
A-25 Thematic Poster - Can Kids Move More? Assessing Interventions

May 29, 2013, 9:30 AM - 11:30 AM
Room: 206

77 **Chair:** Darla M. Castelli, University of Texas, Austin, TX
(No relationships reported)

78 Board #1 May 29, 9:30 AM - 11:30 AM

Development and Assessment of An Afterschool Intervention to Improve Physical Activity and Academic Performance

Kevin E. Finn¹, Edward Martin¹, Kristen Lemay¹, Kyle McInnis, FACSM¹, Michael Milner². ¹Merrimack College, North Andover, MA. ²United States Department of Health and Human Services, Boston, MA.
(No relationships reported)

After school programs offer significant opportunities to increase physical activity levels and improve academic performance of children.

PURPOSE: This purpose of this study was to develop and assess a pilot program that embedded physical activity into traditional academic lessons in an afterschool setting.

METHODS: Participants were 33 Hispanic boys and girls (age=12.1 ±0.8 yr) enrolled in an after school program serving economically disadvantaged children. Researchers developed a curriculum that involved children engaging in a variety of physical activities in the after school setting (e.g., dance, games, sports, and outdoor play), along with an integrated academic enrichment component. Children wore activity monitors (pedometers, heart rate monitors, and accelerometers) and recorded their physical activity data after each session using an interactive website. The children then participated in a series of age and grade appropriate academic lessons that involved using the activity data to explore and reinforce important concepts in science, math, and technology. The researchers assessed the effects of the curriculum on improvements in physical activity levels; academic performance including scientific inquiry; and enjoyment of the program.

RESULTS: Physical activity results showed the mean steps (2772 ±580); calories (90 ±21kcal); and distance (1.1 ±0.3 miles) were consistent with national physical activity recommendations for children. In addition, the subjects spent over 50% of the activity time in the moderate-to-vigorous intensity level during the program. Significant increases in science test scores from pre to post (p<0.001) were observed with a 22.4% increase from pre to post curriculum. The children enjoyed the integration of physical activity into science lessons in the after school environment.

CONCLUSIONS: Our findings from this pilot program were consistent with an accumulating and impressive body of scientific evidence demonstrating the integration of movement with learning helps to promote physical activity and supports academic achievement in school-age children. The children who participated in this project increased the amount of physical activity in the afterschool setting, while simultaneously improving science achievement skills.

79 Board #2 May 29, 9:30 AM - 11:30 AM

Increased Physical Activity by Accelerometry in Pre-school Daycare Centers Following Implementation of the NAPSACC Program

Marc Bonis¹, Mark Loftin, FACSM², Dianne Ward³, Leslie Lewis⁴, Julia Volaufova⁵, Tung Sung Tseng⁵, Ann Clesi⁵, Maura Mohler⁵, Amanda Arguello⁵, Melinda Sothorn⁵. ¹University of New Orleans, New Orleans, LA. ²University of Mississippi, Oxford, MS. ³University of North Carolina, Chapel Hill, NC. ⁴Louisiana Office of Public Health, New Orleans, LA. ⁵Louisiana State University Health Science Center - School of Public Health, New Orleans, LA.
(No relationships reported)

PURPOSE: To determine the effect of implementing the Nutrition and Physical Activity Self Assessment for Child Care (NAPSACC) program on objectively measured physical activity during the school day in twenty-six licensed daycare centers throughout Louisiana randomized to either treatment (intervention; N=13) or control (no intervention; N = 13) conditions. Subjects: Pre-school children, 3-5 year olds (N= 105, 54 males [22 Caucasian, 32 African-American], 51 females [26 Caucasian, 25 African-Americans]; age [yrs] = 3.85 + 0.8 [Mean + SD]).

METHODS: At baseline and after implementation of NAPSACC, accelerometry was employed to determine physical activity levels in preschool students attending the daycare centers. Actigraph accelerometers (2010 GT3X+ models) were attached to each student for 4.5 hrs per day for 2 days during the school day (total =9 hours) prior to and six months after implementation of the NAPSACC program.

RESULTS: Students in the treatment centers demonstrated significantly greater light and moderate intensity physical activity following the intervention when compared to those attending the control centers [F(1,104) = 5.9, p < 0.05, η^2 = 0.054, and F(1,104) = 4.2, p <0.05, η^2 = .038, respectively (Multivariate analysis)]. However, no significant differences were observed between the groups in sedentary or vigorous intensity physical activity.

CONCLUSIONS: The implementation of the NAPSACC program in pre-school day care centers results in a significant increase in objectively measured light to moderate intensity physical activity during the school day. Future studies should determine if these effects can be sustained, and whether a longer study duration is needed to observe significant alterations in sedentary or vigorous intensity physical activity.

80 Board #3 May 29, 9:30 AM - 11:30 AM

Head Start Classroom-based Physical Activity Lessons Improves Academic Achievement In African American Preschoolers

Stacie M. Kirk, Erik P. Kirk. Southern Illinois University Edwardsville, Edwardsville, IL.
(No relationships reported)

PURPOSE: To determine the effects of classroom-based physical activity incorporated into academic lessons in Head Start preschools on academic achievement.

METHODS: Fifty-four African American children (mean±SD, age 3.7±0.5y) from a low socioeconomic Head Start program were randomized to Control (CON, n=2 classrooms, n=16 total, n=13 F, n=3 M) or PA (n=3 classrooms, n=38 total, n=25 F, n=13 M) groups for 6 months. The PA program was designed to promote 300 min/wk of moderate to vigorous PA academic lessons (3.0-6.0 METS, ~30 min each, 2 lessons/day). The Preschool Individual Growth and Development Indicators for Early Literacy and Language (for children ages 3-5y) was administered to assess academic achievement in the areas of picture naming, rhyming, and alliteration. Intensity of classroom PA was measured by SOFIT. All measures were assessed at baseline, 3 and 6 months.

RESULTS: The PA protocol resulted in significantly (p<0.05) greater levels of PA in the classroom during free play at 3 (PA, 10.1±2.1% vs. CON, -3.2±2.1%) and 6 (PA, 22.1±2.3% vs. C, -8.1±2.5%) months than children in the CON, resulting in between-group differences at 3 and 6 months, p<0.01. Picture naming (number of pictures named correctly/min) significantly (p<0.01) improved in the PA group from baseline (15.0±5.9) to 3 (23.0±7.1) and 6 (24.1±6.6) months compared to no improvement in the CON, resulting in between-group differences at 3 and 6 months, p<0.05. Rhyming (number of rhymes correctly identified/two min) significantly (p<0.01) improved in the PA group from baseline (2.6±3.6) to 3 (4.9±6.0) and 6 (7.1±5.9) months compared to no improvement in the CON, resulting in between-group differences at 3 and 6 months, p<0.01. Alliteration (number of letters sounds correctly identified/two min) significantly (p<0.01) improved in the PA group from baseline (2.3±2.7) to 3 months (3.2±4.0) and was maintained at 6 months (2.9±4.7) compared to no change in CON, resulting in between-group differences at 3 and 6 months, p<0.01. Higher scores for picture naming, rhyming, and alliteration indicate greater early literacy skills and phonological awareness.

CONCLUSION: Classroom-based physical activity lessons improves academic achievement in African American preschoolers enrolled in Head Start.

81 Board #4 May 29, 9:30 AM - 11:30 AM

Effects Of An After-School Physical Activity Intervention On Physical Activity, Aerobic Fitness, And Body Composition

Matthew T. Mahar, FACSM¹, Grace Anne Edwards¹, Lucas J. Carr², C David Kemble¹, Nelson Cooper¹. ¹East Carolina University, Greenville, NC. ²University of Iowa, Iowa City, IA.
(No relationships reported)

PURPOSE: To examine the effects of a 10-week after-school physical activity program on physical activity, aerobic fitness, and body composition in 5 to 12 year olds.

METHODS: Participants (n = 277) from 15 after-school programs were assigned to an intervention or control group. After-school leaders were trained to lead physical activities called After-School Energizers. Participants were assessed at baseline and follow-up on physical activity, body composition, and aerobic fitness. Physical activity was measured for five days during after-school hours with pedometers (n = 277) and accelerometers (n = 112) at baseline and during the intervention. Body composition was assessed with body mass index (BMI), BMI percentile, and percent fat. Aerobic fitness was measured with the PACER 20-meter multistage shuttle run. Repeated measures ANOVA and effect size estimates were used to evaluate changes.

RESULTS: Participants accumulated a daily average of 3,497 (\pm 2,627) steps and 28.3 (\pm 13.6) minutes of moderate-to-vigorous physical activity (MVPA) at the after-school program. Approximately 60% of participants met the recommended level of physical activity for after-school programs. Body composition and aerobic fitness were not ($p > .05$) impacted by the intervention. Physical activity assessed via pedometer demonstrated a significant ($p < .001$) time x group interaction. Physical activity levels for the intervention group stayed fairly constant, while physical activity levels for the control group decreased by over 800 steps from baseline to follow-up. Accelerometer-derived results demonstrated both intervention (ES = 0.41, 0.31) and control groups (ES = 0.36, 0.23) had low to moderate increases in light and moderate intensity physical activity time. ANOVA results demonstrated no significant effects ($p > .05$) for MVPA.

CONCLUSIONS: The intervention did not result in improvements, relative to the control group, in physical activity, aerobic fitness, or body composition. It is possible that after-school leaders chose to implement the physical activities used in this intervention during times when participants would have already been physically active (e.g., during gym time or playground time). We documented that many children do not obtain the recommended level of physical activity during after-school programs.

82 Board #5 May 29, 9:30 AM - 11:30 AM

Vitamin D, Physical Activity and Metabolic Risks: a Physical Activity Promotion Program with Obese Youth

Clarice Martins¹, Luísa Aires², Gustavo Silva², Elisa Marques², Luísa Lemos³, Jorge Mota². ¹Porto University - CIAFEL, High Education Institute from Maia, Porto, Portugal. ²Porto University - CIAFEL, Porto, Portugal. ³Porto University, Porto, Portugal.
(No relationships reported)

In children, serum vitamin D and physical activity (PA) levels are inversely related to total cholesterol, triglycerides, fasting glucose, and insulin. However, vitamin D deficiency prevalence is increasing and PA decreasing worldwide among youth.

PURPOSE: To investigate the relationship of changes in serum vitamin D with PA patterns and metabolic risk factors over a six-months PA intervention program with overweight/obese youth.

METHODS: 57 overweight/obese youth of both genders, 7-16 year-olds, from Porto public schools comprised the sample and were evaluated pre and post intervention. Measurements included PA patterns (accelerometers), blood analysis (metabolic risk factors - glucose, insulin, HDL and LDL cholesterol, triglycerides; and vitamin D), waist circumference (NHANES protocol), and maturational stage (Tanner criteria). All participants were submitted to a PA intervention program during six months, twice a week, aiming to increase their moderate-vigorous PA patterns. For all the variables measured, the delta (Δ) value was calculated as the difference between the second and the first moment of evaluation. The association between Δ vitamin D, Δ metabolic risk factors and Δ PA patterns were verified through Partial Correlations and adjusted for potential confounders (gender and maturational stage at baseline). The variables that showed a statistically significant correlation with Δ vitamin D were introduced in a multiple linear regression, adjusted for gender and maturational stage at baseline.

RESULTS: Data showed that obese youth were less likely to have low vitamin D values by increasing their vigorous PA (OR=3.19).

CONCLUSIONS: In obese youth, higher vigorous PA patterns appears to reduce the chance of decreased vitamin D. Supported by grant: SFRH/BPD/66441/2009

83 Board #6 May 29, 9:30 AM - 11:30 AM

A Daily Colorful Diary Elicits Changes In Lifestyles And Physical Activity Level In Children

Carmen S g Campbell, Raiane M dos S Pereira, Daniel T de Andrade, Isabela A. Ramos, Suliane B. Rauber, Raissa M de S Matos, Herbert G. Simões.
University Catholic of Brasília, Brasília, Brazil.
(No relationships reported)

PURPOSE: To assess the efficacy of completing a daily colorful diary to motivate changes in lifestyle and increase the physical activity level in children

METHODS: 63 children (10.0 \pm 0.8yrs) were separated into a control group with no intervention (NI, n=18), an experimental intervention group with (WID, n=22) and without completing the daily colorful diary (WIND, n=23). Anthropometric parameters, body composition, systolic blood pressure (SBP) and diastolic blood pressure (DBP) were assessed pre and post two months of intervention. Also the following physical fitness tests were applied pre and post intervention and control: sit and reach (SR), abdominal (AB); medicine ball throwing (MT), long jump (LJ), a9min race (R9min) and a lifestyle questionnaire (LSQ) for classification of physical activity level (PAL). The NI group only performed the physical fitness tests and completed the LSQ; the WIND group underwent physical tests and LSQ proceedings, besides receiving guidance about healthy lifestyles (GHLS) weekly; and the WID group underwent to the same procedures of WIND and also completed the diary of habits with pasting pictures related to their lifestyles (diet and physical activity) performed daily. The figures related to bad habits (unhealthy ones) were in black and white color, and those related to good habits (healthy ones) were colorful and were delivered to the children weekly. Once a week the filled diary was collected and a new one was given to the children.

RESULTS: Only the WID group showed significant improvement ($p=0.02$) in PAL after 8 weeks of intervention (144.3 \pm 47.5 vs 181.1 \pm 55.7) with change from moderately active to active. There was a trend of decreased values of sum of the skinfold, %G and SBP in the WI (-3.4mm; -2.6%; -4mmHg) and WID (-2.1mm; -2.6%; -4mmHg) groups; while the NI group tended to increase them (+1.4mm; +2%; +5mmHg) respectively. Regarding physical tests, the WID group showed significant improvement ($p<0.05$) in 4 tests (SR:+3.7cm, AB:+6rep; MT:+35cm; LJ:+5.2cm and R9min:+160.5m); WIND in 3 tests (SR:+4.1cm; LJ:+9.5cm and R9min:+139.6m) and NI in only 1 test (MT:+20cm).

CONCLUSIONS: The two-month intervention with advices about healthy habits besides completing a daily colorful diary changed lifestyle and improved physical activity level in children. Supported by CNPq and FAP-DF.

84 Board #7 May 29, 9:30 AM - 11:30 AM

Effectiveness Of HOP'N Home Childcare Program Delivery Methods: Parent And Child Television Practices

David A. Dziewaltowski¹, Tanis J. Hastmann², Bronwyn S. Fees¹, Richard R. Rosenkranz¹, Michaela A. Schenkelberg¹. ¹Kansas State University, Manhattan, KS. ²University of North Dakota, Grand Forks, ND. (Sponsor: Thomas Barstow, FACSM)
(No relationships reported)

Childcare provides a setting to reach children and parents to modify home environments to prevent sedentary behavior. Parental practices (PP) may influence children's exposure to television (TV) and advertising, but there is little evidence on how to reach and impact children and parents.

PURPOSE: This pilot study evaluated the comparative effectiveness of three different delivery methods for the HOP'N (Healthy Opportunities for Physical Activity and Nutrition) Home childcare program on TV outcomes.

METHODS: The HOP'N program was delivered by research team training staff at full-day childcare (method 1, n=2 settings) or by the county extension/health department training staff at full-day childcare (method 2, n=2 settings) or half-day preschool settings (method 3, n=2 settings). Research staff assessed children (n =66; 5-6 yrs; 61% male; 96% white; 32% overweight and obese) on height and weight and surveyed parents prior to and after the 12-week program. HOP'N Home targeted developing children's skill in asking their parents for healthier food and physical activity options and media literacy through group time, dramatic play, caregiver prompts, musical social narratives, and home curriculum activities. General linear mixed model regression examined the interaction of delivery method (method 1, method 2, method 3) and time (pre, post) on the measures.

RESULTS: Children decreased in asking to watch TV (pre=5.7 times/wk, post=5.2 times/wk; p=0.05), with a greater decrease in the research team delivered training sites compared to other methods (pre=5.9 times/wk, post=4.5 times/wk, p=0.01). PP of active mediation of TV advertising exposure increased (pre=1.02 times/wk, post 1.51 times/wk; p =0.05) and a greater increase occurred from method 2 (pre=.59, post=1.99; p=0.01). Parent provision of TV in response to asking (57% of time, SE=3.56), restrictive advertising mediation (pre=.22 days/wk, SE=.12), concept-oriented or socio-oriented consumer communication, tracking of TV (5.26 times/wk, SE=.47), limiting TV (6.06 times/wk, SE=.44), and watching TV (pre=79 min/day, SE=8.85) did not change.

CONCLUSIONS: The HOP'N Home childcare program may influence children's asking for TV and PP of actively discussing advertising on TV. Supported by United Methodist Health Ministry Fund.

A-26 Thematic Poster - Fitness Assessment Strategies for Children and Adolescents

May 29, 2013, 9:30 AM - 11:30 AM

Room: 207

85 **Chair:** Avery D. Faigenbaum. *The College of New Jersey, Ewing, NJ.*
(No relationships reported)

86 Board #1 May 29, 9:30 AM - 11:30 AM

Comparing Aerobic Capacity Estimates In Children Of Long-term Healthy And High-risk Body Fat

Loran D. Erdmann, Cathy S. McMillan. *Western Illinois University, Macomb, IL.* (Sponsor: Michael P. Godard, FACSM)
(No relationships reported)

With high childhood obesity rates, body fat (BF) and aerobic capacity (AC) are important health-related physical fitness parameters commonly tested in schools.

PURPOSE: To compare AC of 11-year-olds with long-term healthy and high-risk BF and report AC healthy fitness zone (HFZ) classification rates by sex-and-BF group, using FITNESSGRAM® & ACTIVITYGRAM® Test Administration Manual, Updated Fourth Edition (2010).

METHODS: Examined were school-based health-related physical fitness test data from 269 boys and 248 girls with body mass index (BMI, kg-m²) and BF% (from triceps and medial calf skinfolds) values at ages 8, 9, 10, and 11 yrs, and 1-mile run/walk elapsed time at age 11 yrs. We considered 85 boys and 58 girls with BF% in the HFZ at each of the 4 ages to have long-term healthy BF. We also considered 26 boys and 31 girls with high-risk BF% at each of the 4 ages to have long-term high-risk BF. At age 11 yrs, AC (mL.kg⁻¹.min⁻¹) was predicted from age, gender, BMI, and 1-mile run/walk time. In separate gender analyses, independent t tests were used (p < 0.05) to compare AC of long-term healthy and long-term high-risk BF groups. HFZ classification rates were also found for boys and girls by BF groups.

RESULTS: AC was significantly higher in long-term healthy BF boys compared to long-term high-risk BF boys (m+sd = 50.5±3.8 v. 37.0±3.5 mL.kg⁻¹.min⁻¹, t(109) = 16.20, p < 0.001). AC was also significantly higher in long-term healthy BF girls compared to long-term high-risk BF girls (m+sd = 45.5±2.9 v. 34.6±2.8 mL.kg⁻¹.min⁻¹, t(87) = 17.10, p < 0.001). All 85 boys and all 58 girls with long-term healthy BF achieved AC values in the HFZ, whereas only 4 of 26 boys (15%) and 1 of 31 girls (3%) with long-term high-risk BF were classified in the HFZ for AC.

CONCLUSION: In upper-elementary-aged boys and girls with long-term healthy BF, AC is approximately 4 and 3 METs higher than in their long-term high-risk BF counterparts, respectively. The likelihood that AC is satisfactory in upper-elementary-aged children with long-term healthy BF is extremely high, whereas AC needs improvement in the vast majority of those with long-term high-risk BF.

87 Board #2 May 29, 9:30 AM - 11:30 AM

High Intensity Aerobics Training Induces Robust Improvements In Cardiopulmonary Function In Healthy Adolescent Boys

Azmy Faisal¹, Khaled Hammouda². ¹Queen's University, Kingston, ON, Canada. ²Alexandria University, Alexandria, Egypt.
(No relationships reported)

Aerobics training has shown to induce distinct changes in cardiopulmonary fitness; however, little is known about the "optimal" aerobics training intensity to improve the cardiopulmonary function in healthy adolescents.

PURPOSE: This study compared the effects of 3 interval aerobics programs on the cardiopulmonary function in healthy adolescent boys.

METHODS: 56 active boys (13.6 ± 0.4 years, 166 ± 4.5 cm, 61 ± 5.5 kg) were divided into 4 homogeneous groups; 3 experimental groups (A,B,C) and control group. The experimental groups had participated in 11 weeks of interval aerobics training, 4 times a week (45 min per session). Training intensities were determined as a percentage of heart rate reserve (HRR); Group A (60-75%), B (70-85%) and C (80-95%). Maximal oxygen consumption (VO₂max), resting lung functions, as well as post exercise heart rate (HR)recovery and blood lactate [La⁻] were measured before and after training interventions in the experimental groups and within 12 weeks in the control group.

RESULTS: Following training programs there were significant differences between the 3 experimental groups and the control group in all variables, as well as between pre and post training measurements within all the experimental groups. High intensity aerobics programs in Group B and C had shown greater improvements in VO₂max, HR recovery, maximal voluntary ventilation (MVV), and post exercise [La⁻] compared to the moderate aerobics program in Group A. VO₂max had increased in Groups B and C by 18.1% and 17.7 % (B: 47.3 to 55.8; C: 47.3 to 55.7 ml/kg/min) compared to 13.7% in Group A (46.8 to 53.2 ml/kg/min). Improving VO₂max could be linked to increase stroke volume and oxygen delivery. MVV had increased in Groups B and C by 25.2% and 25.8% (B: 115 to 144; C: 24 to 156 l/min) compared to 17.3% in Group A (117 to 137 l/min). Enhancing MVV could result from improving respiratory muscle contractility and lung volumes. Post exercise [La⁻] had decreased in Groups B and C by 71.7% and 64.6% (B: 9.2 to 2.6; C: 9.1 to 3.2 mM) compared to 55.2% in Group A (9.3 to 4.2 mM). Lower post exercise [La⁻] could be associated with the augmentation of skeletal muscle oxidative capacity.

CONCLUSION: High intensity interval aerobics training above 70% HRR seems to be notably more effective in improving the cardiopulmonary function in healthy adolescent boys.

88 Board #3 May 29, 9:30 AM - 11:30 AM

Early Age Gender Differences In Health Related Fitness Components Among Children In Puerto Rico

Olvin O. Rosado-Mendez, Rosimayri Hernandez-Melendez, Lucia del R. Martinez, Farah A. Ramirez-Marrero, FACSM. *University of Puerto Rico, Río Piedras Campus, San Juan, PR.*
(No relationships reported)

Poor health related physical fitness (HR-fitness) is associated with increased risk of cardio-metabolic diseases starting early in life, and gender differences are usually apparent after the age of 9 yrs. Children in Puerto Rico (PR) are at a high risk of inactivity and poor nutritional habits. However, physical fitness characteristics have not been documented in this group.

PURPOSE: To describe HR-fitness in 6-7 year old children in PR, and identify gender differences and associations between HR-fitness components.

METHODS: A pilot study was conducted to evaluate HR-fitness components in a group of 79 children (40 girls, 39 boys): muscle strength and endurance, flexibility and body composition using the Fitnessgram protocol (curl-ups, push-ups, back-saver sit and reach, trunk lift, shoulder stretch, height, weight, and triceps and calf skinfolds). A vertical jump and hand grip strength tests were also included. A t-test was used to detect differences by gender. Spearman correlations, lineal and logistic regression were used to test association between variables.

RESULTS: BMI (group mean±sd=17.1±2.8 kg/m²) and the proportion of children classified as normal, overweight and obese according to age and gender specific BMI percentiles (group=86%, 6%, and 8%, respectively) were similar between boys and girls. There was a tendency for boys to be taller and to have lower triceps skinfolds compared to girls. Boys also had less body fat and higher left hand grip strength compared to girls (17.7±7.4 vs. 20.7±5.9%, 9.9±1.8 vs. 8.5±2.3 kg, respectively, P<0.05); but girls had higher sit & reach values with either right