# **CHILDHOOD OBESITY-**An Intervention & Outcomes

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The purpose of NEA Clinic Charitable Foundation Center for Healthy Children is to teach, motivate and guide children who are overweight, and their families, to build a solid foundation of proper nutrition and regular exercise for a healthy lifestyle.





## SUMMARY OF EVIDENCE FOR CHILDREN IN N.E.A. REGION

- HIGHER INCIDENCE OF BEING OVERWEIGHT OR OBESE COMPARED TO NATIONAL NORMS.<sup>1,2</sup>
- ONSET OF BEING OVERWEIGHT APPEARS TO BEGIN BY THE 4<sup>th</sup> GRADE, IF NOT EARLIER.<sup>1</sup>

## NEA Children cont...

- PARENTS' EXERCISE HABITS HAVE A SIGNIFICANT IMPACT ON CHILDREN'S EXERCISE HABITS.<sup>1</sup>
- CHILDREN'S ACTIVITY & GENERAL FITNESS LEVEL IS INVERSELY RELATED TO BMI.<sup>1</sup>
- CHILDREN WITH HIGHER BMI APPEAR TO HAVE A HIGHER INCIDENCE OF HYPERTENSION.<sup>2</sup>

#### NEA Children cont...

- CHILDREN WITH AN AROW BMI MAY HAVE SIMILAR FITNESS LEVELS AS THEIR PEERS WITH NORMAL BMI<sup>2,3</sup>
- CHILDREN WITH NORMAL BMI USUALLY PERFORM BETTER ON FITNESS TESTS THAN CHILDREN WITH OW BMI<sup>2,3</sup>



# REVIEW OF INTERVENTIONS

- THEME: PARENTS APPEAR TO BE KEY<sup>4</sup>
  - SUPPORT FOR BEHAVIORS THAT
    PROMOTE GOOD HEALTH BOTH INSIDE & OUTSIDE OF THE HOME<sup>5</sup>
  - INTERVENTIONS WITH INVOLVED PARENTS MORE SUCCESSFUL<sup>6</sup>
  - PARENTS' READINESS FOR CHANGE AND PERCEPTION OF OVERWEIGHT AS HEALTH PROBLEM<sup>7</sup>
    - LIKELIHOOD TO IMPLEMENT BEHAVIORAL CHANGES

## PARENT PERCEPTION OF CHILD'S WEIGHT & HEALTH

- FEWER PARENTS OF OVERWEIGHT CHILDREN ACCURATELY PERCEIVE CHILD'S WEIGHT (10.5%) vs. OTHER PARENTS (59%)<sup>8</sup>
- FEWER PARENTS IDENTIFY CHILD AS AROW or OW CORRECLTY WITH WORDS (36%) – BUT BETTER WITH PICTURES (70%).<sup>9</sup>
- 26% OF PARENTS WITH CHILDREN AROW & OW WORRIED ABOUT CHILD'S WEIGHT

– More concern if child is over 6 years of age<sup>9</sup>

## FAMILY INVOLVEMENT FACTORS

- PARENTAL SUPPORT & MODELLING IS POSITIVE FOR CHILD ACTIVITY LEVEL<sup>10</sup>
  - ESP FOR YOUNGER CHILDREN<sup>11</sup>
  - ESP IF BOTH PARENTS ARE ACTIVE<sup>12</sup>
- THREE MOST IMPORTANT FORMS OF PARENTAL SUPPORT<sup>10</sup>
  - ENCOURAGEMENT
  - INVOLVEMENT
  - FACILITATION



## FAMILY FACTORS cont...

- FAMILIAL ENVIRONMENTAL FACTORS OF NUTRITIONAL BEHAVIOR<sup>13</sup>
  - PARENTS' EATING BEHAVIORS
  - CONTROLLING CHILD-FEEDING PRACTICES vs.
    FOSTERING HEALTHY FOOD PREFERENCES & PROMOTING ACCEPTANCE OF NEW FOODS
  - DEVELOPING ACTIVITY PREFERENCES

## **Program Components Cohort 3**

- Planned Exercise Programming (14 weeks total)
- Nutrition Education (Parents)
- Team "competition" & Fun Friday (compliance)
- Pre-participation physical by NEA Clinic M.D.
- Pre vs. Post Measures (weeks 1 & 16)
  - B.P. & blood
  - Anthropometric
  - Performance
- Application
- Interview
- N=29



## **Exercise Intervention**

- Two Required Exercise Sessions per week
  - M-W or T-R
  - Fridays = fun: swimming, karate, hiking, cycling, rock climbing wall, skating, active games (eg, DDR, PS2 Gamebikes)
- One hour exercise sessions after school
- All exercise and activities led by Certified Personal Trainer with MS in Exercise Science
- Additional exercise monitors included ASU PT & Exercise Science students

#### **Exercise Intervention cont...**

- Parent(s) Exercise Plan
  - Parents were encouraged to exercise for a "family lifestyle change"
  - All parents were offered a special discounted rate to the NEA Clinic Wellness Center
  - All parents were offered use of the running/ walking track FREE of charge



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## **Nutrition Education**

- Nutrition Class topics Mandatory for Parents
  - Basic Nutrition Overview
  - Label Reading
  - Managing Calories
  - Understanding Hunger
  - Quick, Healthy Meals
  - Best Choices for Eating Out
  - Best Choices for School Lunch
  - Review and Resources



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## **Program Goals**

- Introduce new games, sports and activities
- Embrace proper diet and regular exercise as a lifestyle





## **Program Goals cont...**

- Increase
  - Muscular Fitness
  - Cardiovascular
    Endurance
  - Nutritional Knowledge
  - Self Esteem
  - Motivation to Live
    Healthier

\*Blood panel (pre & post) not required until Cohort 3. Voluntary in 2, justified mandate.

- Decrease
  - Weight
  - Body Fat Percentage
  - BMI
  - BP
  - Cholesterol\*
  - Triglycerides\*
  - Negative Feelings
    Toward Proper Diet and Exercise



#### **OUTCOMES**



#### ANTHROPOMETRIC RESULTS COHORT 3

	PRE	POST	p value
	Mean (StD)	Mean (StD)	(Paired t)
BMI	29.45	27.1	p <0.001
	(2.8)	(3.02)	
CIRCUM-	147.3	147.1	NS
FERENCE	(10.8)	(9.8)	
(6 site)			
B-Fat% Est	42.8	40.8	p=0.015
(2 site SkF)	(6.9)	(6.4)	



#### ANTHROPOMETRIC RESULTS COHORT 3

- 6 Site Circumference
  - Arm, Chest, Waist, Hip, Thigh, Calf
- Significant changes in:
  - Waist: Decrease (p=0.039)
  - Calf: Increase (p=0.004)
- NS Change in:
  - Thigh: Increase (p=0.054, trend)

#### **Performance Results**

	PRE	POST	p value
	Mean (StD)	Mean (StD)	(Paired t)
Step (3 min)	137	126	p=0.004
HR- (I.P.E.)	(20)	(12)	
Push-up	1.04	5.6	p<0.001
	(1.8)	(3.8)	
Sit-up	23.6	33.2	p=0.003
	(12.7)	(13.8)	
Sit&Reach	13.8	16.6	p<0.001
	(3.0)	(2.2)	



#### **BP/Blood Results**

	PRE Mean (StD)	POST Mean (StD)	p value (paired t)
Systolic BP	102 (10)	108 (9)	p=0.003??
Glucose	90 (5)	87 (6)	p=0.057 <sub>trend</sub>
Total Cholesterol	179 (38)	162 (30)	p=0.033
ALT	41 (9)	35 (8)	p<0.001
Bilirubin	0.36 (0.13)	0.33 (0.12)	p=0.047
BUN	14 (3)	12 (3)	p=0.017



## Brief Summary of Intervention Outcomes

- POSITIVE IMPROVEMENTS IN ALL AREAS
  - ANTHROPOMETRIC
    - Decreased BMI, estimated Body Fat%, & Waist circumference;
    - Increased calf, thigh(trend)
  - PERFORMANCE
    - Aerobic/CV, muscular fitness, flexibility improvements
  - BLOOD PRESSURE / BLOOD VARIABLES
    - BP?
    - Total Cholesterol & markers of liver & kidney fxn improved
    - Glucose (trend) for improvement

#### CONCLUSION

 MULTIDISCIPLINARY INTERVENTIONS DESIGNED FOR CHILDREN SHO ARE OVERWEIGHT AND THEIR PARENTS CAN HAVE A POSITIVE IMPACT ON THE HEALTH AND WELLNESS OF THESE CHILDREN.



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