



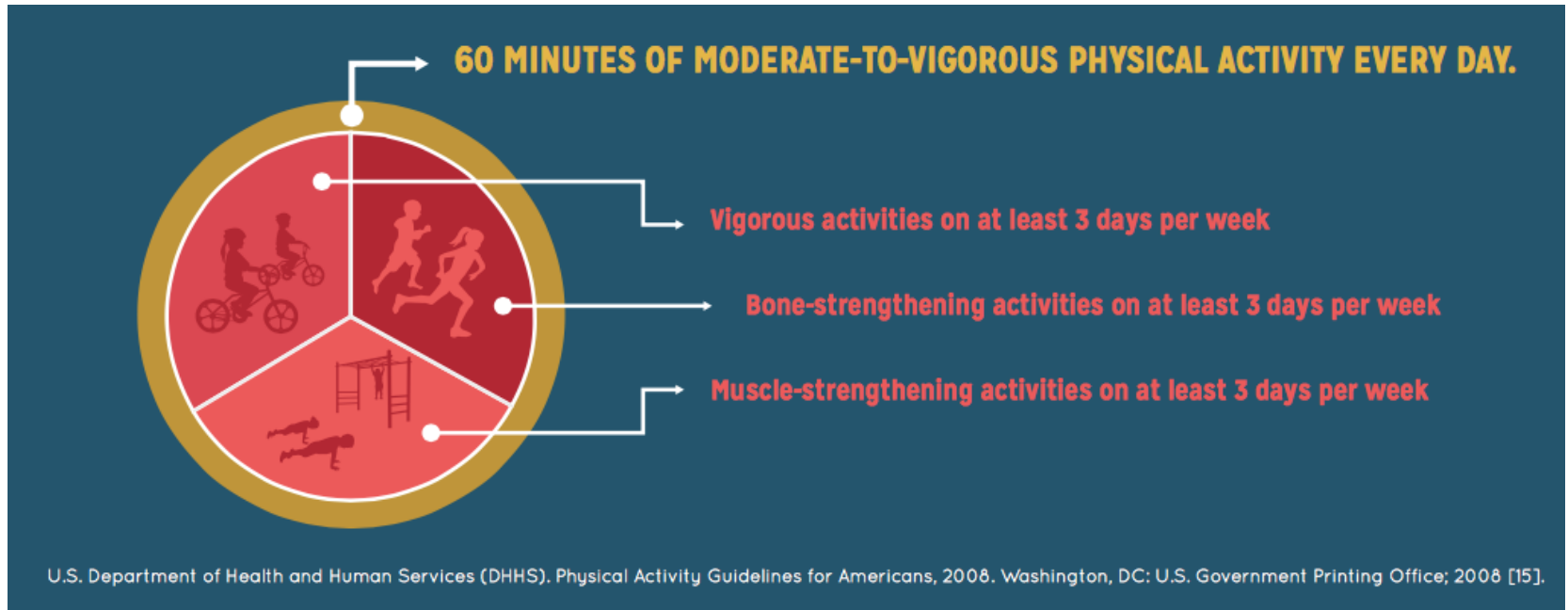
PHYSICAL ACTIVITY DURING RECREATION YOUTH SPORT: DOES COACH TRAINING HAVE AN INFLUENCE?

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7/23/15

Presentation Overview

- Research Study
 - Background
 - Methods
 - Results
 - Discussion
 - Conclusion
- Field Experience Report
 - Introduction
 - Methods
 - Results
 - Conclusion

Background



- NHANES data indicates 42% of 6-11 year olds and 8% of 12-15 year-olds are meeting guidelines (Troiano et al., 2008)



60 Minutes or More a Day

Where Kids Live, Learn, and Play



Physical activity is critical for overall health.

Learn more: www.health.gov/paguidelines



Sources: Synder T, Dillow S. Digest of education statistics 2010. Washington, DC: National Center for Education Statistics, Institute of Education Sciences, US Department of Education; 2011. Federal Interagency Forum on Child and Family Statistics. America's children in brief: key national indicators of well-being, 2006. Washington, DC: US Government Printing Office; 2006. Sirard JR, Riner WF, McIver KL, Pate RR. Physical activity and active commuting to elementary school. Med Sci Sports Exerc. 2005;37(12):2062-9. J Pediatr. 1991;118(2):215-9. Bloom B, Cohen RA, Freeman G. Summary health statistics for U.S. children: National Health Interview Survey, 2011. Vital Health Stat 10. 2012 Dec;(254):1-148. Heitzler CD, Martin SL, Duke J, et al. Correlates of physical activity in a national sample of children aged 9-13 years. Prev Med. 2006;42(4):254-60.

KANSAS STATE
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Minutes or More a Day

Where Kids Live, Learn, and Play

- Physical Activity Settings: Physical Education (PE)
 - Guidelines $\geq 50\%$ MVPA (USDHHS, 2008)
 - Typical PE class $\leq 50\%$ (USDHHS, 2008)



Minutes or More a Day

Where Kids Live, Learn, and Play

- **Physical Activity Settings: Youth sport (YS)** (School Health Council on Sports Medicine and Fitness and Council on School Health, 2006; USDHHS, 2013; Kokko, Green, & Kannas, 2013)
 - 44 million children in the US participate in youth sport (National Council of Youth Sports, 2008)

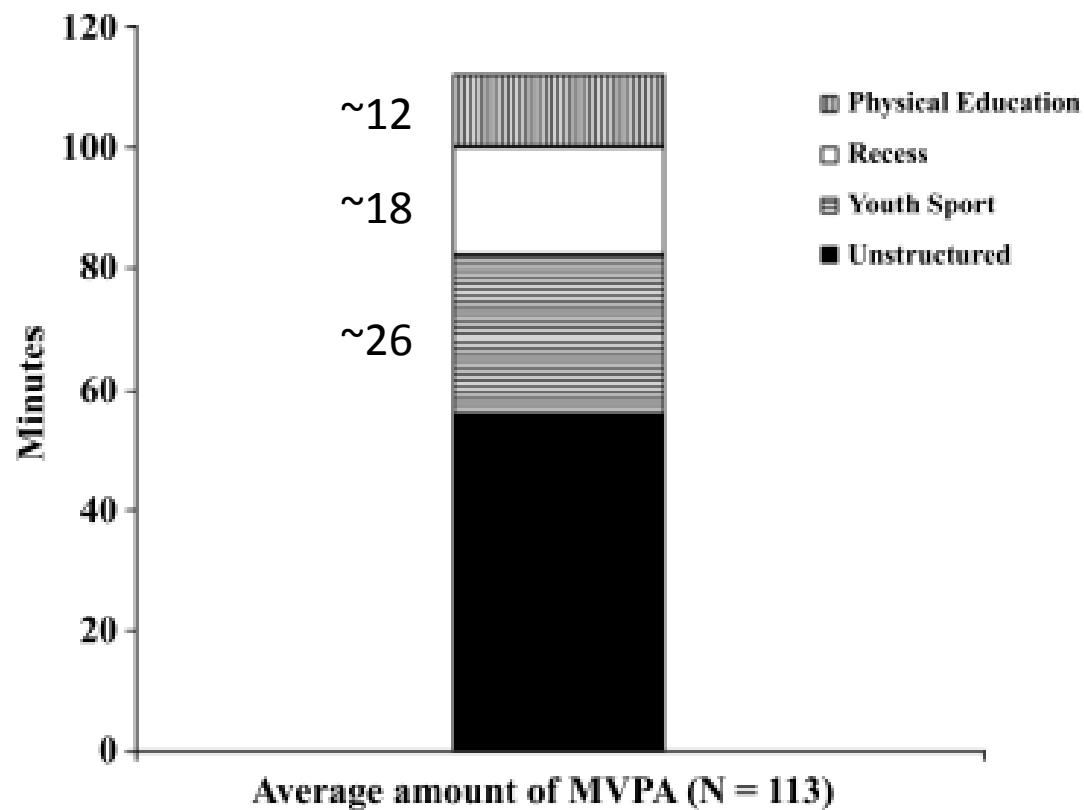


FIGURE 2—Contribution of youth sport, PE, recess, and unstructured activity to total daily MVPA.

(Wickel & Eisenmann, 2007)

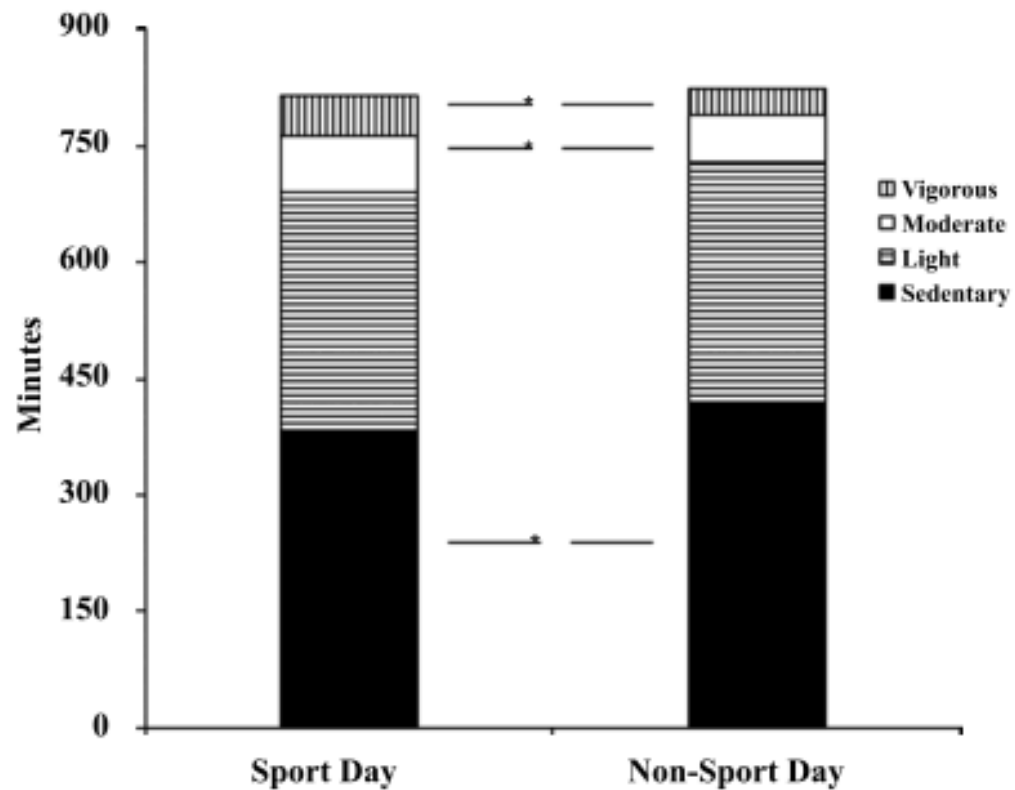


FIGURE 5—Distribution of sedentary, light, moderate, and vigorous physical activity on a sport and nonsport day ($N = 36$). * Significant difference between sedentary, moderate, and vigorous activity ($P < 0.05$).

Physical activity levels during youth sport

- Almost half of time is spent in sedentary or light PA (Guagliano, Rosenkranz, & Kolt, 2013; Leek et al., 2011; Sacheck et al., 2011; Van Den Berg & Kolen, 2015; Wickel & Eisenmann, 2007)
- 30-53% of time has been shown to be spent in MVPA depending on sport or game context (A. Cohen, McDonald, McIver, Pate, & Trost, 2011; Guagliano et al., 2013; Leek et al., 2011; Sacheck et al., 2011; Van Den Berg & Kolen, 2015; Wickel & Eisenmann, 2007)

- 
- Coaches are the primary leader of the youth sport setting and have the potential to influence child's PA during the session
 - Recreation program coaches are often volunteers with little or no coaching experience (Conroy & Coatsworth, 2006; Seefeldt & Ewing, 1997)

- Objectives

1. Report PA levels during practice time for parks and recreation youth flag football participants
2. Compare youth PA levels between teams with trained coaches versus untrained coaches, and between teams with experienced coaches versus inexperienced coaches

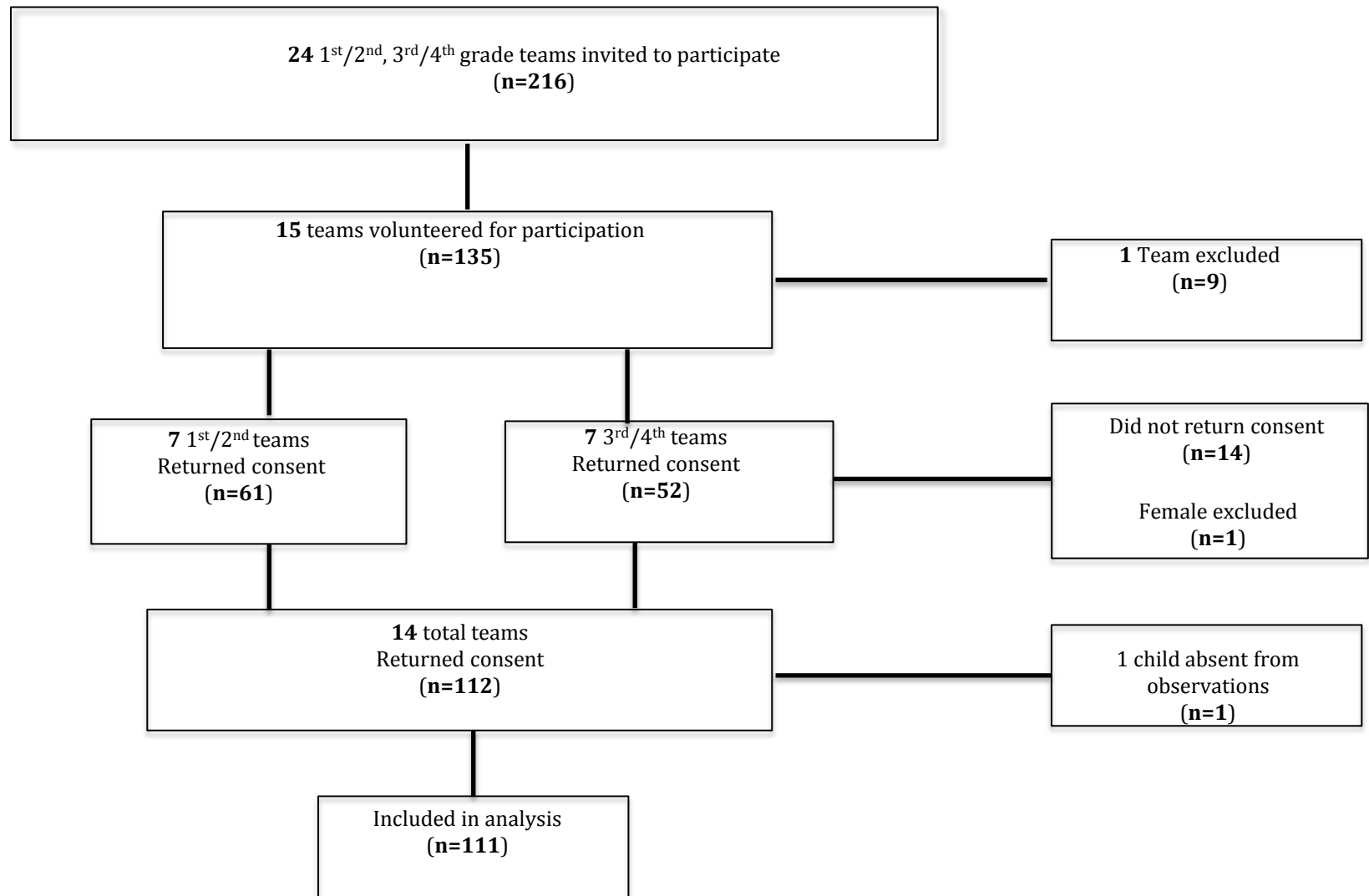
- Hypothesis

1. Children would spend less than 50% of flag football practice time in MVPA
2. Coaches who had received prior coach training or had prior experience coaching football would conduct practices that resulted in higher MVPA than untrained or inexperienced coaches

Methods

- Setting
 - Parks and Recreation program in Manhattan, Kansas
 - All flag football teams enrolled in the 1st/2nd grade or 3rd/4th grade program during the fall of 2014 were eligible to participate (24)
 - 15 coaches volunteered for participation

Recruitment and Consent Flow Chart



Methods, cont

- Measures: Physical Activity
 - Assessed by Actigraph GT1M accelerometer
(ActiGraph; Pensacola, FL; Cain, Sallis, Conway, Van Dyck, & Calhoon, 2013; Trost, Mciver, & Pate, 2005)
 - 15 second epochs (Cain et al., 2013; Trost et al., 2005)
 - Evenson cutpoint (Evenson, Catellier, Gill, Ondrak, & McMurray, 2008)
 - sedentary (≤ 100 counts per minute, (CPM))
 - light (101-2295 CPM),
 - moderate (2296-4011 CPM)
 - and vigorous (≥ 4012 CPM)



Methods

- Measurement-Physical Activity
 - PA assessed from schedule practice start time until practice completion
 - All boys arriving within 30 minutes of practice start time were included in analysis

Methods

- Measures-Classification of coach training and experience
 - Short Survey
 - Coach training
 - A degree related to coaching
 - Coach certification
 - Coach training workshop
 - National Youth Sport Coaching Association (NYSCA)

Methods

- Coach experience
 - Coached football at least once prior to the current season (any level)
 - Includes school competitive, non-school affiliated competitive, or recreation

Procedure

- Data collection
 - Attended 3 practices for each team
 - Placed accelerometers on kids as they arrived
 - Took accelerometers off as they left

Statistical Analysis

- Three-level model (team, time, child)
- Examined coach experience and training on PA responses
- Team, Team*Day, and Child as random effects

Statistical Analysis

- Performed 3 separate comparisons
 - Trained, untrained
 - NYSCA training, No NYSCA training
 - Experience, no experience

Results

Prior Coaching Experience, % (n)

Prior coaching football	71.4 (10)
Prior coaching non school competitive	21.4 (3)
Prior coaching school competitive	21.4 (3)
Prior coaching recreation/non-competitive	42.9 (6)
No prior coaching	14.3 (2)

Prior Coach Training, % (n)

Coaching Certification	21.4 (3)
Coaching Workshop	21.4 (3)
NYSCA	50.0 (7)
No Training	28.6 (4)

Results

- Practice duration
 - 27 to 90 minutes with a mean of 61.5 (SD = 8.6)

	% (SE)	Min (SE)
Sedentary	13.0 (1.1)	7.7 (0.5)
MVPA	34.0 (1.5)	19.9 (1.2)
VPA	12.0 (0.8)	6.8 (0.5)

Results

Least Squares Means estimate of sedentary, MVPA, and VPA percentage and minutes of practice time by coach characteristic

Coach Characteristic			
	%	%	<i>p</i> -value
	Training	No Training	
Sedentary	14.4	11.1	0.17
MVPA	33.3	35.9	0.50
VPA	11.3	12.1	0.68
	NYSCA	No NYSCA	
Sedentary	14	14.2	0.95
MVPA	34.7	32.7	0.56
VPA	12.1	10.7	0.43
	Coaching Experience	No Coaching Experience	
Sedentary	13.8	12.9	0.73
MVPA	34.1	33.8	0.92
VPA	11.6	11.1	0.79

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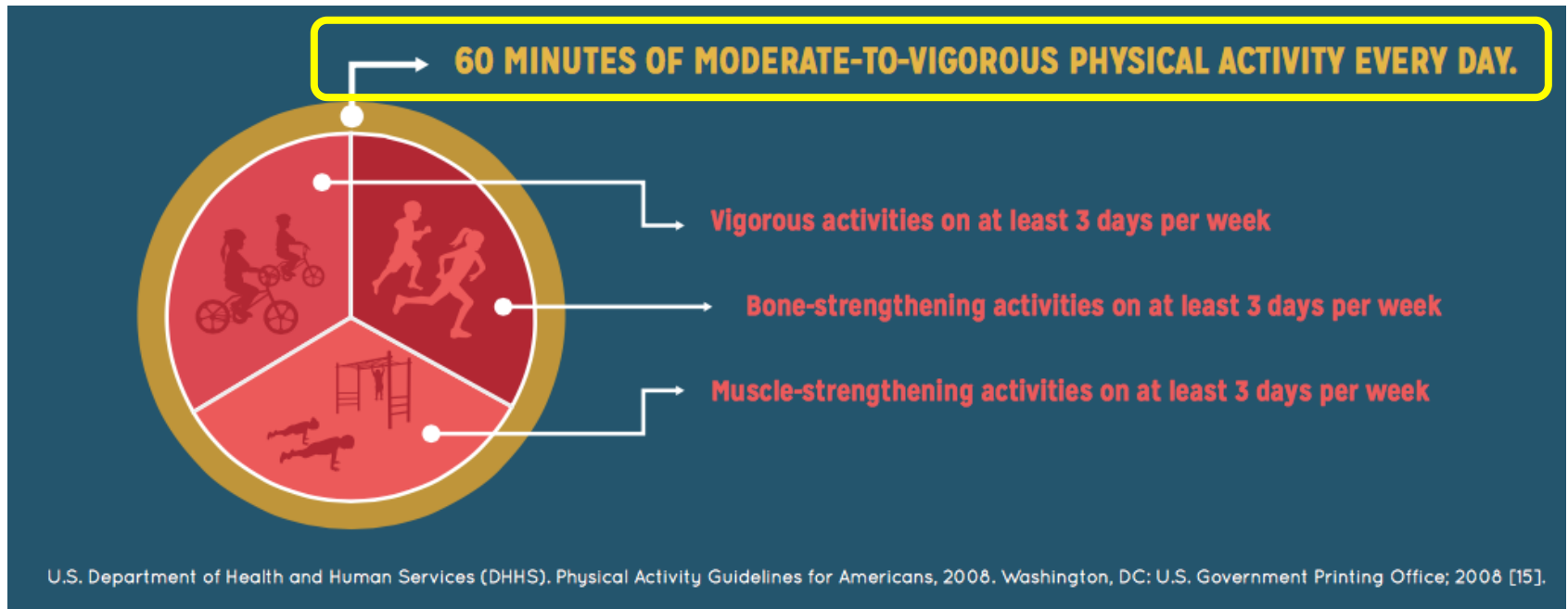
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Discussion

- Hypothesis 1
 - Children would spend less than 50% time in MVPA
 - Supported
- Hypothesis 2
 - Trained or Experienced coaches would conduct practices resulting in higher MVPA than untrained or inexperienced coaches
 - Not supported

Public Health Impact



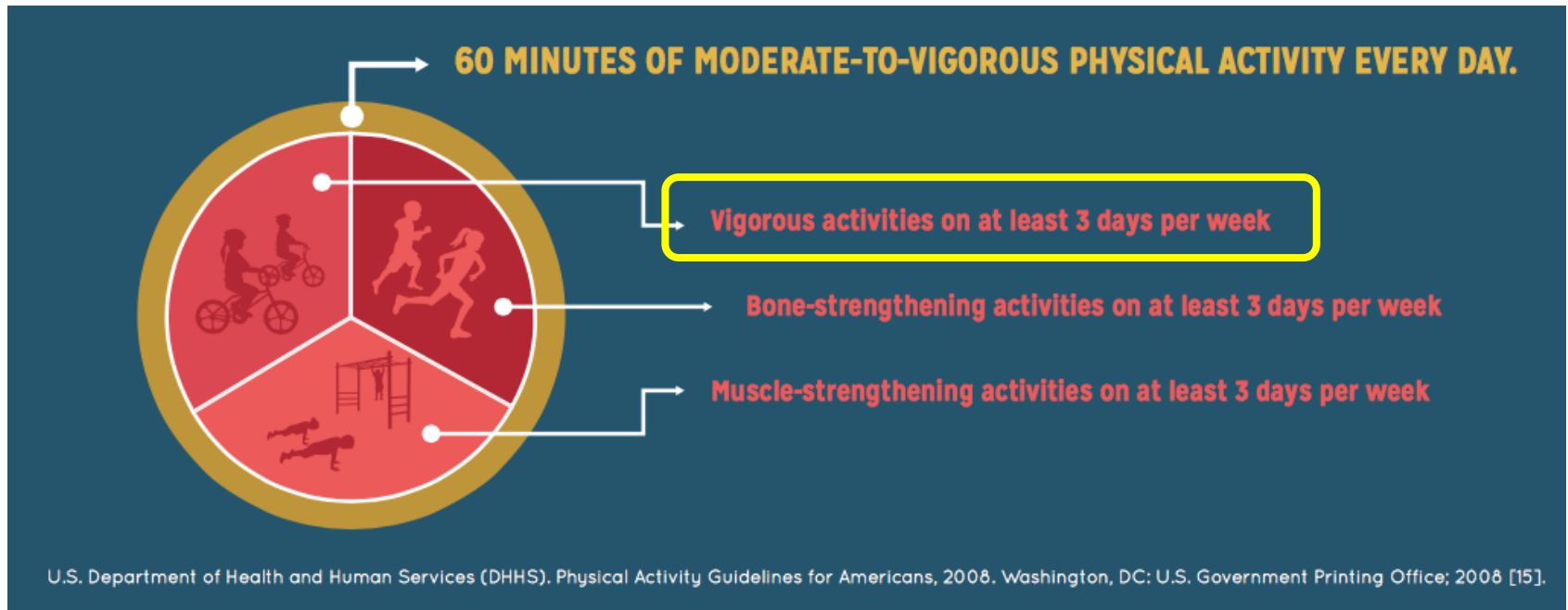
YS contributed ~20 minutes MVPA

Table 3: Least Squares Means estimate of sedentary, MVPA, and VPA percentage and minutes of practice time by coach characteristic

Coach Characteristic (n)	Sedentary Mean (SE)		MVPA Mean (SE)		VPA Mean (SE)	
	%	Min	%	Min	%	Min
All Teams (14)	13.0 (1.1)	7.7 (0.5)	34.0 (1.5)	19.9 (1.2)	12.0 (0.8)	6.8 (0.5)
Overall Trained (10)	14.4 (1.4)	8.7 (0.6)	33.3 (2.0)	19.4 (1.5)	11.3 (1.0)	6.5 (0.6)
No Training (4)	11.1 (1.9)	6.6 (0.7)	35.9 (3.3)	21.5 (2.5)	12.1 (1.7)	7.3 (1.1)
NYSCA Training (7)	14.0 (1.8)	8.0 (.8)	34.7 (2.4)	19.6 (1.9)	12.1 (0.6)	6.9 (.5)
No NYSCA Training (7)	14.2 (2.1)	8.5 (.9)	32.7 (2.4)	19.7 (1.9)	10.7 (1.6)	6.5 (1.1)
Coach Experience (10)	13.8 (1.5)	8.4 (0.7)	34.1 (2.0)	19.8 (1.6)	11.6 (1.0)	6.7 (0.7)
No Prior Coach Experience (4)	12.9 (2.1)	7.5 (1.0)	33.8 (3.0)	20.5 (2.5)	11.1 (1.5)	6.8 (1.1)

MVPA=moderate to vigorous physical activity; SE=standard error, NYSCA=National Youth Sport Coaching Association

Public Health Impact



YS contributed ~7 minutes

Public Health Impact

- VPA has been associated with inverse relationships of waist circumference, fat mass, SBP, and BMI (Carson et al., 2014; Steele, Van Sluijs, Cassidy, Griffin, & Ekelund, 2009)
- 7-15 minutes per day suggested to receive benefits (Hay et al., 2012; Martinez-Gomez et al., 2010)

Public Health Impact

- No recommendations exist for youth sport for MVPA
- Youth sport flag football contributed ~34%.
- If bumped up to 50%, could contribute an extra 10 minutes of MVPA per practice

Relationship to Other Research

A. Cohen et al., 2011

- Similar age group (5-10y)
 - Spent higher time sedentary (24%), higher MVPA (36.8%)
 - Used similar accelerometer methods (Evenson cutpoints)
 - Different sport (soccer)
 - shown to have higher MVPA than flag football (Wickel and Eisemann, 2007)

Relationship to Other Research

- 1 other study has examined Flag Football PA levels (Wickel & Eisenmann 2007)
- Found more time spent in vigorous (11min), and MVPA (28 min)
- Difficulty in comparing due to reporting units and accelerometer methods
 - Start/Stop times
 - Epoch length
 - Cutpoints

Importance of Training

- Recreation YS sport coaches are volunteers, often with little to no training
- Training to increase MVPA has shown success with settings that are not youth sport/people that do not have experience with teaching PE

Importance of Training

Training has been successful in

- PE
 - Spark (Sallis et al., 1997)
- Youth Sport
 - Basketball Camp (Guagliano et al 2014)
- After school
 - HOP’N After School (Dzewaltowski et al., 2010)
 - LET US Play (Weaver et al., 2014)

Limitations

- Small sample size
- Limited generalizability across other flag football programs

Strengths

- High participation rate (91% across all teams)
- Object measurement of PA
- Rigorous definition of practice start and stop time

Recommendations for Future Research

- Focus on physical activity as a primary outcome for coach training interventions
- Determine which coach training strategies in youth sport lead to increased MVPA without compromising other positive outcomes

Conclusion

- Youth sport contributes to children's daily MVPA (20 min)
- Room for improvement (goal of 50%)
- Current training programs showed no difference in PA levels
- Further research is needed to identify strategies to train volunteer coaches

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The seal of Kansas State University is partially visible on the left side of the slide. It features a circular design with the text "KANSAS STATE UNIVERSITY" and the year "1863".

Field Experience Report: A Food Waste Assessment of Two Elementary Schools

Background: Research and Extension

- Established in 1914
- Partners with the land grant university
- Brings education on agriculture and health to communities



KSU Research and Extension

5 Challenges



Background: The Food Waste Problem

The Food Waste Chain



Background: The Food Waste Problem

- 133 billion lbs., \$16.1 billion wasted in 2010 at the retail/consumer level (Buzby, Wells, & Hyman, 2014)
- 387 billion calories per day (Buzby, Wells, & Hyman, 2014)
- 96% ends up in landfills (Buzby, Wells, & Hyman, 2014)
- Decomposing food accounts for 20% of methane gas emissions (EPA, 2014)

Background: The Food Waste Problem

- USDA + EPA US Food Waste Challenge
- One target is schools
 - 29-43% of food taken is wasted (J. F. W. Cohen, Richardson, Parker, Catalano, & Rimm, 2014)



U.S. Food Waste Challenge

Reduce, Recover, Recycle

USDA Activity Form

Name of School:

City, State:

Website:

What activities will the school undertake in the next year? (Check all that apply.)

- ☐ Program to reduce the amount of excess food generated in the school
- ☐ Recover wholesome food from breakfasts and/or lunches to donate to feed people
- ☐ Recover food waste from breakfasts and/or lunches to feed animals
- ☐ Recover food waste from breakfasts and/or lunches for composting
- ☐ Recover food waste from breakfasts and/or lunches for energy generation or other uses
- ☐ Other

Methods

- Participants: 2 Elementary Schools
 - Manhattan Catholic School
 - Serves children pre-k to 8th grade
 - Places food orders and cooks food in house
 - Lee Elementary Feeding Site
 - Qualifies as a summer feeding site for USD-383
 - Serves food in house, has food cooked and delivered at USD 383 central kitchen



Methods

- Observation
 - Separate plate waste into 5 categories
 - Sharing table items
 - Liquids (milk)
 - Recycling
 - Food waste
 - Remaining trash



Methods

- Observation
 - Throughout lunch period, weigh and record amounts in each category
 - Record # of kids served
- Smarter Lunchroom Assessment (SLA)_(Just & Wansink, 2009)
 - Questions to pertaining to behavioral economics techniques



Since its founding in 2009 the Smarter Lunchrooms Movement has championed the use of evidence-based, simple low and no-cost changes to lunchrooms which can simultaneously improve participation and profits while decreasing waste. This tool can help you to evaluate your lunchroom, congratulate yourself for things you are doing well and identify areas of opportunity for improvement

Instructions

Read each of the statements below. Visualize your cafeteria, your service areas and your school building. Indicate whether the statement is true for your school by checking the box to the left. If you believe that your school does not reflect the statement 100% do not check the box on the left. After you have completed the checklist, tally all boxes with check marks and write this number in the designated area on the back of the form. This number represents your school's baseline score. The boxes which are not checked are areas of opportunity for you to consider implementing in the future. We recommend completing this checklist annually to measure your improvements!



Important Words

Service areas: Any location where students can purchase or are provided with food

Dining areas: Any location where students can consume the food purchased or provided

Grab and Go Meals: Any meal with components pre-packaged together for ease and convenience – such as a brown bag lunch or “Fun Lunch” etc.

Designated Line: Any foodservice line which has been specified for particular food items or concepts – such as a pizza line, deli line, salad line etc.

Alternative entrée options: Any meal component which could also be considered an entrée for students - such as the salad bar, yogurt parfait, vegetarian/vegan or meatless options etc.

Reimbursable “Combo Meal” pairings: Any reimbursable components available independently on your foodservice lines which you have identified as a part of a promotional complete meal – For example you decided your beef taco, seasoned beans, frozen strawberries and 1% milk are part of a promotional meal called the, “Mi Amigo Meal!” etc.

Non-functional lunchroom equipment: Any items which are either broken, awaiting repair or are simply not used during meal service – such as empty or broken steam tables, coolers, registers etc.

Good Rapport: Communication is completed in a friendly and polite manner

All Points of Sale: Any location where a register/pin-pad is located for example: deli-line, snack window, a la carte line, hot line, kiosks/ carts etc.

Focusing on Fruit

- ☐ At least two types of fruit are available daily
- ☐ Sliced or cut fruit is available daily
- ☐ Fruit options are not browning, bruised or otherwise damaged
- ☐ Daily fruit options are given creative, age-appropriate names



- ☐ Fruit is available at all points of sale (deli-line, snack windows, a la carte lines etc.)
- ☐ Daily fruit options are available in at least two different locations on each service line
- ☐ At least one daily fruit option is available near all registers (If there are concerns regarding edible peel, fruit can be bagged or wrapped)
- ☐ Whole fruit options are displayed in attractive bowls or baskets (instead of chaffing/hotel pans)
- ☐ A mixed variety of whole fruits are displayed together
- ☐ Daily fruit options are easily seen by students of average height for your school
- ☐ Daily fruit options are bundled into all grab and go meals available to students
- ☐ Daily fruit options are written legibly on menu boards in all service and dining areas

Promoting Vegetables & Salad

- ☐ At least two types of vegetable are available daily
- ☐ Vegetables are not wilted, browning, or otherwise damaged
- ☐ At least one vegetable option is available in all foodservice areas
- ☐ Individual salads or a salad bar is available to all students
- ☐ The salad bar is highly visible and located in a high traffic area
- ☐ Self-serve salad bar utensils are at the appropriate portion size or larger for all fruits and vegetable offered
- ☐ Self-serve salad bar utensils are smaller for croutons, dressing and other non-produce items
- ☐ Daily vegetable options are available in at least two different locations on each service line
- ☐ Daily vegetable options are easily seen by students of average height for your school
- ☐ A daily vegetable option is bundled into grab and go meals available to students
- ☐ A default vegetable choice is established by pre-plating a vegetable on some of the trays



- ☐ Available vegetable options have been given creative or descriptive names
- ☐ All vegetable names are printed/written on name-cards or product IDs and displayed next to each vegetable option daily
- ☐ All vegetable names are written and legible on menu boards
- ☐ All vegetable names are included on the published monthly school lunch menu

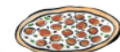
Moving More White Milk

- ☐ All beverage coolers have white milk available
- ☐ White milk is placed in front of other beverages in all coolers
- ☐ White milk crates are placed so that they are the first beverage option seen in all designated milk coolers
- ☐ White milk is available at all points of sale (deli-line, snack windows, a la carte lines etc.)
- ☐ White milk represents at least 1/3 of all visible milk in the lunchroom
- ☐ White milk is easily seen by students of average height for your school
- ☐ White milk is bundled into all grab and go meals available to students as the default beverage
- ☐ White milk is promoted on menu boards legibly
- ☐ White milk is replenished so all displays appear “full” continually throughout meal service and after each lunch period



Entrée of the Day

- ☐ A daily entrée option has been identified to promote as a “targeted entrée” in each service area and for each designated line (deli-line, snack windows, a la carte lines etc.)
- ☐ Daily targeted entrée options are highlighted on posters or signs
- ☐ Daily targeted entrée is easily seen by students of average height for your school
- ☐ Daily targeted entrées have been provided creative or descriptive names
- ☐ All targeted entrée names are printed / written on name-cards or product IDs and displayed next to each respective entrée daily



Results

- Manhattan Catholic
 - 10 Observation Days
 - 897 lbs. of food waste
 - 25 gallons of milk
 - $\sim 1/3^{\text{rd}}$ lb. and 1.2 ounces of milk per child per day



Results

- Lee Summer Feeding Site
 - 9 observation days
 - 480 lbs. of food
 - 26 gallons of milk
 - ~1/4lb of food and 2oz of milk per child per day



Results

- Lee Feeding Site

- Sharing table

- 115 chocolate milk
 - 46 white milk
 - 12 bananas
 - 11 bags of carrots
 - 14 apples
 - 39 packets of sauce

- 90 lbs recyclable

- SLA Results

- <30

Strategies to Decrease Plate Waste

- Extend lunch period
- Move recess before lunch
- SLA strategies
- Donating food
- Composting
- Recycling



Scheduling recess before lunch
can **reduce plate waste by**

**AS
MUCH
AS** **30%**



Extending lunch periods from

20 TO 30

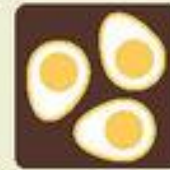
minutes reduced plate
waste by nearly one-third



SMARTER LUNCHROOM STRATEGIES,

such as how foods are named and
where they are placed in the cafeteria,
can facilitate healthy choices
and increase fruit
and vegetable
consumption by

UP TO 70%



Conclusion

- Food waste is a problem in schools
- Policies need to be put in place to attempt to decrease plate waste, and redirect waste from landfills



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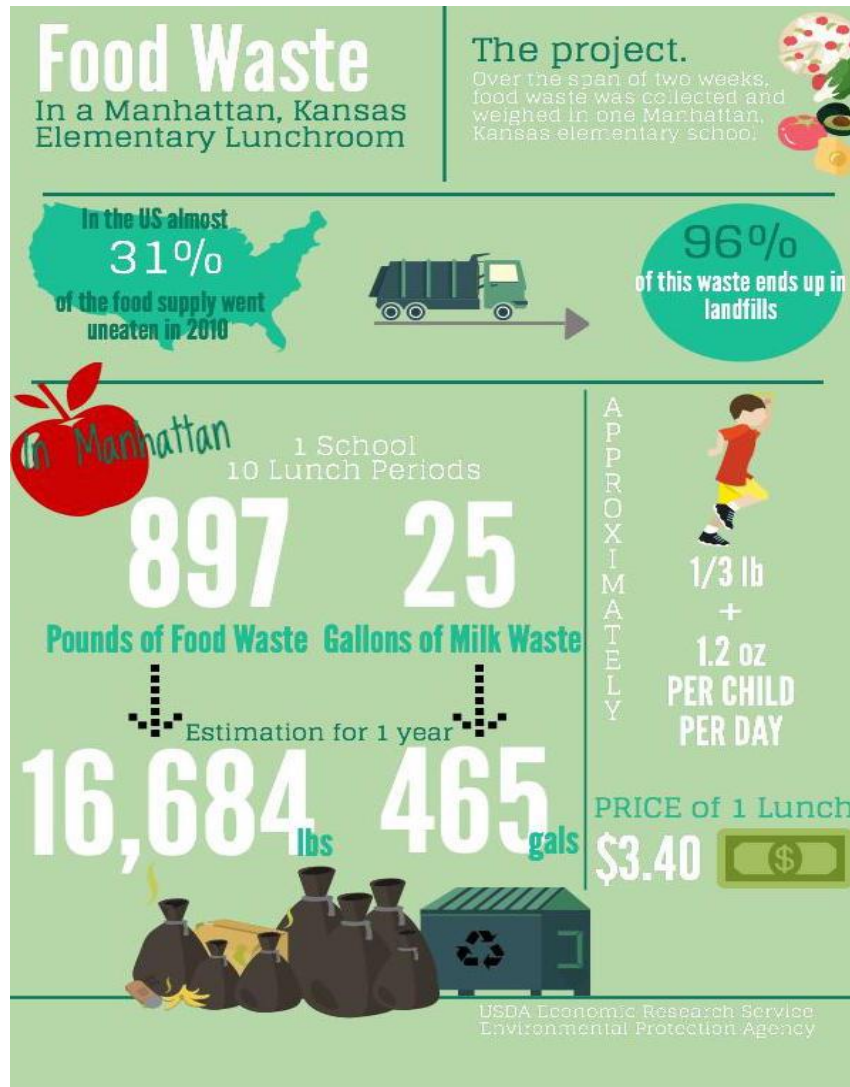
Acknowledgements

- Dr. David Dzewaltowski
- Dr. Ric Rosenkranz
- Dr. Brandon Irwin
- Manhattan Parks and Recreation
- Virginia Barnard
- Dr. Michael Cates
- Barta Stevenson

The seal of Kansas State University is partially visible on the left side of the slide. It features a circular design with the text "KANSAS STATE UNIVERSITY" and the year "1863".

Questions?

Supplemental Slide



Supplemental Slide

Food Waste

In a summer feeding program



The project.

Over the span of two weeks, food waste was collected and weighed in one Manhattan, Kansas elementary school

In the US almost

31%

of the food supply went uneaten in 2010



96%

of this waste ends up in landfills

In Manhattan

408

Pounds of Food Waste



26

Gallons of Milk Waste

90

Pounds of Recycling



115

UNOPENED

11 bags of carrots



+ 12 unpeeled bananas
chocolate milk 1/2 pints

46

UNOPENED

white milk 1/2 pints

14

whole apples



USDA Economic Research Service
Environmental Protection Agency

KANSAS STATE
UNIVERSITY

Supplemental Slide

Reducing Plate Waste

What Manhattan Schools Can Do



ASSESS

Perform a Food Waste Assessment to discover where the waste is coming from.



DECREASE WASTE

Incorporate strategies to decrease the amount of food wasted



REDIRECT

Redirect waste from landfills. Separate excess food, trash, and recyclables. Donate pre-packaged food, send food scraps to compost, and recycle.

ASSESS

Assess What is Being Wasted and Where it Comes From

-  Record all sources of food waste
-  Separate lunchroom waste into 4 categories: Food, Recycle, Donate, Trash
-  Weigh the pounds of waste in each category to give you an insight of what is being wasted

DECREASE WASTE

Incorporate Strategies Suggested by the USDA

-  Hold recess before lunch
-  Ensure lunch periods are at least 30 minutes
-  Become a 'Smarter Lunch Room'

REDIRECT WASTE

Set a School Goal with the USDA

-  Create sharing table within the lunch room for left over, packaged food, or donate it to the Flint Hills Breadbasket
-  Separate waste into different categories, such as unopened food, food scraps, recyclables, and trash.
-  Compost food scraps

Supplemental, CI

Physical Activity Intensity	% time (95% Confidence Interval)
Sedentary	13% (95% CI = 10.8%, 15.2%)
MVPA	34% (95% CI = 31.1%, 36.9%)
VPA	12% (95% CI = 10.4%, 13.6%)

Supplemental: Child Characteristics

Participants, n		111	Mother Education, %(n)	
Age, Years (SD)		7.9 (1.2)	Less than high school	1.0 (1)
Free or reduced lunch status, % (n)			High School	6.0 (6)
Not eligible		71.2 (74)	Some college or associate's degree	27.0 (27)
Free/Reduced		25.0 (26)	Graduated college	38.0 (38)
Do Not Know		3.6 (4)	Master's degree or above	28.0 (28)
Race/Ethnicity, % (n)			Father Education, % (n)	
Non-Hispanic Caucasian		77.7 (80)	Less than high school	0 (0)
Racial/Ethnic minority		22.3 (23)	High School	9.8 (9)
Parent Race/Ethnicity, % (n)			Some college or associate's degree	20.8 (20)
Non-Hispanic Caucasian		81.6 (84)	Graduated college	42.7 (41)
Racial/ethnic minority		18.4 (19)	Master's degree or above	26.0 (25)
Parent Gender, % (n)			Does not apply	1.0 (1)
Female		43.9 (47)		
Male		56.1 (60)		