

# The KaBOOM! Schoolyard Study: The Effect of Installed Play Equipment on Physical Activity of Elementary School Children Results of an Observational Study



Erin T. Baker, MS Ed  
Thomas Farley, MD MPH  
Janet Rice, PhD  
Jeanette Gustat, PhD



## **Tulane University Prevention Research Center**

Tulane University School of Public Health and  
Tropical Medicine

Member of Prevention Research Centers program of Centers for Disease  
Control and Obesity through cooperative agreement

#1-U48-DP-000047

# Potential of Installed Equipment for Physical Activity in Children

- Children who have access to safe play spaces are more physically active
  - Farley et al, AJP. 2007 Sep;97(9):1625-31.
- Previous studies indicate that playground equipment and markings can have effect on physical activity:
  - Type of play area (e.g. court, open field)
  - Availability of sports equipment
    - Verstraete et al, EJPH. 2006 Aug;16(4):415-9.
    - Hannon & Brown, Prev Med. 2008 Jan 26 (Epub ahead of print)
  - Presence of adult supervision
  - Installed play structures
    - Sallis et al, AJP. 2001 Apr;91(4):618-20.
    - Ridgers et al, Prev Med. 2007 May;44(5):393-7.

# Playgrounds and Schoolyards in New Orleans

- Joint project between KaBOOM! And Tulane PRC
  - Tulane University Prevention Research Center is a member of Prevention Research Centers program of CDC; conduct research to study impact of physical environment on obesity
  - KaBOOM! is the national non-profit that brings together businesses and communities to construct playgrounds for children in need.
- KaBOOM! launches Operation Playground:
  - Goal is to build 100 playgrounds in hurricane-affected Gulf Coast area
  - 25 built on New Orleans schoolyards
- 21 of 25 had no installed equipment prior to KaBOOM! build

# Research Question

Will the installation of stationary play equipment increase observed levels of physical activity in elementary school-aged children?

# Setting

- 4 public/charter elementary schoolyards in Orleans Parish
  - 2 schools had some equipment prior to KaBOOM! Build – Dibert and Einstein
  - 2 schools had no equipment – Bethune and Craig

# Installed Structures



# Methods

- Observed children K through 5<sup>th</sup> grade during recess pre- and post-build using the System for Observing Play and Leisure Activity in Youth (SOPLAY)
  - Momentary time sampling
  - Records physical activity level, gender, predominant activity, contextual factors
  - PA codes:
    - Sedentary – Lying, sitting, or standing
    - Walking
    - Very active – running, climbing, etc.
- Used 2 observers and averaged counts across observers

## Methods (cont.)

- 5-10 days of pre-build observations immediately before; 8-11 days post-build immediately after
- Averaged counts across pre-installation period and post-installation period
- Equipment included climbers, swings, slides, rock walls, basketball hoops, tetherball poles



# Dibert: Before

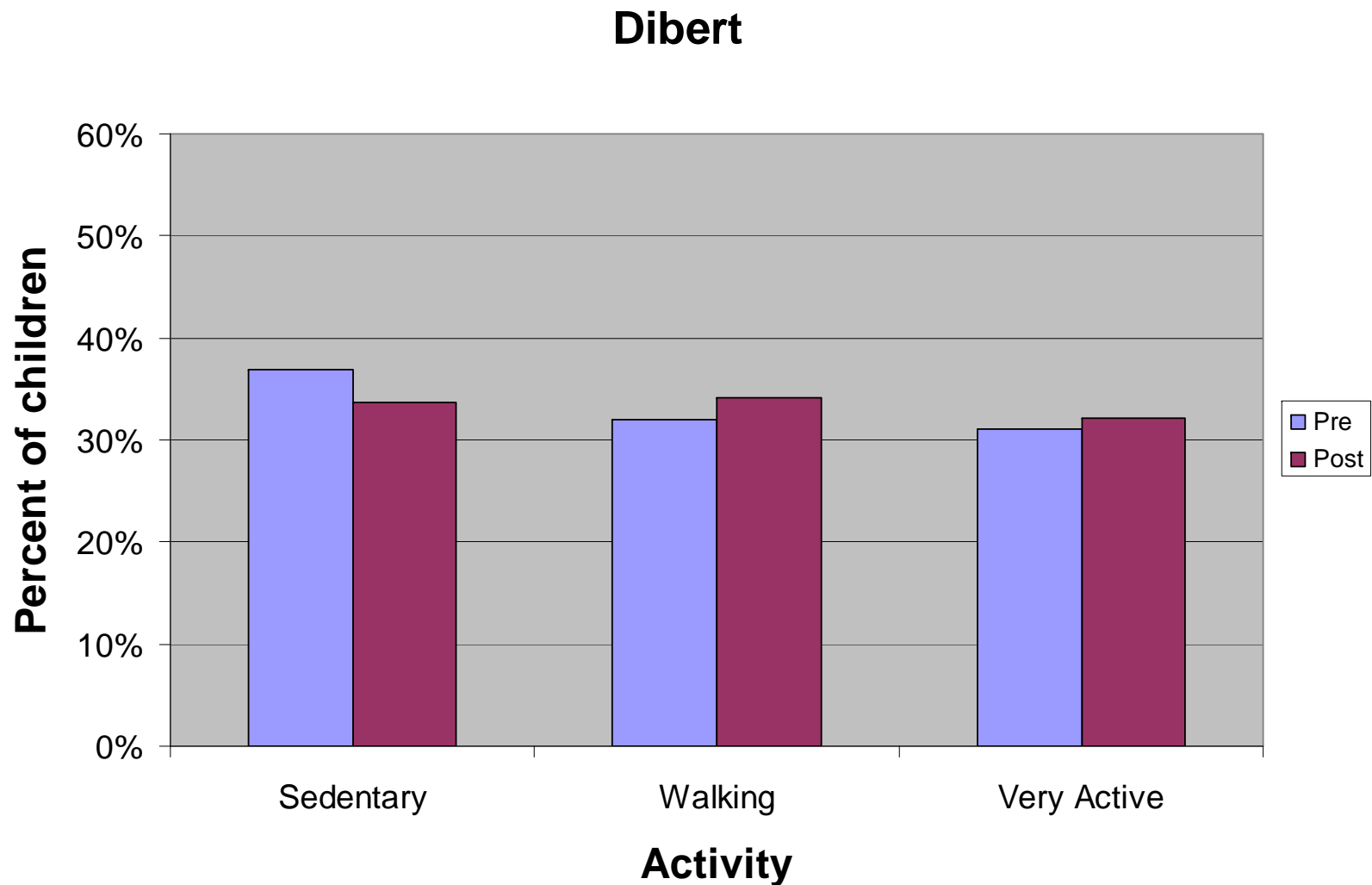


# Dibert: After



# Changes in Activity: Dibert

Equipment available pre-KaBOOM!



# Einstein: Before

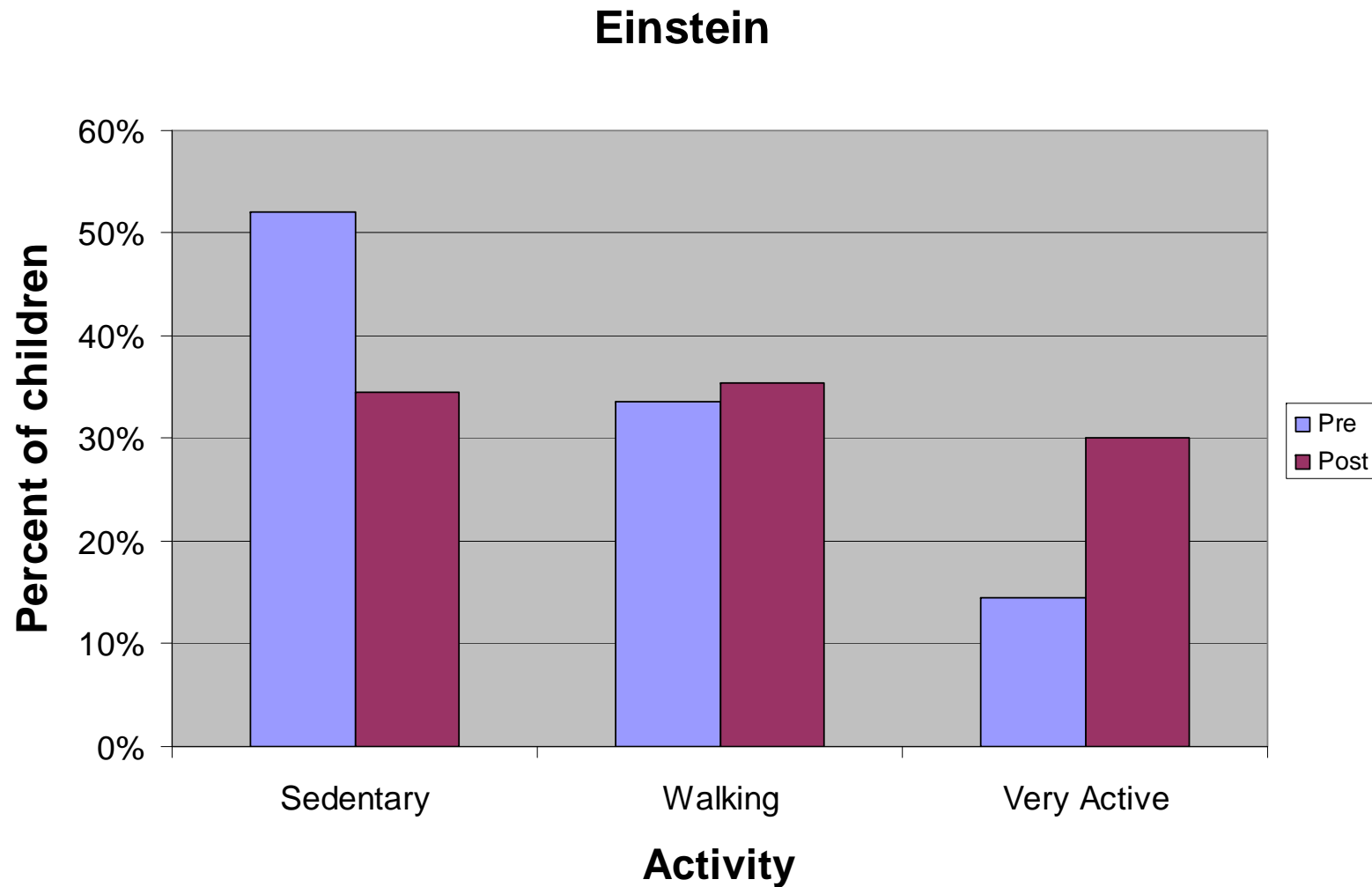


# Einstein: After

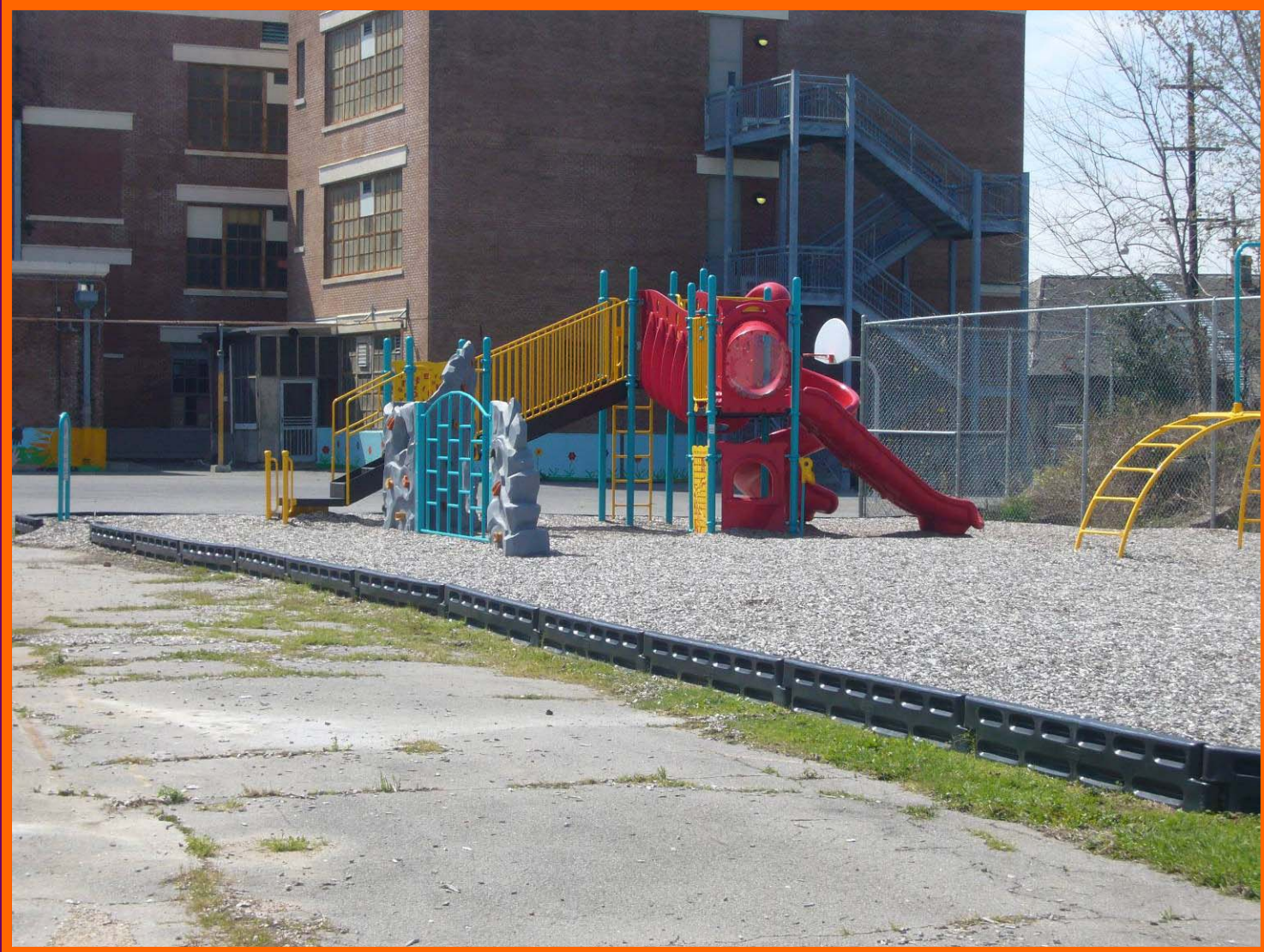


# Changes in Activity: Einstein

Equipment available pre-KaBOOM!

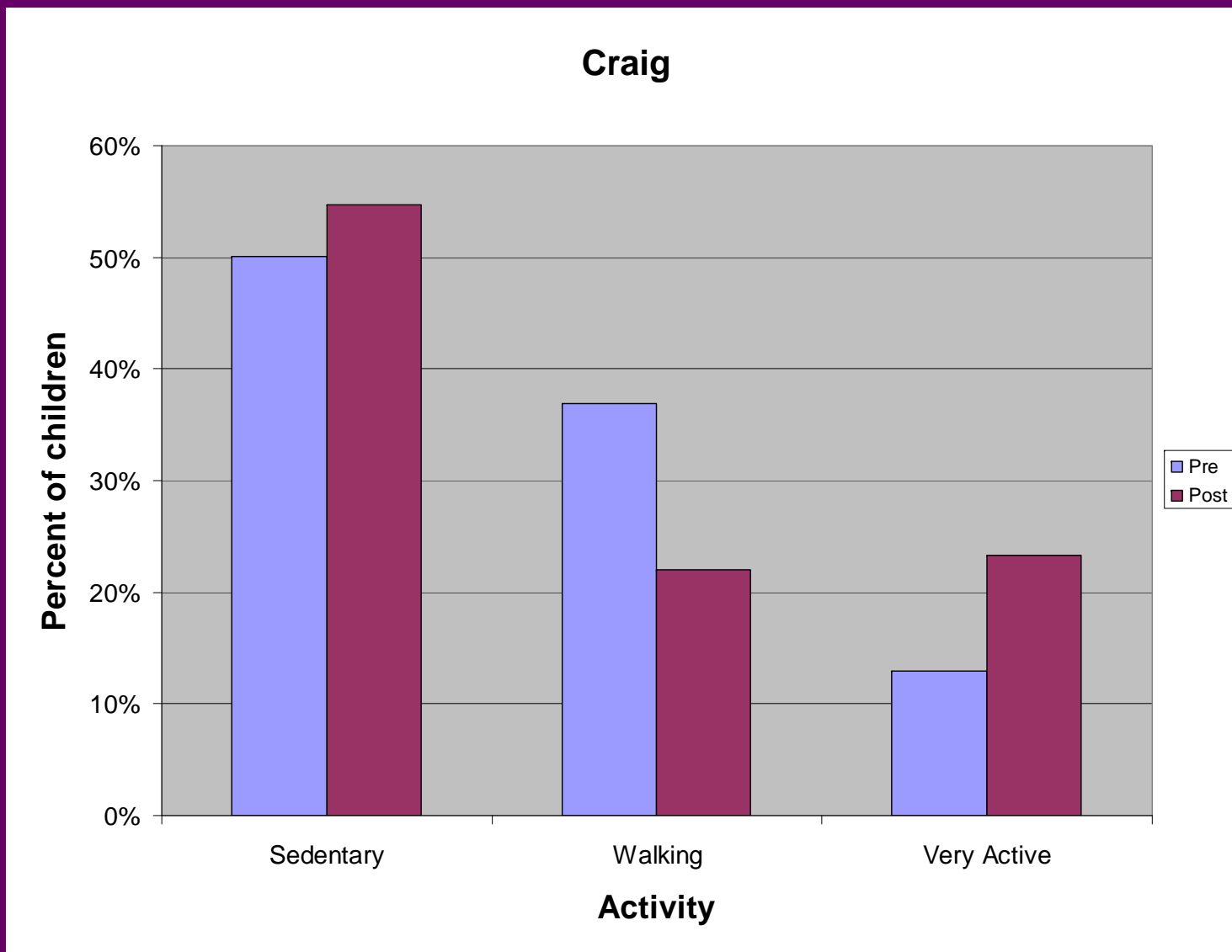


# Craig: After



# Changes in Activity: Craig

No equipment available pre-KaBOOM!



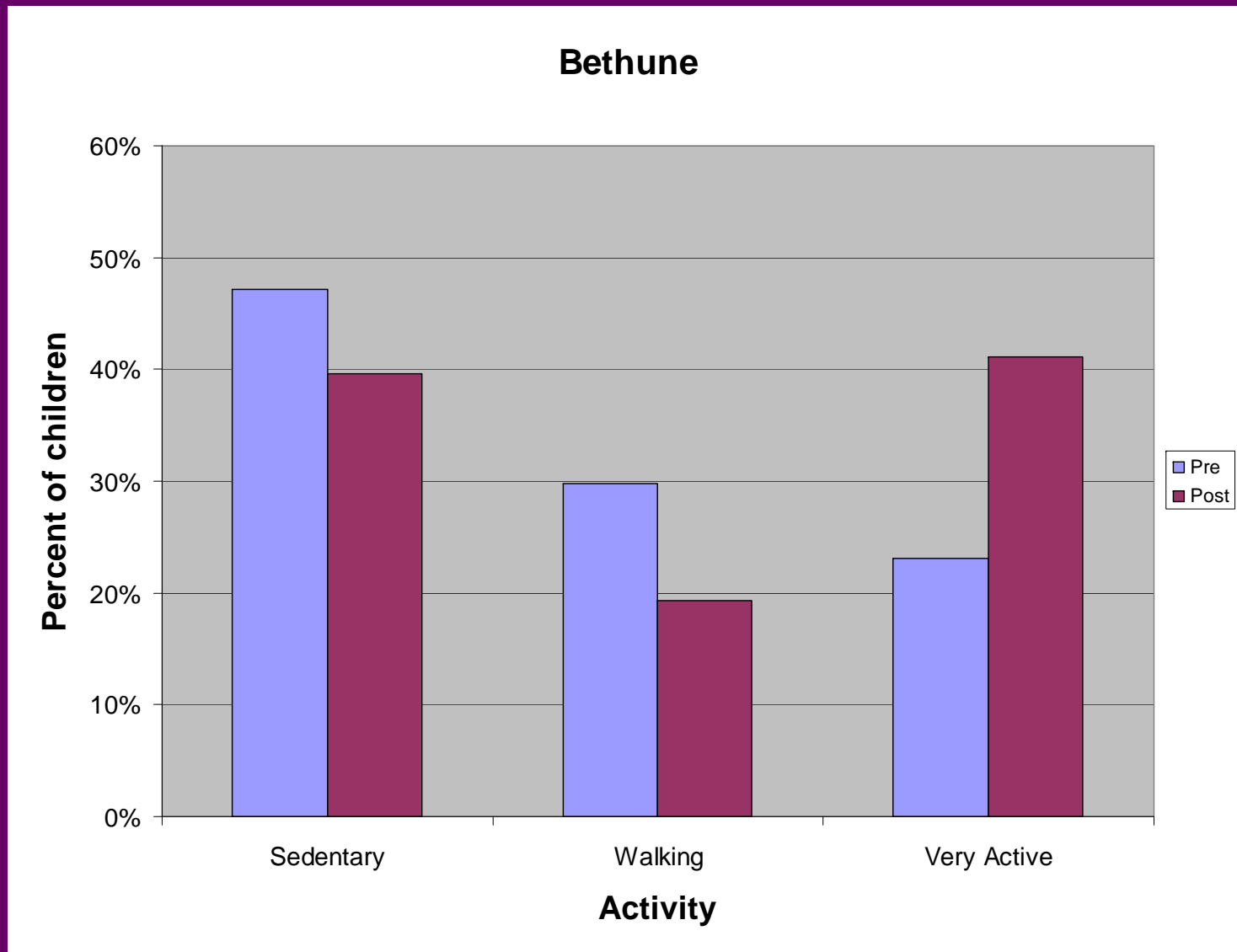


# Bethune: After



# Changes in Activity: Bethune

No equipment available pre-KaBOOM!



# Changes in Physical Activity

School		Girls	Boys	All			Kcal/Kg/Min	% Ch.	P-value
		<u>Very active</u>	<u>Very Active</u>	<u>Sedentary</u>	<u>Walking</u>	<u>Very Active</u>			
<b>Dibert</b>	Pre	28%	35%	37%	32%	31%	0.093		
	Post	29%	35%	34%	34%	32%	0.095	2%	NS
<b>Einstein</b>	Pre	14%	15%	52%	34%	14%	0.077		
	Post	27%	33%	35%	35%	30%	0.094	21%	<.001
<b>Craig</b>	Pre	10%	15%	50%	37%	13%	0.078		
	Post	24%	23%	55%	22%	23%	0.080	3%	NS
<b>Bethune</b>	Pre	14%	29%	47%	30%	23%	0.084		
	Post	43%	40%	40%	19%	41%	0.096	15%	<.001

# Changes in Physical Activity Compared to Equipment Available

School		PA	Kids	Sports Equipment		Installed Equipment				
				<u>Balls/Day</u>	<u>JR/Day</u>	<u>Swings</u>	<u>Slides</u>	<u>Hoops</u>	<u>Other</u>	<u>Maximum Child Capacity</u>
		<u>Very Active</u>	<u>Kids/Day</u>							
Dibert	Pre	31%	99	15.7	7.2	0	3	4	1	57
	Post	32%	115	8.1	1.8	0	5	5	2	86
Einstein	Pre	14%	69	7.4	1.2	0	3	1	0	16
	Post	30%	63	2.4	0.4	4	4	1	3	59
Craig	Pre	13%	37	3.4	1.6	0	0	1	0	6
	Post	23%	42	1.2	0.5	4	3	3	2	75
Bethune	Pre	23%	48	4.4	0	0	0	0	0	0
	Post	41%	52	3.1	0	0	2	4	1	79

# Summary and Conclusions

- Installation of playground equipment by itself (without PA programming) is followed by substantial increases in observed physical activity in school-aged children, but effect is inconsistent
  - Schools showing no increase in PA may have been over equipment capacity or had adults limiting use of equipment
- Playgrounds should ensure child capacity is sufficient for times of peak use
- Further research needed on effect of equipment and other factors on activity levels

**For more information, please contact  
Tom Farley, MD MPH, Director  
[tfarley@tulane.edu](mailto:tfarley@tulane.edu)**

**Kathryn Parker, MPH, Assistant Director  
[kparker1@tulane.edu](mailto:kparker1@tulane.edu)**



**Tulane University Prevention  
Research Center**

Tulane University School of Public Health  
and  
Tropical Medicine

Member of Prevention Research Centers  
program of Centers for Disease Control  
and Prevention through cooperative  
agreement

#1-U48-DP-000047