Obesity Prevention & Control in Community Recreation Centers

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Background

Public Health Problem

- Childhood obesity: 6-11yrs increased from **6.5%** in 1980 to **19.6%** in 2008[1]
- Currently, **35.5%** of U.S. children aged 6-11yrs are overweight/obese[1]

Consequences

- Obese children are at risk of adult obesity and CVD complications[2]

Causes

- Poor diet, low physical activity, sedentary behavior

[1]Ogden (2010); [2]Freedmand (2007)

Approach

Individual-Based Approach

- Short-term, intensive, individual interventions are efficacious [1]

Public Health Approach

- Target entire populations
  - E.g., All obese children in a city, county or state
- Target settings
  - E.g., Schools, churches, recreation centers, day care centers
- Target policies
  - E.g., Screen time, availability of unhealthy snacks, physical activity time

[1]Shaibi (2006)

Rationale

Why recreation centers?

- Community resource where children engage in physical activity
- Have facilities and space for play and sports
- Low cost or free
- Can implement policies that encourage physical activity and sports participation
- Can implement policies for healthy alternatives in vending machines
- High potential for generalizability
- High potential to reach many children

Primary Study Aim

To evaluate the efficacy of a 2-year multi-level recreation center-based intervention to prevent overweight and obesity in 5-8 year old children.

Primary Outcome:
Child BMI (z-score)

Behavioral Outcomes:
Physical Activity
Sedentary Behavior
Nutrition/Eating Behavior

Secondary Aims

Home

- Setting and enforcement of home rules
- Establish environmental controls for childhood nutrition and sedentary/PA behaviors
- Assess mediation effects of parenting factors on proximal behavioral outcomes

Recreation Centers

- Increase access to- and use of- physical activity programs and healthy foods (vending machines)
- Establish policies that promote PA, reduce sedentary behavior and increase healthy food options

Physical Activity Behaviors

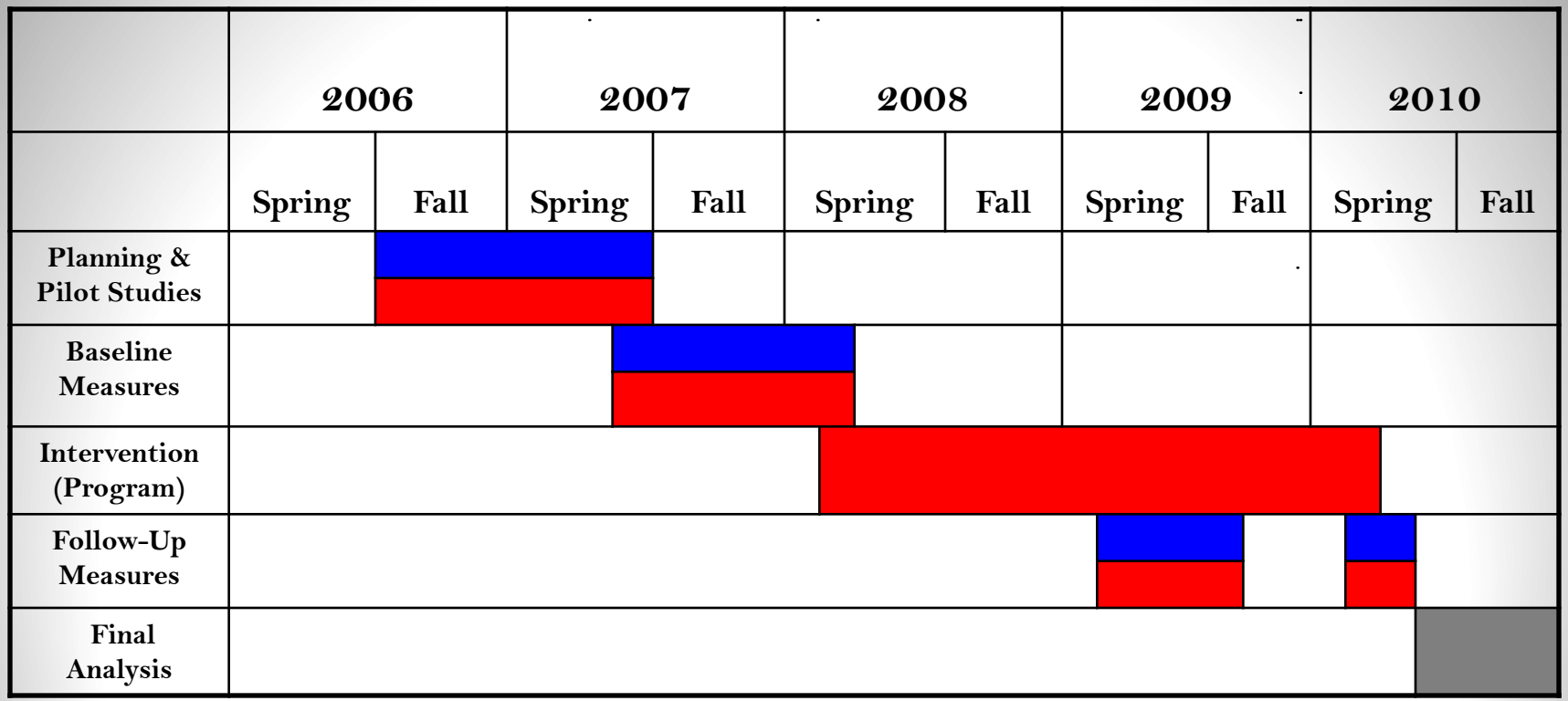
- Increase MVPA: 60 minutes per day on most days of the week
- Increase availability and accessibility of physical activity opportunities in the home
- Increase use of recreation center as a resource for physical activity

Study Design

- Group randomized controlled trial
- Recruited 30 recreation centers in San Diego
  - 15 Intervention Centers
  - 15 Control Centers

- Enrolled 541 parent and child dyads
  - Eighteen families per recreation center
  - Live ≤3 miles of recreation center
  - English or Spanish-speaking
  - Child 5-8 yrs. old

Timeline: 2006-2011



INTERVENTION SITES
(Intervention & Measurement)

CONTROL SITES
(Measurement Only)

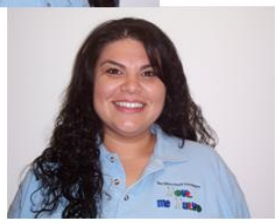
San Diego State University

Family Health Program

2008 — 2010

Yearly Measurements

4 Family Events at the Recreation Center



1 Home Visit with a Family Health Coach

Bi-monthly Phone Consultations

www.myspace.com/themoveproject

Monthly TIPS Sheet Mailings

Home Intervention

Family Health Coach

- Two coaches with 135 families each
- Phone consultations
  - Motivational interviewing techniques
  - Track tips attempted/completed
  - Review progress
  - Problem-solve to overcome barriers
- Conduct home visits
  - Conduct food inventory
  - Capitalize on the family's strengths and needs
- Household environment
  - Increase availability and options
- Household rules
  - TV time, fruits & vegetables, sugary drinks
  - Reinforcement strategies (prompts for PA, verbal encouragement, modeling)

Recreation Center Intervention

MOVE Recreation Specialist

- On-site consultation
- Monthly action planning & resource sharing
- Support of staff efforts
- Placement and distribution of signs, fliers, announcements
- Monitor progress & address barriers
- Four family open house events

Measures

Child: (3 time points):

- BMI, waist circumference, total % fat (BIA)
- Seven-day accelerometry (2 time points)
  - Baseline (n=178)
  - Post-intervention (n=382)

Primary Caregiver:

- BMI & Survey

Incentives:

- Caregivers: $20, $10, $50
- Children toys & pens

Parent-Report Measures (Survey)

- Demographics
- Food frequency
- Child's TV & video viewing
- Rule setting and parenting practices
- Home environment
- Eating out and take out frequency
- Sports participation
- Recreation center use
- Acculturation
- Transport to/from school
- Where child goes after school
- Neighborhood barriers to PA
- Social support
- Parent perceptions of child's weight
- Etc….

Process Evaluation – Rec Centers

Structured Physical Activity Survey (SPAS)

- Director self-report of frequency, type, and duration of structured physical activity programs
- Breakdown by gender

REcreation Facility Audit Tool (REFAT)

- Direct observation of environmental conditions (indoor and outdoor areas)
- Rate availability and condition of amenities and the presence of incivilities

Vending Machine Audit Tool (VMAT)

- Presence of beverage vending machines (indoor and outdoor)
- Identifies types, location, accessibility, advertising, cost, size, position of beverages sold in vending machines

Results: Demographics

Child

- Age: 6.7±0.7yrs (range 5.2-8.8)
- Gender: 55.1% female
- Ethnicity: 46% Hispanic/Latino
- Place of birth: 92% U.S. born

Caregiver

- Age: 37.6±6.5 (range 23-62)
- Gender: 93.7% female
- Place of birth: 26% Mexico
- Married: 76%
- Employed full-time: 28%

Results

Table 1. Baseline child and caregiver anthropometrics

	Minimum	Maximum	Mean	SD
Child BMI (kg/m^2)	13.80	41.29	17.21	3.02
Child BMI z-score	-1.27	3.54	0.66	0.95
Child BMI %ile	10.29	99.98	67.80	25.50
Child WC (cm)	47.05	93.85	57.37	6.57
Child %body fat	9.9	67.7	29.3	8.5
Caregiver BMI (kg/m^2)	17.04	75.56	28.07	6.47

Results

Table 2. Baseline BMI categories for children and caregivers

Child BMI%ile		**N**	**Percent**
Normal		365	67.5
Overweight		94	**17.4**
Obese		82	**15.2**
	Total	541	
Caregiver BMI			
Underweight		6	1.1
Normal		200	37.2
Overweight		156	**29.1**
Obese		175	**32.6**
	Total	537	

Retention Rates

Table 3. Overall study retention rates.

	Control	Intervention	Total
Baseline	270	271	541
1yr	252 (93.3%)	239 (88.2%)	491 (90.8%)
2yr	256 (94.8%)	238 (87.8%)	494 (91.3%)

Results

Table 4. Intervention effects on child MVPA (min/day)

	Intervention			Control		
Accelerometer	**N**	**Mean**	**SE**	**N**	**Mean**	**SE**
Pre-Post (M1-M3)[1]	52	54.9	3.1	49	58.3	3.2
Post-only (M3)[2]	137	58.2	2.1	163	58.6	1.9

[1] ANCOVA: p>0.05, adjusted for baseline MVPA, age, gender and ethnicity
[2] ANCOVA: p>0.05, adjusted for age, gender and ethnicity

Results

Table 5. Intervention effects on child meeting PA guidelines (≥60 MVPA minutes per day)

	Intervention		Control	
M1	**N**	**%**	**N**	**%**
No	23	44%	17	35%
Yes	29	**56%**	32	**65%**
Total	52		49	
M3	**N**	**%**	**N**	**%**
No	34	65%	29	59%
Yes	18	**35%**	20	**41%**
Total	52		49	
Difference		**-21%**		**-24%**

All Chi-Squares: p>0.05; Logistic Regression analysis p>0.05

Results

Table 6. Intervention effects on parent-report child physical activity.

	Intervention			Control		
	N	**Mean**	**SE**	**N**	**Mean**	**SE**
Days/wk of MVPA ≥60 min*	237	**4.5**	0.1	256	4.2	0.1
Days/wk of sports*	238	**2.0**	0.1	255	1.7	0.1

*$p<0.05$
ANCOVA: Adjusted for baseline, age, gender and ethnicity

Results

Table 7. Intervention effects on parent-report child frequency of physical activity in recreation/outdoor locations.

Never (0), < 1/wk (1), 1-2/wk (3), 3-4/wk (4), 5-7 (5)	Intervention (n=237)		Control (n=256)	
	Mean	**SE**	**Mean**	**SE**
Public Recreation Center	1.2	0.07	1.0	0.06
Other Recreation Center (YMCA, B&G club)	0.7	0.07	0.6	0.06
Commercial Facilities (Gym)**	**0.8**	0.06	**0.6**	0.06
School Grounds (Afterschool)	1.5	0.09	1.5	0.09
School Grounds (Weekends)	0.5	0.05	0.4	0.05
Parks or Playgrounds	1.9	0.06	1.7	0.05
Walking/Hiking/Biking Trails**	**1.4**	0.06	**1.2**	0.06
Beach or Lake	1.1	0.05	1.0	0.05
Neighborhood (Field or Lot)**	**1.6**	0.09	**1.1**	0.08
Yard or Apartment Complex	2.7	0.08	2.6	0.08
Friend's or Relative's house*	**1.6**	0.06	**1.4**	0.06

*p<0.05, **<0.01

ANCOVA: Adjusted for baseline, age, gender and ethnicity

Results: Policy

"…**brochures issued now include** tips for **active lifestyles**, as well as **samples of "healthy" snacks**. Activities that are good for the heart, such as karate, and yoga now include such statements in the activity listing"

"…department management **paid** to have them [study materials] duplicated **so all 54** centers within the City would have access to them"

"The Park and Recreation Department will now provide **training on an annual basis** to recreation leaders who want to **become ACE Exercise Certified** which will provide them the certification to offer aerobics classes in their centers"

Conclusions

- No intervention effects on accelerometer-determined child physical activity.
- Significant increase in parent-reported child MVPA and frequency of sports participation.
- Significant increase in parent-reported child frequency of physical activity in…
  - Commercial facilities
  - Walking/hiking/biking trails
  - Neighborhood locations (lots and fields)
  - Friend's or relative's house
- Important policy changes implemented in recreation centers

Thank You!


Move
...TO BE ACTIVE... TO EAT WELL
me Muevo
...PARA SER ACTIVO... PARA COMER SALUDABLE