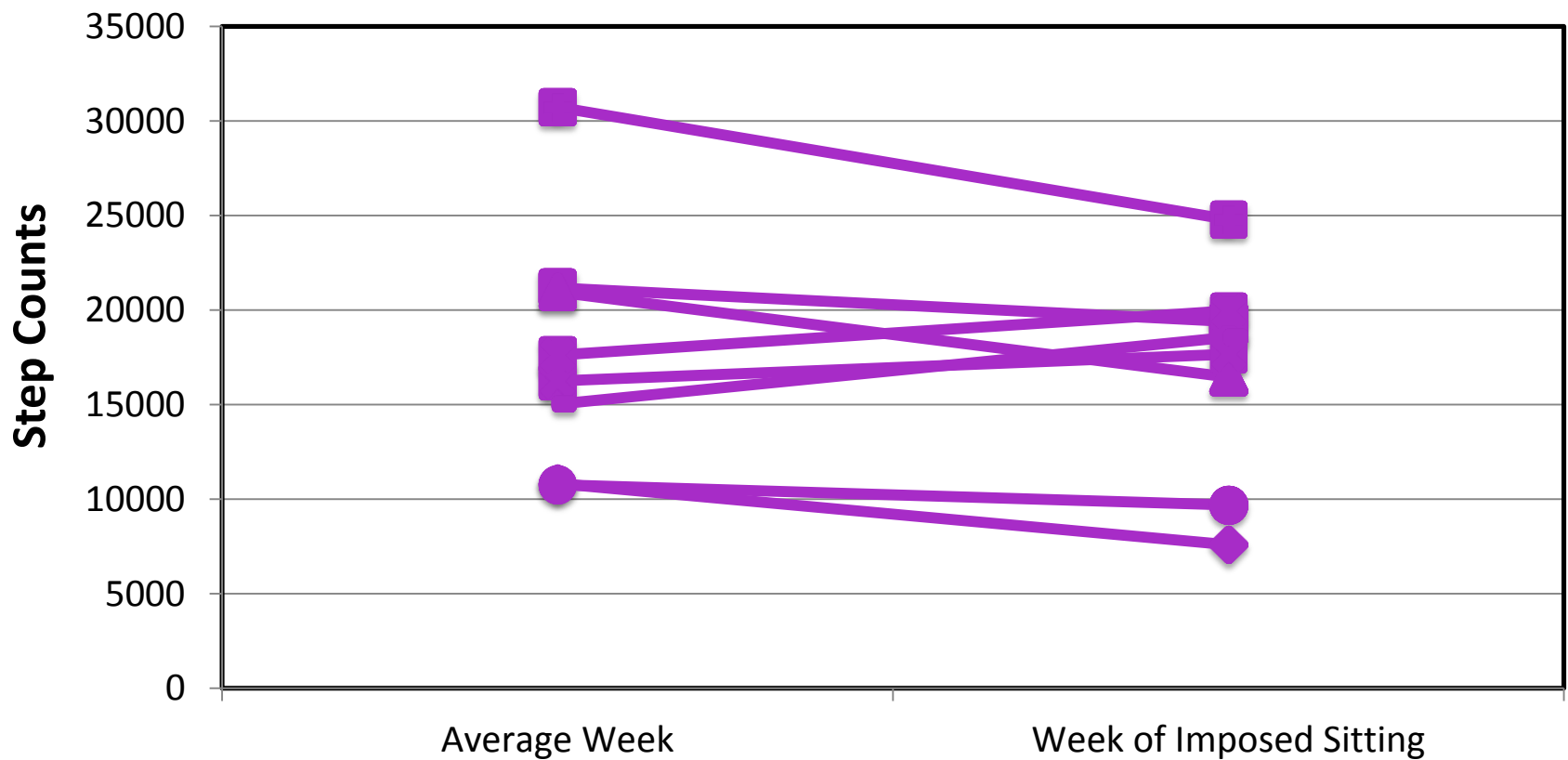


Physical Activity Results

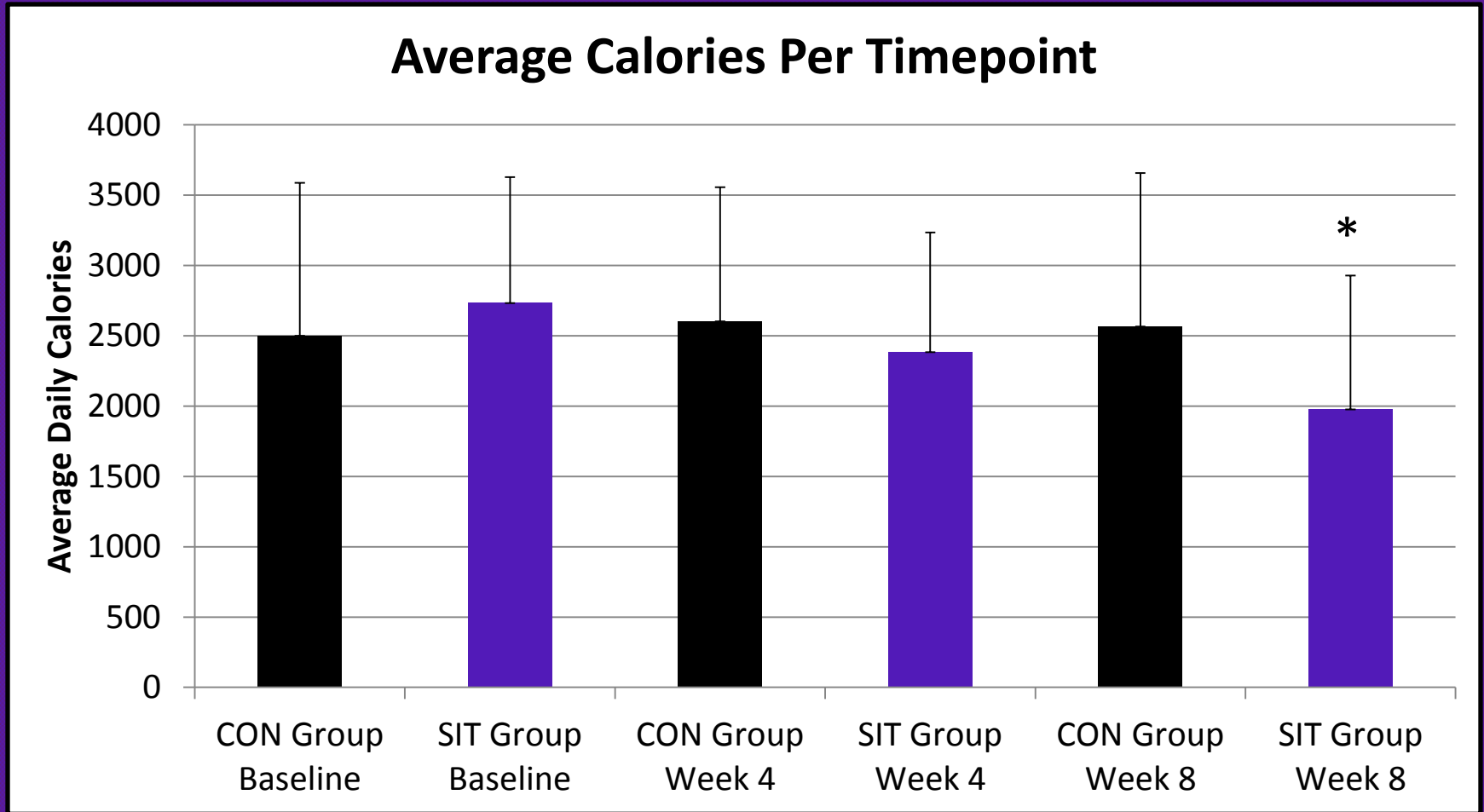
- No changes in total steps ($p=0.287$), sedentary ($p=0.366$), light ($p=0.293$), moderate ($p=0.656$) or vigorous ($p=0.701$) physical activity
 - Typical week vs. imposed sitting week
- A significantly greater proportion of SIT (4/8) participants decreased steps compared to CON (1/8) participants ($p<0.001$)

Physical Activity Results

SIT Group Average Daily Steps



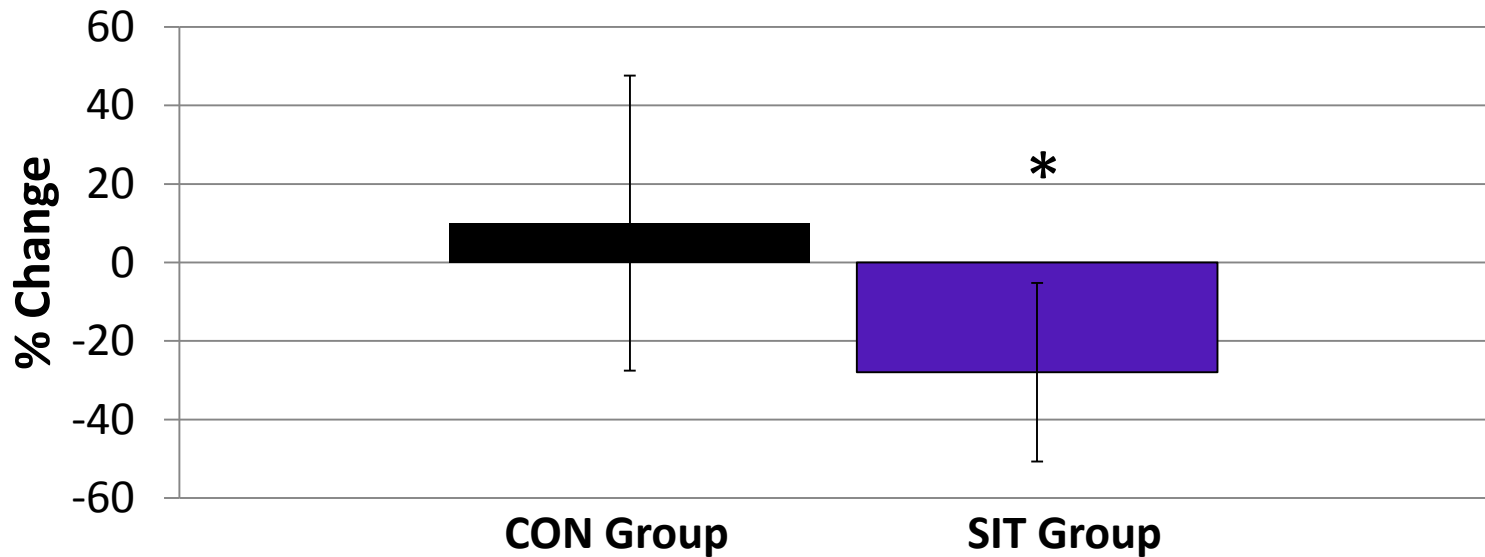
Dietary Intake Results



***Statistically significant decrease in total calories from baseline to week 8 in SIT only ($p= 0.012$)**

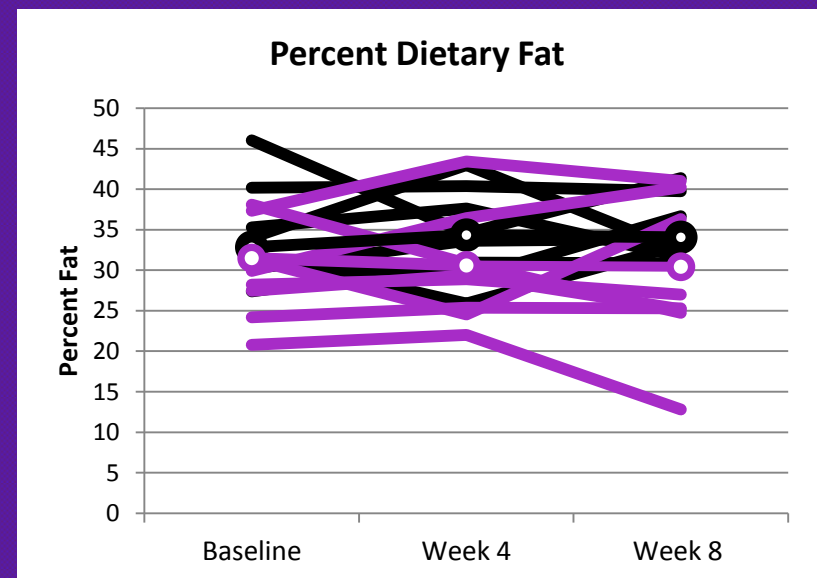
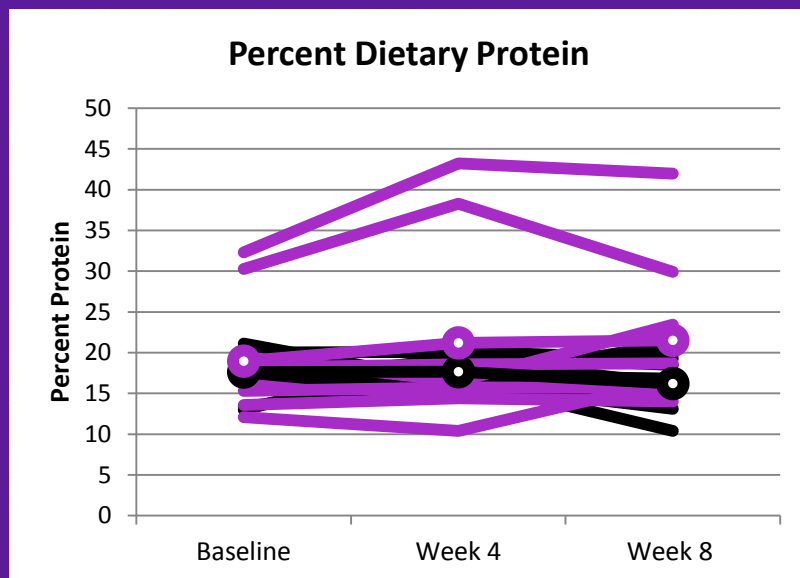
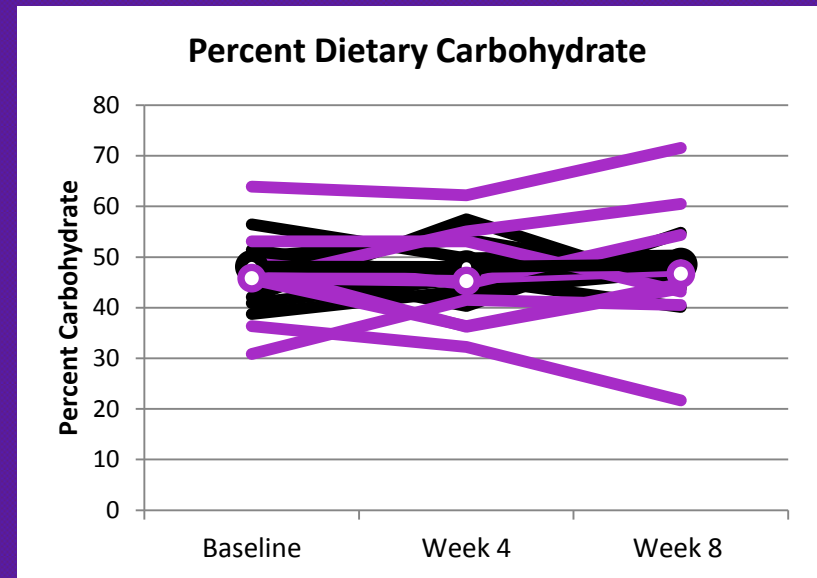
Dietary Intake Results

Baseline to 8-week Percentage Change Calories



Average caloric intake decreased significantly in the SIT group by approximately 28% compared to the CON group, where average caloric intake increased by approximately 10%. Error bars indicate standard deviation. *CON vs SIT were statistically different at $p < 0.05$ level.

Dietary Intake Results



Discussion

- In response to imposed sedentary time, physically active adults
 - Did not change physical activity behaviors
 - Decreased caloric intake
- Possible dietary compensation to imposed sitting in physically active adults
- A greater proportion of SIT participants decreased steps
 - Possibility of future negative health outcomes

Alignment with Previous Research

Epstein (2002)

- Children increased caloric intake and decreased energy expenditure
- Our dietary intake results are in contrast



Saunders (2014)

- Children did not change physical activity levels or dietary intake after full day of sitting
- Our physical activity findings are consistent, but dietary intake results are in contrast

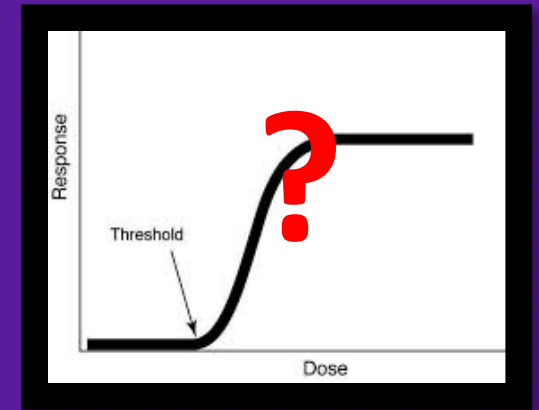
Experimental Strengths

- Long-term intervention
- Two cohorts over two semesters
- Monitored sedentary sessions
- Minimal recall bias
- Objectively measured physical activity
- No participant drop-out



Future Directions

- Dose-response relationship
- Obtain fuller picture of the day
- Different study groups
- Further research to understand complexity of behavior change and the impacts on chronic-disease risk profiles



References

1. Healy, G. N., Matthews, C. E., Dunstan, D. W., Winkler, E. A., & Owen, N. (2011). Sedentary time and cardio-metabolic biomarkers in US adults: NHANES 2003–06. *European heart journal*, ehq451.
2. Katzmarzyk, P. T., Church, T. S., Craig, C. L., & Bouchard, C. (2009). Sitting time and mortality from all causes, cardiovascular disease, and cancer. *Med Sci Sports Exerc*, 41(5), 998-1005.
3. Chomistek, A. K., Manson, J. E., Stefanick, M. L., Lu, B., Sands-Lincoln, M., Going, S. B., ... & Eaton, C. B. (2013). Relationship of Sedentary Behavior and Physical Activity to Incident Cardiovascular Disease Results From the Women's Health Initiative. *Journal of the American College of Cardiology*, 61(23), 2346-2354.
4. Seguin, R., Buchner, D. M., Liu, J., Allison, M., Manini, T., Wang, C. Y., ... & LaCroix, A. Z. (2014). Sedentary Behavior and Mortality in Older Women: The Women's Health Initiative. *American journal of preventive medicine*, 46(2), 122-135.
5. McGavock, J. M., Anderson, T. J., & Lewanczuk, R. Z. (2006). Sedentary lifestyle and antecedents of cardiovascular disease in young adults. *American journal of hypertension*, 19(7), 701-707.
6. Hamburg, N. M., McMackin, C. J., Huang, A. L., Shenouda, S. M., Widlansky, M. E., Schulz, E., ... & Vita, J. A. (2007). Physical inactivity rapidly induces insulin resistance and microvascular dysfunction in healthy volunteers. *Arteriosclerosis, thrombosis, and vascular biology*, 27(12), 2650-2656.
8. Bey, L., & Hamilton, M. T. (2003). Suppression of skeletal muscle lipoprotein lipase activity during physical inactivity: a molecular reason to maintain daily low-intensity activity. *The Journal of physiology*, 551(2), 673-682.

References

9. Hu, F. B., Li, T. Y., Colditz, G. A., Willett, W. C., & Manson, J. E. (2003). Television watching and other sedentary behaviors in relation to risk of obesity and type 2 diabetes mellitus in women. *Jama*, 289(14), 1785-1791.
10. Cameron, A. J., Welborn, T. A., Zimmet, P. Z., Dunstan, D. W., Owen, N., Salmon, J., ... & Shaw, J. E. (2003). Overweight and obesity in Australia: the 1999-2000 Australian diabetes, obesity and lifestyle study (AusDiab). *Medical Journal of Australia*, 178(9), 427-432.
11. Tremblay, M. S., Colley, R. C., Saunders, T. J., Healy, G. N., & Owen, N. (2010). Physiological and health implications of a sedentary lifestyle. *Applied Physiology, Nutrition, and Metabolism*, 35(6), 725-740.
12. Sedentary Behaviour Research Network. 2012. Standardized use of the terms “sedentary” and “sedentary behaviours”. *Appl Physiol Nutr Metab*. 37: 540–542.
13. "How Much Physical Activity Do Adults Need?" *Centers for Disease Control and Prevention*. Centers for Disease Control and Prevention, 01 Dec. 2011. Web. 01 Dec. 2013.
14. Epstein, L. H., Paluch, R. A., Consalvi, A., Riordan, K., & Scholl, T. (2002). Effects of manipulating sedentary behavior on physical activity and food intake. *The Journal of pediatrics*, 140(3), 334-339.
15. Dale, D., Corbin, C. B., & Dale, K. S. (2000). Restricting opportunities to be active during school time: do children compensate by increasing physical activity levels after school?. *Research Quarterly for Exercise and Sport*, 71(3), 240-248.
16. Saunders, T. J., Chaput, J. P., Goldfield, G. S., Colley, R. C., Kenny, G. P., Doucet, E., & Tremblay, M. S. (2014). Children and youth do not compensate for an imposed bout of prolonged sitting by reducing subsequent food intake or increasing physical activity levels: a randomised cross-over study. *British Journal of Nutrition*, 111(04), 747-754.

Sedentary Break

Public Health Field Experience Presentation



Riley County Research and Extension

Preceptor: Ginny Barnard, MPH

January-May, 2014



Riley County Research and Extension



- Extends education and research into communities, worksites and homes
- “Dedicated to a safe, sustainable, competitive food and fiber system and to strong, healthy communities, families, and youth through integrated research, analysis and education.” (Riley County, 2013)

Field Experience Preceptor

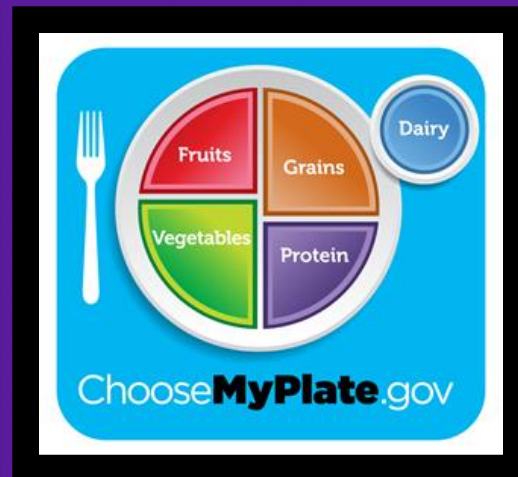


- Virginia (Ginny) Barnard, MPH
- Family and Consumer Sciences Agent
- Specialty Areas:
 - Food and Nutrition
 - Food Safety
 - Health and Safety
 - Indoor Environments
- Organizes and runs the Walk Kansas program and nutrition education lessons at local elementary schools

Focus and Scope of Field Experience



- Walk Kansas Program
- Junior Master Gardener Series
- Nutrition Education for elementary schools



Learning Objectives

1. Understand how to organize and implement a community-wide physical activity program
2. Identify successful recruitment methods and ways to reach diverse groups in Riley County
3. Recognize and implement ways to keep participants motivated in their physical activity and nutrition efforts
4. Gain an understanding of how public health works in a community-wide setting

Walk Kansas Background

- Eight week community-wide health promotion program
 - Physical Activity
 - Healthy Eating
- State-wide program
- Teams of 6-8 members
- Participants log physical activity minutes and fruit/vegetable consumption



Walk Kansas Background

- Team members select a challenge for themselves
 - Challenge 1: Walk Across Kansas
 - Each member: 150 minutes MVPA per week
 - Challenge 2: Walk Across Kansas and Back
 - Each member: Five hours of physical activity per week
 - Challenge 3: Walk Around the Perimeter of Kansas
 - Each member: Six hours of physical activity per week



Walk Kansas Effectiveness Research

- Community-wide programs and social support campaigns show strong evidence for increasing PA levels (Kahn et al. 2002)
- Walk Kansas is effective in increasing MVPA levels (Estabrooks et al., 2008)
 - Increase in PA dependent upon PA levels at baseline
 - Significant increase in moderate ($p < 0.001$) and vigorous ($p < 0.001$) activity for those inactive at baseline



Walk Kansas Activities

Preparation for Walk Kansas

- Created, updated and delivered documents for recruitment
- Modified participant packet information
- Online registration and apparel ordering system
- Entered teams into the database and organized team files

Walk Kansas 2014

An 8-week healthy lifestyle challenge!
March 16 - May 10



Walk Kansas
celebrate healthy living

Walk Kansas is a team-based program that will help you and others lead a healthier life by being more active, making better nutrition choices, and learning positive ways to deal with stress.

You can participate by gathering a team of 6 people, register the team in your local program, and start your journey toward a healthier life!

General information about Walk Kansas is available at: www.walkkansas.org

For local program information, contact:

Riley County Research and Extension
110 Courthouse Plaza
Room B220
Manhattan, KS 66502



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Walk Kansas Kick-Off Event

- Organized and held a kick-off event
- Manhattan Town Center Mall
- Activities included:
 - Mall Walk
 - Door Prizes
 - Apparel Sales
 - Group interaction and team-building



Walk Kansas Activities

During the Walk Kansas program

- Set up online reporting system, usernames and passwords
- Contacted participants with problems
- Emailed participants each week
 - Weekly newsletters
 - Captain's letters





Celebration Event Activities

- Planned, organized and hosted celebration event
- Prepared food
- Contacted local businesses for donations
- Provided team statistics
- Distributed program evaluation surveys







Walk Kansas Evaluation Surveys

2. During the 8 weeks of Walk Kansas, I reached the minimum goal for physical activity – 150 minutes of moderate/vigorous activity per week.



| # | Answer | Bar | Response | % |
|---|--------|--|----------|-----|
| 1 | Yes |  | 72 | 86% |
| 2 | No |  | 12 | 14% |
| | Total | | 84 | |

3. If you answered "yes" to the previous question, please indicate how confident you are in your ability to continue this amount of physical activity over the next 6 months.





| # | Answer | Bar | Response | % |
|---|----------------------|--|----------|-----|
| 1 | Completely confident |  | 33 | 46% |
| 2 | Confident |  | 30 | 42% |
| 3 | More often than not |  | 8 | 11% |
| 4 | Somewhat confident |  | 1 | 1% |
| 5 | Not confident | | 0 | 0% |
| | Total | | 72 | |

Walk Kansas Evaluation Surveys

7. During the 8 weeks of Walk Kansas I ate more fruits and/or vegetables.



| # | Answer | Bar | Response | % |
|---|--------|---|----------|-----|
| 1 | Yes |  | 60 | 72% |
| 2 | No |  | 23 | 28% |
| | Total | | 83 | |

8. If you answered yes to the previous question, indicate how confident you are that you will continue to eat this amount of fruits and/or vegetables over the next 6 months.











| # | Answer | Bar | Response | % |
|---|----------------------------|---|----------|-----|
| 1 | Strongly agree |  | 29 | 47% |
| 2 | Agree |  | 25 | 40% |
| 3 | Neither Agree nor Disagree |  | 6 | 10% |
| 4 | Disagree |  | 2 | 3% |
| 5 | Strongly Disagree | | 0 | 0% |
| | Total | | 62 | |

Walk Kansas Evaluation Surveys

9. As a result of this program I have adopted healthier lifestyle habits.

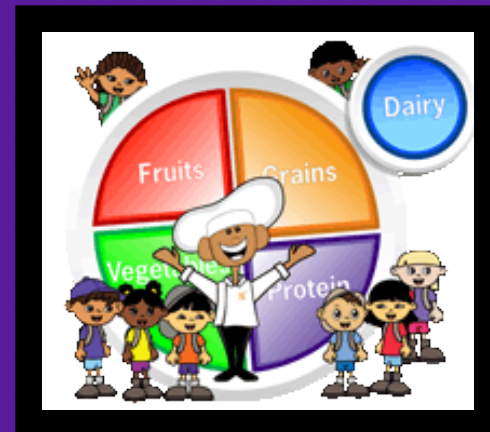
| # | Answer | Bar | Response | % |
|---|--------|--|----------|-----|
| 1 | Yes |  | 64 | 79% |
| 2 | No |  | 17 | 21% |
| | Total | | 81 | |

10. If you experienced any physical or mental changes as a result of this program, check all that apply.

| # | Answer | Bar | Response | % |
|----|------------------------------|--|----------|-----|
| 1 | Increased energy |  | 39 | 59% |
| 2 | Increased endurance |  | 23 | 35% |
| 3 | Increased muscle strength |  | 24 | 36% |
| 4 | Increased flexibility |  | 14 | 21% |
| 5 | Lower blood pressure |  | 11 | 17% |
| 6 | Lower cholesterol |  | 7 | 11% |
| 7 | Better attitude |  | 41 | 62% |
| 8 | Better able to manage stress |  | 15 | 23% |
| 9 | Improved sleep |  | 22 | 33% |
| 10 | Decreased weight |  | 18 | 27% |

Nutrition Education Background

- Gardening and nutrition education at local elementary schools
- Four weeks of gardening instruction/planting
 - Part of Junior Master Gardener series
- Five weeks of nutrition education



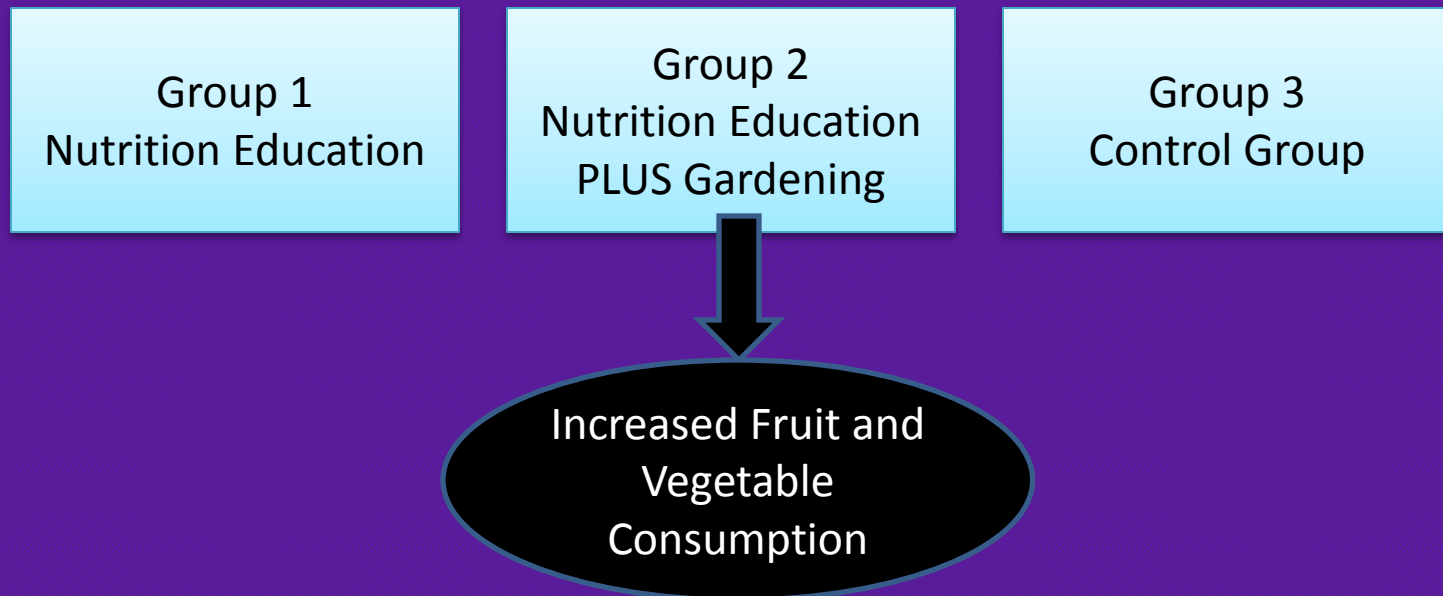
School-Based Nutrition Education Effectiveness Research

- School-based nutrition education can be effective in increasing the nutrition knowledge
(Contento et al., 1992)
 - Short-term instruction increases knowledge, skills and self-efficacy, but does not significantly lead to behavior change
 - Consistent, long-term programs needed for food choice behavior changes



Garden-Enhanced Nutrition Education Research

- Garden-enhanced nutrition programs can increase children's preference for vegetables (Morris et al., 2002)
- McAleese and Rankin (2007)
 - Effectiveness of garden-enhanced nutrition education in increasing students' fruit and vegetable consumption



Garden-Enhanced Nutrition Education

- Local elementary schools
- Gardening lessons involved:
 - Types of plants
 - Cycle from farms to harvest to our plates
 - Planting, weeding and watering

Site Selection Survey

You are trying to decide the best place to put your garden. Circle one number for each line. 1 = not very good and 5 = excellent

Location of Site #1

| | | | | | |
|-------------------------------------|---|---|---|---|---|
| Area has sunlight | 1 | 2 | 3 | 4 | 5 |
| Area is near a water source | 1 | 2 | 3 | 4 | 5 |
| Area has good soil | 1 | 2 | 3 | 4 | 5 |
| Area is near where tools are stored | 1 | 2 | 3 | 4 | 5 |
| Area is close by and easy to get to | 1 | 2 | 3 | 4 | 5 |

Add up all of the numbers you circled and write the total in the box.

Total Score for Site #1



Nutrition Education

- Five weeks of instruction (45 minutes per session)
- Topics Covered
 - Vitamins and Minerals
 - Carbohydrates
 - Fats
 - Protein
 - Water
- Ended each lesson with the preparation of a snack
 - Air-popped popcorn, bean dip with vegetables, fruit smoothies, fresh garden salads



Nutrition Education Workbook Pages

6 Nutrient Categories

1) Fat

Provides _____ to the body.

1 gram of fat = _____ calories (energy).

Fat is divided into two categories:

1) _____

→ are hard at room temperature

→ examples: stick of butter/margarine

2) _____

→ are liquid at room temperature

→ examples: vegetable oils



2) Carbohydrates



Body's main source of _____.

1 gram of carbohydrate = _____ calories (energy).

If you skip _____, your body may run _____ on energy.

Examples of carbohydrates:

vegetables, fruits, table sugar, rice, bread, pasta

3) Protein

Provides _____ to the body.

1 gram of protein = _____ calories (energy).

Protein helps your body _____, _____, and _____ disease.

Examples of protein:

meat, poultry, fish, eggs, beans, peas, nuts, and dairy products



4) Water



Provides _____ calories.

Water helps your body _____ nutrients, _____ waste, and _____ body temperature.

Your body is _____ water!

Your blood is _____ water!

Sources of water:

plain water, milk, juice, sports drinks, and many foods
(watermelon is over 90% water!)

5) Vitamins

Provide _____ calories.

Only needed in _____ amounts.

They help the body:

→ build tissue

→ regulate body function

→ help other nutrients do their job

Sources of vitamins:

fruits, vegetables, whole grains, nuts, meats, milk



6) Minerals

Provide _____ calories.

Promote good health while regulating body functions AND become part of your _____, _____, and _____.

Your bones need _____, _____, and _____ to grow.

Your blood needs _____ to help red blood cells carry oxygen to all parts of your body.

Alignment with Public Health Competencies

Biostatistics

- Survey method for Walk Kansas
- Analyzed baseline demographic data and compiled a report
- Learned the proper use of measurement techniques, data acquisition and analysis of data



Environmental Health

- Topics in gardening and nutrition education
- Food safety regarding handling and washing of garden vegetables



Alignment with Public Health Competencies

Epidemiology

- Reading and critical analysis of published literature
- Ethical research practices, potential biases, maintenance and use of epidemiological data

Healthcare Administration

- Gained insight into the ways public health impacts the health of our communities
- Learned that public health professionals have a key role in society's healthcare, by promoting disease prevention and healthy lifestyles

Alignment with Public Health Competencies

Social and Behavioral Sciences

- Promoted physical activity and nutrition in several areas of the community
- Helped to provide opportunities for successful behavior change
- Best laid-out programs are meaningless if people don't have access or a willingness to participate

Conclusion

- Education and experience gained through the MPH program has changed the way I view the world and our nation's public health
- My education, research and field experience have given me the skills to advance the mission of the public health profession
- I will continue on at Kansas State University for a PhD in Human Nutrition (Public Health Nutrition)

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References

1. Riley County Research and Extension. (2014). Riley County. Retrieved July 1, 2014, from www.riley.ksu.edu.
2. Contento, I.R., Manning, A.D., & Shannon, B. (1992). Research perspective on school-based nutrition education. *Journal of Nutrition Education*, 24(5), 247-260.
3. Estabrooks, P. A., Bradshaw, M., Dzewaltowski, D. A., & Smith-Ray, R. L. (2008). Determining the impact of Walk Kansas: applying a team-building approach to community physical activity promotion. *Annals of Behavioral medicine*, 36(1), 1-12.
4. Morris, J. L., & Zidenberg-Cherr, S. (2002). Garden-enhanced nutrition curriculum improves fourth-grade school children's knowledge of nutrition and preferences for some vegetables. *Journal of the American Dietetic Association*, 102(1), 91-93.
5. McAleese, J. D., & Rankin, L. L. (2007). Garden-based nutrition education affects fruit and vegetable consumption in sixth-grade adolescents. *Journal of the American Dietetic Association*, 107(4), 662-665.
6. Kahn, E. B., Ramsey, L. T., Brownson, R. C., Heath, G. W., Howze, E. H., Powell, K. E., Stone, E. J., Rajab, M. W., & Corso P. (2002). The effectiveness of interventions to increase physical activity: A systematic review. *American journal of preventative medicine*. 224s, 73-107.

Questions?