



Preventing Childhood Obesity and Promoting Health among Youth and Families: After School Park Programs as an Effective Public Health Strategy

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NHANES 2009-2010 Shows About One in Every Three Children in the US is Overweight or Obese

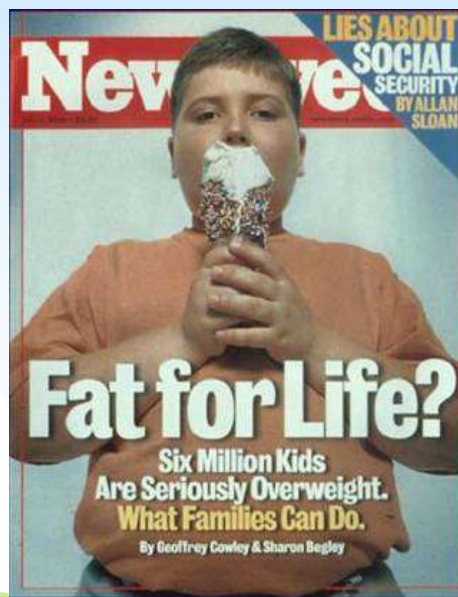
Table 2. Prevalence for 2009-2010 of High Body Mass Index (BMI) in US Children and Adolescents From 2 Through 19 Years of Age^a

By BMI Percentile	Children and Adolescents by Age Group, % (95% CI) ^b				
	2-19 y	2-5 y	6-19 y	6-11 y	12-19 y
Both Sexes					
All racial/ethnic groups ^c					
≥85th	31.8 (29.8-33.7)	26.7 (22.6-31.2)	33.2 (31.2-35.3)	32.6 (30.1-35.2)	33.6 (30.9-36.5)
≥95th	16.9 (15.4-18.4)	12.1 (9.9-14.8)	18.2 (16.5-20.1)	18.0 (16.3-19.8)	18.4 (15.8-21.3)
≥97th	12.3 (11.1-13.5)	9.7 (7.7-12.2)	13.0 (11.7-14.4)	13.0 (11.2-15.0)	13.0 (10.9-15.4)
Hispanic ^d					
≥85th	39.1 (36.9-41.4)	33.1 (29.7-36.6)	41.2 (38.0-44.4)	39.7 (35.2-44.3)	42.4 (37.2-47.8)
≥95th	21.2 (19.5-23.0)	16.2 (13.1-20.0)	22.9 (21.0-24.9)	22.5 (20.2-25.0)	23.2 (19.3-27.7)
≥97th	15.6 (14.3-16.9)	13.0 (10.1-16.5)	16.4 (15.0-18.0)	16.4 (13.6-19.8)	16.4 (13.4-20.0)
Mexican American					
≥85th	39.4 (35.8-43.1)	33.3 (28.2-38.9)	41.4 (36.4-46.6)	39.0 (33.3-45.1)	43.4 (36.6-50.4)
≥95th	21.2 (18.8-23.8)	15.5 (11.9-20.0)	23.1 (20.1-26.3)	22.1 (18.8-25.8)	23.9 (18.2-30.6)
≥97th	15.5 (13.6-17.7)	11.9 (8.4-16.6)	16.7 (14.7-19.0)	17.5 (13.9-21.7)	16.1 (12.2-20.8)
Non-Hispanic white					
≥85th	27.9 (25.1-31.0)	23.8 (17.9-31.0)	29.0 (25.8-32.4)	27.6 (23.6-31.9)	30.0 (25.4-34.9)
≥95th	14.0 (11.7-16.7)	9.2 (6.0-14.0)	15.2 (12.5-18.4)	13.9 (11.1-17.3)	16.1 (12.6-20.5)
≥97th	9.8 (8.0-12.0)	7.5 (4.6-12.0)	10.4 (8.3-12.9)	9.1 (6.7-12.3)	11.3 (8.4-15.0)
Non-Hispanic black					
≥85th	39.1 (35.5-42.8)	28.9 (21.8-37.3)	41.8 (38.3-45.4)	42.7 (36.2-49.4)	41.2 (35.0-47.8)
≥95th	24.3 (20.5-28.6)	18.9 (12.5-27.5)	25.7 (21.7-30.2)	28.6 (22.0-36.2)	23.7 (19.2-29.0)
≥97th	18.6 (15.4-22.2)	14.4 (9.1-22.2)	19.7 (16.5-23.4)	22.2 (16.9-28.6)	18.0 (14.1-22.6)

National Obesity Trends Among Preschool-Age Children: Prevalence has more than Doubled in Four Decades

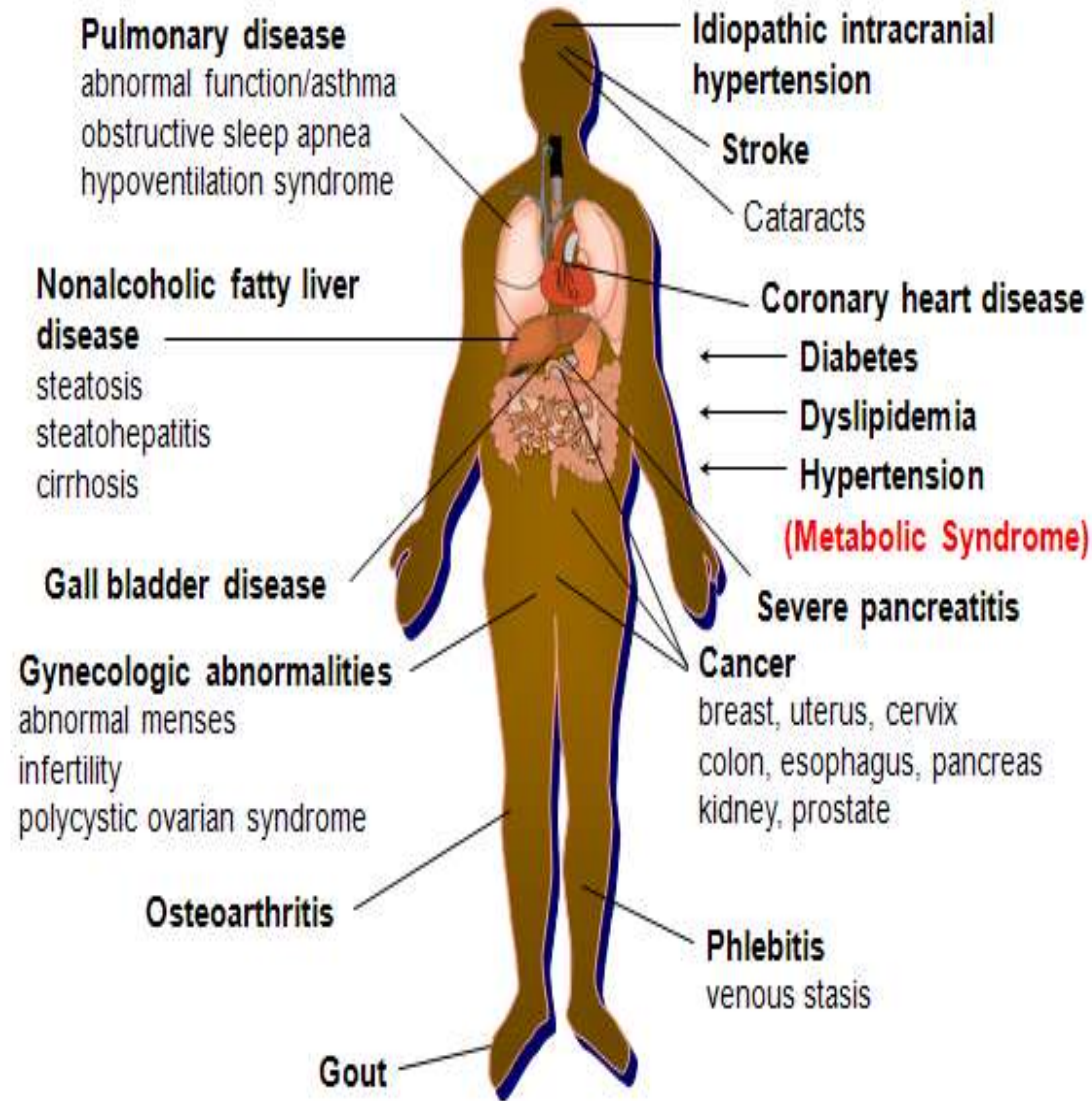
Prevalence of Obesity Among U.S. Preschool-Age Children

	Survey Periods			
	NHANES I 1971–1974	NHANES II 1976–1980	NHANES III 1988–1994	NHANES 2009- 2010
Ages 2 through 5	5%	5%	7.2%	12.1%



Ogden, CL et al., JAMA 2012
Ogden CL et al., JAMA 2006

37 Medical Complications of Obesity: Many Now Seen in Childhood



Long Term Health Concerns

- **Heart Disease**
- **Hypertension**
- **Diabetes**
- **Cancers**
- **Pregnancy Related Complications**
- **Mobility Impairment**
- **1 in 3 children born in 2000 destined to develop diabetes in their lifetime**

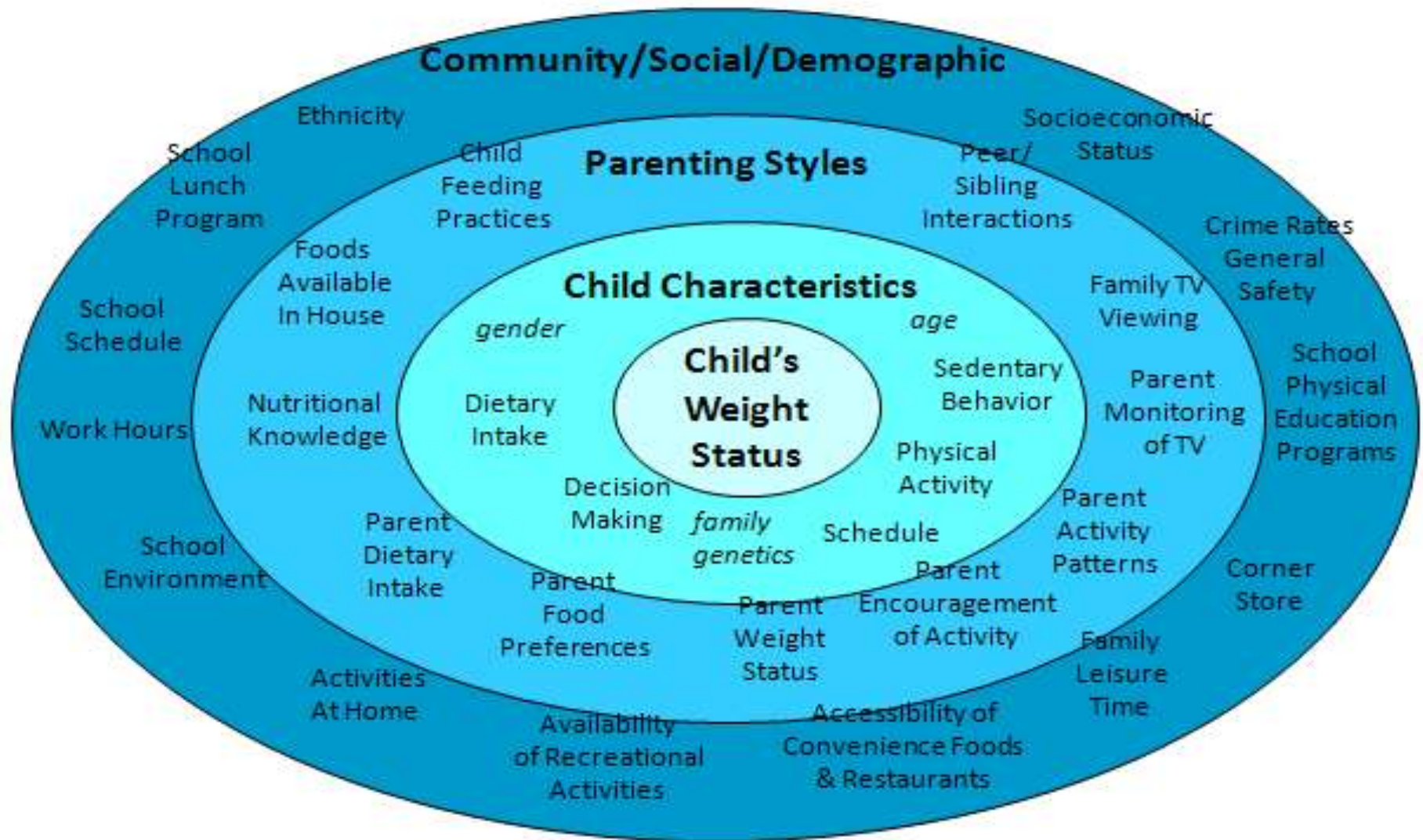
May be the first generation to live sicker and die earlier than the generation before.

More consequences of childhood obesity



- ☹️ Deconditioned
- ☹️ Derailed from normal activity
- ☹️ Depressed, teased and bullied
- ☹️ Disease burden
- ☹️ Decreased quality of life
- ☹️ Diminished educational and job opportunities

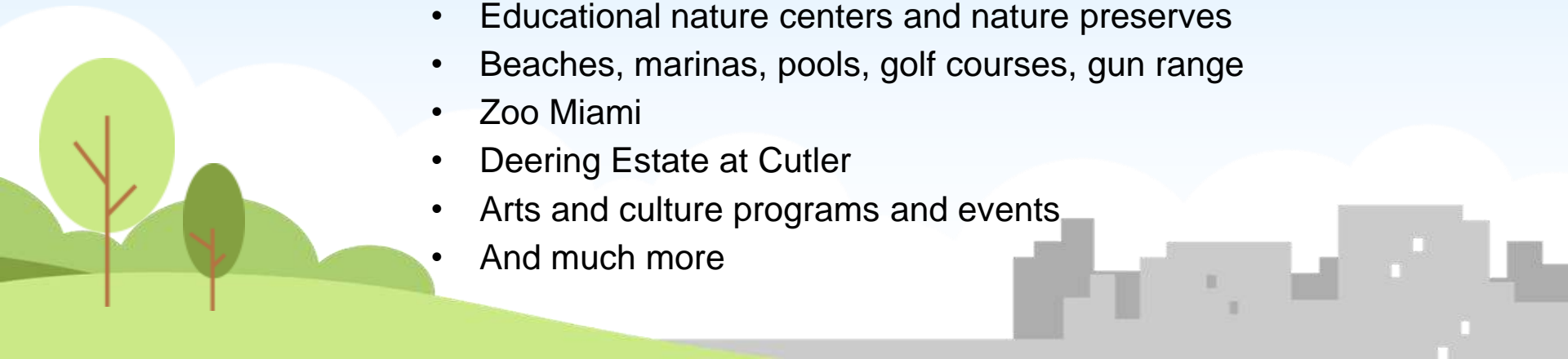
Public Health Approach to Childhood Obesity



Model modified from: Childhood overweight: a contextual model and recommendations for future research. Davison KK, Birch LL. *Obes Rev.* 2001 Aug;2(3):159-71. With additions by S Hassink

About Miami-Dade Parks

- 3rd largest parks system in the Country
- Nationally accredited, a three-time winner of the NRPA National Gold Medal Award and winner of the 2009 Florida Governor's Sterling Award for excellence in management and operations
- Serves 2.5 million residents and 10 million visitors annually
- **Serves 10,000 children in out-of-school and summer programs and 25,000 children in organized youth leagues annually**
- 263 parks & 12,848 acres of land including:
 - After school, sports, summer camp programs
 - Educational nature centers and nature preserves
 - Beaches, marinas, pools, golf courses, gun range
 - Zoo Miami
 - Deering Estate at Cutler
 - Arts and culture programs and events
 - And much more



Fit-2-Play

A Partnership for Youth Excellence



UNIVERSITY OF MIAMI
MILLER SCHOOL
of MEDICINE



An evidence based, interactive, fun and educational wellness program for ages 6-14 which incorporates physical activity with interactive learning to develop healthy lifestyles and good citizenship.

Fit-2 Play

GOALS

- Increase the physical activity of children through quality recreation activities
- Improve the health and wellness of children through a nutrition program that teaches healthy choices
- Improve school performance through quality homework assistance
- Create opportunities for children to make friends



empower
ME

**Miami-Dade County Park and Recreation Department**
And the University of Miami School of Medicine

Fit-to-Play—A National Out-of-School and Summer Program Model



Outcome Oriented Structured Programs
Physical and Nutritional Evidenced Based Recreation Activities
Tests—Measures—Results
Program Components
SPARK (Physical Activities)
EmpowerMe 4Life Nutrition
Homework Help
Life Sports and Recreational Games
Recreation Enrichment
Program Goals
Increase Physical Activity
Improve Health and Wellness
Teach Nutrition—Healthy Food Choices
Improve School Performance
Have Fun—Make Friends
Health and Nutrition Initiatives—2012
Healthy Vending in Parks
Develop Community Gardens and
Farmer's Markets in Parks
Tobacco Free Parks

OUT-OF-SCHOOL AND SUMMER PROGRAMS
ESSENTIAL FOR YEAR ROUND CHILDHOOD HEALTH AND WELLNESS

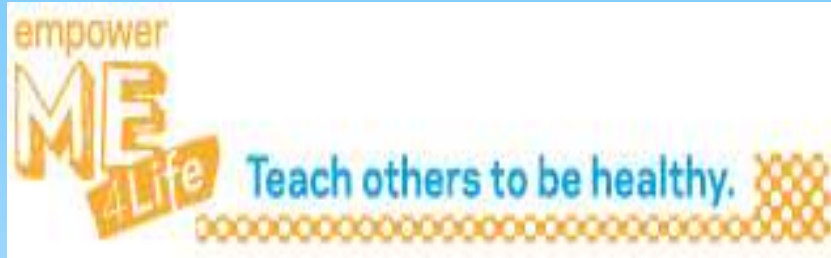
Fit-2-Play Physical Fitness Component



After School Program

- ❖ Evidence Based (NIH funded, 45 publications of effectiveness)
- ❖ 400 Page binder of activities
- ❖ 1 or 2-day training workshops
- ❖ Equipment available for activities
- ❖ Follow up support available

Fit-2-Play Nutrition Education Component



EmpowerME4Life Nutrition Education

Grounded in the American Heart Association's scientific recommendations in promoting heart-healthy lifestyles.

Based on the Alliance's five steps kids can take to live healthier:



- ❖ Get physically active for 60 minutes each day

- ❖ Drink primarily water, 1 percent or fat free milk, and 100 percent juice with no added sugars

- ❖ Eat fruits and vegetables with EVERY meal

- ❖ Limit screen time 1-2 hours a day

Get at least 9 hours of sleep every night



Fit-2 Play Nutrition Education Component

EmpowerME4Life Nutrition Education 8 Session Content

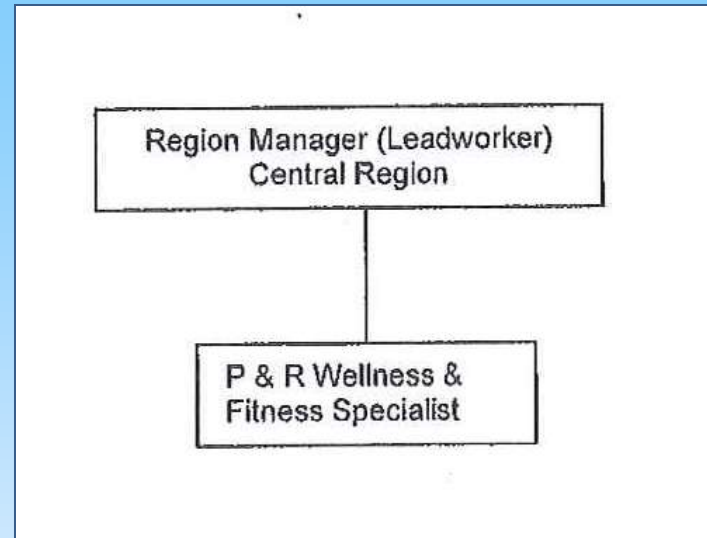




Session 1: On Your Mark, Get Set Baseline assessment

- **Session 2: Go!** Understanding benefits of physical activity
- **Session 3: Jumping Hurdles!** Discussing barriers & solutions to physical activity
- **Session 4: Fueling my Body** Benefits of fruits, vegetables and healthy beverages, how to read a food label, starting a daily food log
- **Session 5: Energy In/Energy Out** Understanding marketing tactics toward kids
- **Session 6: Grocery store field trip**, reading nutrition labels, analyzing marketing messages on food products, recognizing serving sizes
- **Session 7: Move More!** health risks associated with screen time
- **Session 8: The Victory Lap** Sharing completed food log and goals, constructing and eating a healthy snack, post-assessment



Wellness & Fitness Certifications



STATEMENT OF APPOINTING AUTHORITY		
COMMENT AND RECOMMENDATION ON REQUEST: <u>Approved as written</u>		
QUALIFICATIONS WHICH YOU THINK SHOULD BE REQUIRED IN FILLING A FUTURE VACANCY		
CATEGORY	MINIMUM ENTRY QUALIFICATIONS	ADDITIONAL DESIRABLE QUALIFICATIONS
EDUCATION	Bachelor Degree in P&R Management, Business Admin, Public Admin, Sports Admin, Rec. Physical Ed or related field	Additional experience may substitute for the required education on a year-for-year basis.
EXPERIENCE: KIND LENGTH IN YEARS	One year of supervisory, management and/or professional administrative experience to include maintenance, ops. and/or recreation programming within a park and recreation system.	
LICENSES OR OTHER SPECIAL REQUIREMENTS	Must obtain and maintain certification in fitness, wellness or Nutrition from one of the organizations certified by the National Commission for Certifying Agencies within the probationary period.	Must possess a Drivers License
 APPOINTING AUTHORITY'S SIGNATURE		 DATE

Study Design



Longitudinal cohort study to determine the effect of Fit-2-Play on preventing overweight and obesity among 5-to-13 year olds in 23 Miami-Dade County parks.

UM faculty and staff trained MDC Parks field staff in anthropometric and clinical data collection techniques.

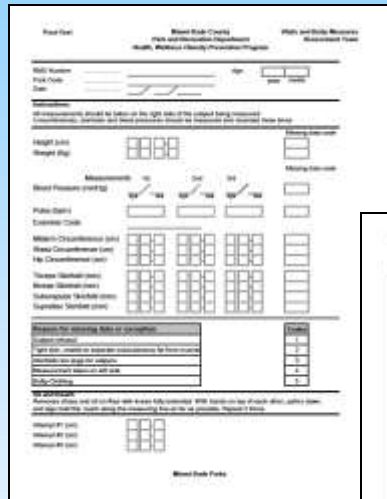
Web-based data collection program. Data automatically uploaded to UM server.

UM faculty analyze data.

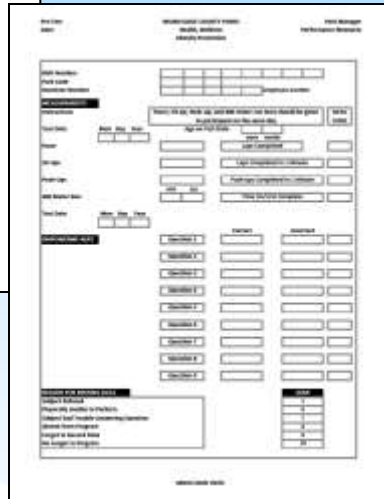


Data Collection

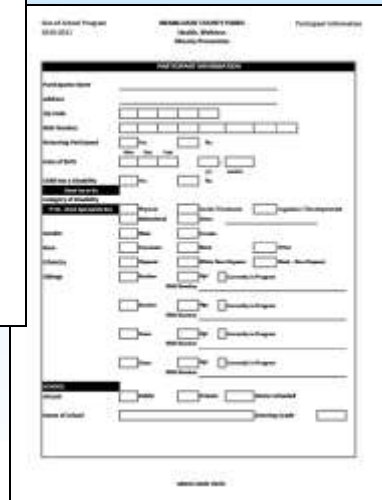
Standardized, quantifiable and measurable testing is incorporated in the Fit-2-Play program to test health, fitness, wellness and academic performance.



This form is titled 'Blood Pressure (Chest)' and 'Height and Weight Measurements'. It includes fields for 'Participant Name', 'Date', and 'Time'. It also has a section for 'Blood Pressure (Chest)' with a table for recording readings. The form is part of the 'Fit-2-Play' program.



This form is titled 'Blood Pressure (Arm)' and 'Heart Rate Measurements'. It includes fields for 'Participant Name', 'Date', and 'Time'. It also has a section for 'Blood Pressure (Arm)' with a table for recording readings. The form is part of the 'Fit-2-Play' program.



This form is titled 'Blood Pressure (Arm)' and 'Heart Rate Measurements'. It includes fields for 'Participant Name', 'Date', and 'Time'. It also has a section for 'Blood Pressure (Arm)' with a table for recording readings. The form is part of the 'Fit-2-Play' program.

Pre and Post Testing at Beginning and End of School Year

Primary Outcome Measures:

1. **Anthropometric Measures (BMI, WC)**
2. **Clinical Measures (BP)**
3. **Physical Fitness**
4. **Nutrition Knowledge**

Results

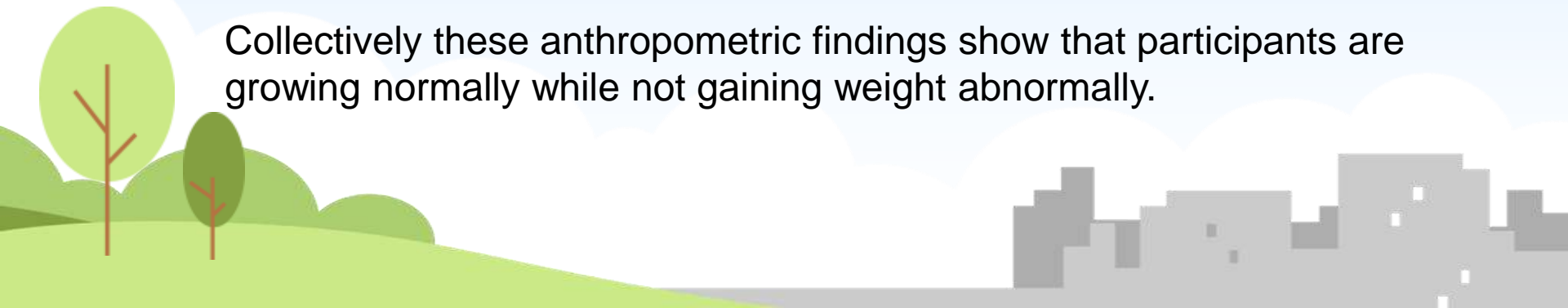
Baseline Descriptive Statistics

Mean Age 9.3 years, (range 5-15)	
Gender	N (%)
Boys	138 (51)
Girls	133 (49)
Ethnicity	
Hispanic	153 (57)
Black	101 (37)
White	13 (5)
Other	3 (1)

Anthropometric Results

	Baseline/Pretest (Fall 2010)	Posttest (Spring 2011)	P value
	Mean	Mean	
BMI percentile	72.2	72.5	NS
BMI z score	0.84	0.85	NS
Weight z score	0.72	0.72	NS
Height	136.4	138.5	<.0001
Waist Circumference	65.0	66.0	<.0001
Hip Circumference	76.5	77.8	<.0001

Collectively these anthropometric findings show that participants are growing normally while not gaining weight abnormally.



Anthropometric Results

Body Mass Index Category*	Baseline/Pretest (Fall 2010) N (%)	Posttest (Spring 2011) N (%)	P value
Underweight	3(1)	4(2)	NS
Normal Weight	135 (56)	126 (52)	NS
Overweight	37 (15)	43 (18)	NS
Obese	68 (28)	71 (29)	NS

Underweight = BMI < 5th %ile for age and sex

Normal Weight = BMI < 85th %ile for age and sex

Overweight = BMI 85th -< 95th %ile for age and sex

Obese = BMI ≥ 95th %ile for age and sex

Blood Pressure Results

Blood Pressure	Pretest (Fall 2010)	Posttest (Spring 2011)	Difference	P value
	Mean mm Hg	Mean mm Hg		
Systolic	114.85	113.02	-1.83	0.002
Diastolic	71.58	69.52	-2.02	<.0001



Blood Pressure Results

BP Status	Pretest (Fall 2010)	Posttest (Spring 2011)	Difference	P value
	%	%		
Systolic HTN	36.4	25.7	-10.7%	<0.001
Diastolic HTN	16.3	13.3	-3%	0.04
Normal SBP	43.9	55.1	+11.2	<0.001
Normal DBP	55.1	68.2	+13.1	0.04



Physical Fitness Results

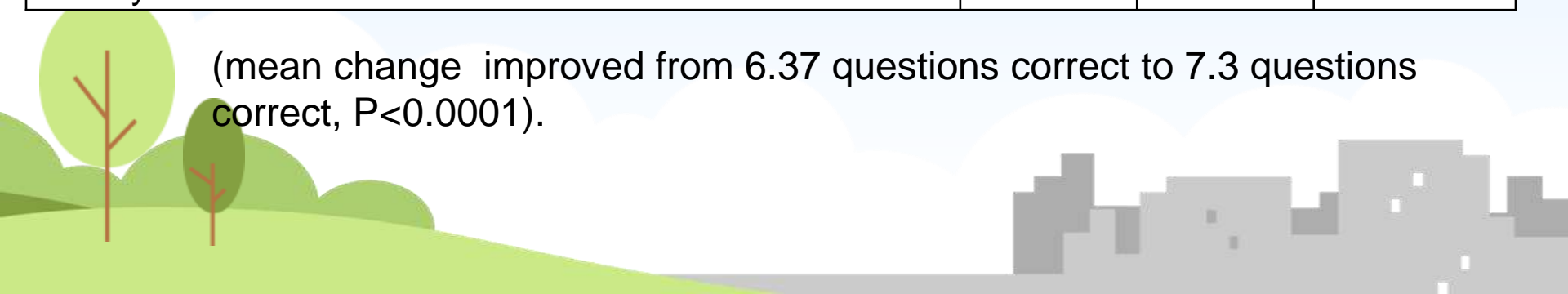
TEST	Pretest (Fall 2010)	Posttest (Spring 2011)	Difference	P value
Sit-and-Reach	25.7	26.2	+.55	0.01
Push Ups	21.7	24.9	+3.3	<0.0001
Sit Ups	25.2	28.6	+3.8	<0.0001
400 Meter Run	260.5	201.7	-58.1	0.0003
Pacer Test	16.0	16.7	+.72	NS



Nutrition Knowledge Results

Test Items/Variables	Pretest % Correct	Posttest % Correct	Change
being physically active is only for athletes	78%	87%	+9%
It is healthy to eat fruits and vegetables at every meal	66%	86%	+20%
Fruits and vegetables are full of nutrients and vitamins	84%	89%	+5%
It's good to exercise. an hour a day	74%	83%	+9%
Watch TV instead of exercise	76%	89%	+13%
I should limit the amount of TV	59%	81%	+22%
How does being physically active help your body	66%	87%	+21%
Identify the activity that is most physically active	88%	95%	+7%
Identify the bad drink	55%	77%	+22%

(mean change improved from 6.37 questions correct to 7.3 questions correct, $P < 0.0001$).



Lessons Learned



- University-Parks partnerships are mutually beneficial
- Team approach is a must (everyone plays a vital role)
- Open fluid communication is key
- Must be a balance between measurement/data collection and staff time

Conclusions



- Fit-2-Play is an effective childhood obesity prevention tool
- Fit-2-Play is an effective tool in maintaining healthy blood pressure
- Fit-2-Play is an effective tool to significantly increase physical fitness levels
- Fit-2-Play significantly increases participant nutrition knowledge



Parks and UM Collaborative Team

- **Allison Diego**- Parks Manager
- **Eric Hansen**- Parks Strategic Planner
- **Jack Kardys**- Director, MDC Parks
 - Parks Data Entry Team
 - Parks Field Staff Team
 - Parks Coordinator Team
- **Maria Marin, MS**- Database Analyst and Manager
- **Sunil Mathew, MS**- Information Technology Manager
- **Sarah Messiah, PhD, MPH** – Pediatric Epidemiologist
- **Tracie Miller, MD** – Pediatric GI, Nutrition
- **Daniela NeriAlmedia, RD/LD** – Dietician
- **Robert O'Brien, MS**- Statistician
- **Gabriel Somarriba, DPT** - Exercise Physiologist