

Girls' Exercise and Health

An Experiment on Girls Only Physical Activity

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Background

The health benefits of physical activity are well documented; thus, every increase in activity adds some benefits. Seventy percent of children between ages 3 to 4 are meeting the Canadian guidelines, as reported by Active Health Kids Canada 2015 Report Card. However, these same children, spend fifty percent of their day occupied in sedentary activities. In addition, one of the most consistent findings in the research is that girls are typically less active than boys.

Literature reports that obesity has been found to affect physical activity levels of boys, not girls. Overweight and obese boys accumulate 51 minutes of moderate physical activity and 44 minutes of vigorous physical activity per day, while boys who are neither overweight nor obese average 65 minutes a day. This difference between normal weight and obese girls was not significant among girls. All girls averaged 44 to 48 minutes of moderate to vigorous physical activity a day.

Purpose: By removing boys from the environment and replacing them with encouraging leaders, in a program dedicated to sports for the purpose of increasing energy expenditure

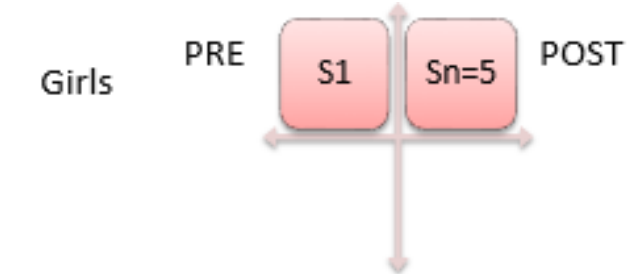
Hypothesis: Girls will increase the amount of time they would normally (in co-ed activities) be able to spend on skill improvement, and increasing girl's attraction to physical activity and quality of life.

Objective: To measure and analyze energy expenditure (Kcal/ 10 sec and MVPA), ppsychosocial functioning and attractiveness to physical activity (PedsQL 4.0 and HRQOL) of children ages 5- 12 years of age during sport oriented play.

Methods

All Procedures were approved by the Human Participation Research Ethics Committee at York University. The Girls Only program started with Girls (n=13) ages 5-12yrs. The children were recruited from a community center after-school program. Nine of the 13 girls participated in the physical activity and psychosocial questionnaires during week one of the program and then again during week 8. The program ran for 8 weeks and sessions were 1 hour 20 min each.

Quasi Experimental Research Design



Measurements or Variables

Accelerometry (ACC) (ActiGraph GT3X+) measured physical activity expressed in vector/10sec epochs
PedsQL 4.0 Survey is comprised of subscales measuring health-related quality of life (HRQOL), variables include:

Psychosocial Functioning: *Subscales for Emotional, Social, School.*

Physical Functioning: *Subscale for Physical self*

❖ Internal consistency reliabilities generally exceeded the standard of 0.7 for group comparisons

❖ Across the ages, the Total Scale Score for self-report and proxy-report approached an alpha of 0.9

Table 1. Sport Activities conducted throughout the 8 week program,.

Week #	1	2	3	4	5	6	7	8
Activity	Assessments	Games	Soccer	Football	Track and Field	Handball	Basketball	Assessments

Discussion & Conclusions

When we looked at Figure 2 we concluded that every girl that completed both the pre and post Children's Attractiveness to Physical Activity questionnaire decreased in enjoyment over the course of the program. While their enjoyment of the program decreased in Figure 1 when comparing Kcal/10 seconds for the Girls' Only program and the Co-ed program, the Girls' Only program expended higher Kcal/10 seconds (significance of 0.002). Howe and colleagues conducted a study using 13 boys and girls. When plotted on a graph resulted of total energy expenditure (Kcal/ min) an r² value of 0.0068 was produced. Games that are rated with the highest perceived enjoyment were games that involved more sporadic movement patterns (like tag). It seems that enjoyment might correlate with MVPA% (sporadic movement). However, when we look at Figure 3 an independent sample test was run on the overall percent MVPA for each program. There was no statistical difference for girls MVPA participation (significance of 0.956). This may be because both programs were structured around the same activities. In other words, there was not an increase in games/ activities that encourage sporadic movement.

Table 2. Girl's Physiological Characteristics Girls' physiological characteristics at the start and at the end of the 8 week girls' only sport skills active play program. A 2-tailed paired sample test was conducted and results indicated a statistically significant increase in weight p= 0.005, this resulted in an increase by 1 kg in the mean. There was no statistically significant difference in height (p = 0.74) or BMI (p=0.305).

Group	N	Age (years)	Weight (kg)	Height (cm)	BMI
PRE Data	13	7.67 ± 1.37	36.4 ± 12.7	127.1 ± 9.7	22.3 ± 6.5
POST Data	9	7.67 ± 1.22	37.4 ± 13.1	128.3 ± 10.8	22.5 ± 6.7

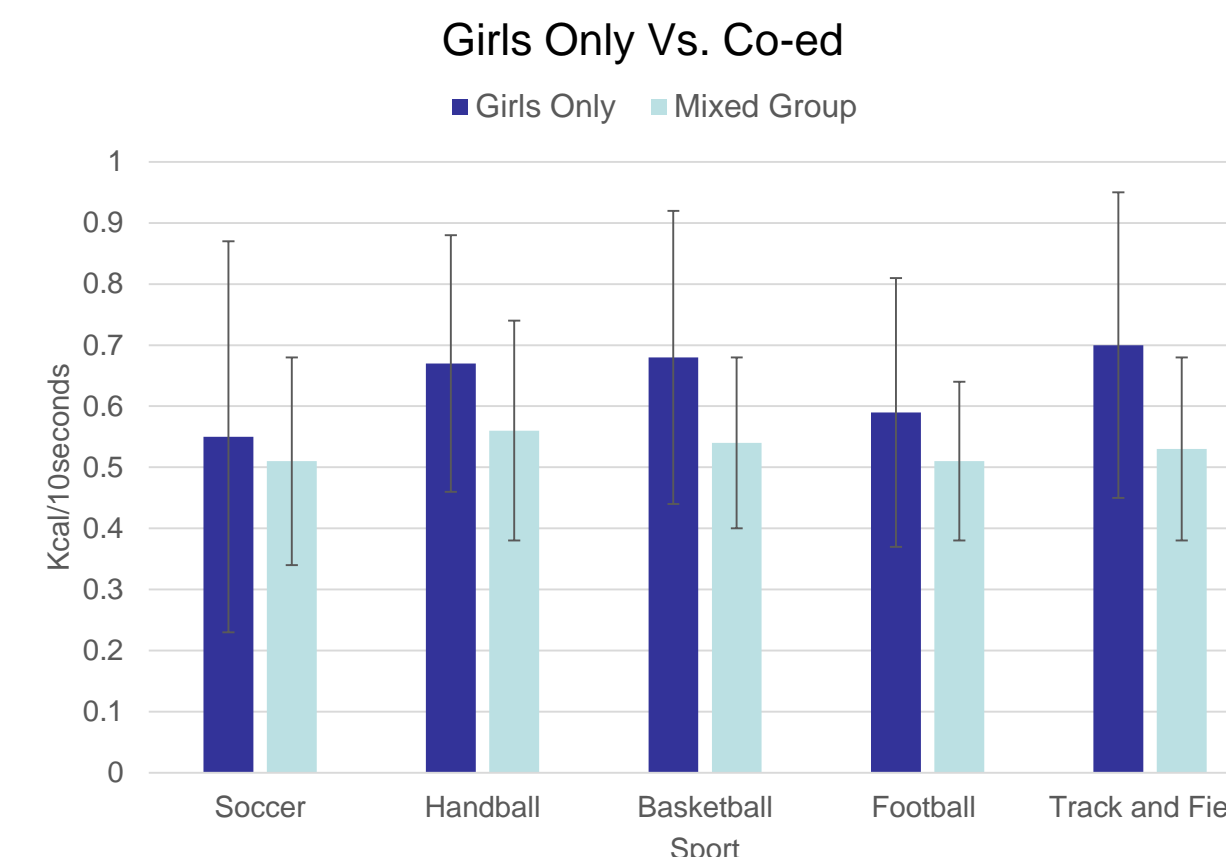


Figure 1. Amount of Kcal/ 10 seconds girls exerted for each sport in the Girls Only program vs. the Co-ed program. Energy expenditure measured in Kcal/10 seconds was reordered by accelerometer ActiGraph GT3X+. Figure 4 represents the Kcal/10 seconds expended by the girls in the Girls Only program compared to a Co-ed program (with the same leaders and activities) for the corresponding activity. A 2-tailed paired samples test was conducted indicating that there was a statistically significant difference between the two groups (p= 0.001). An independent sample test was run on the overall percent MVPA for each program. There was a statistical difference for girls' energy expenditure in Kcal/10 seconds (significance of 0.002).

Results

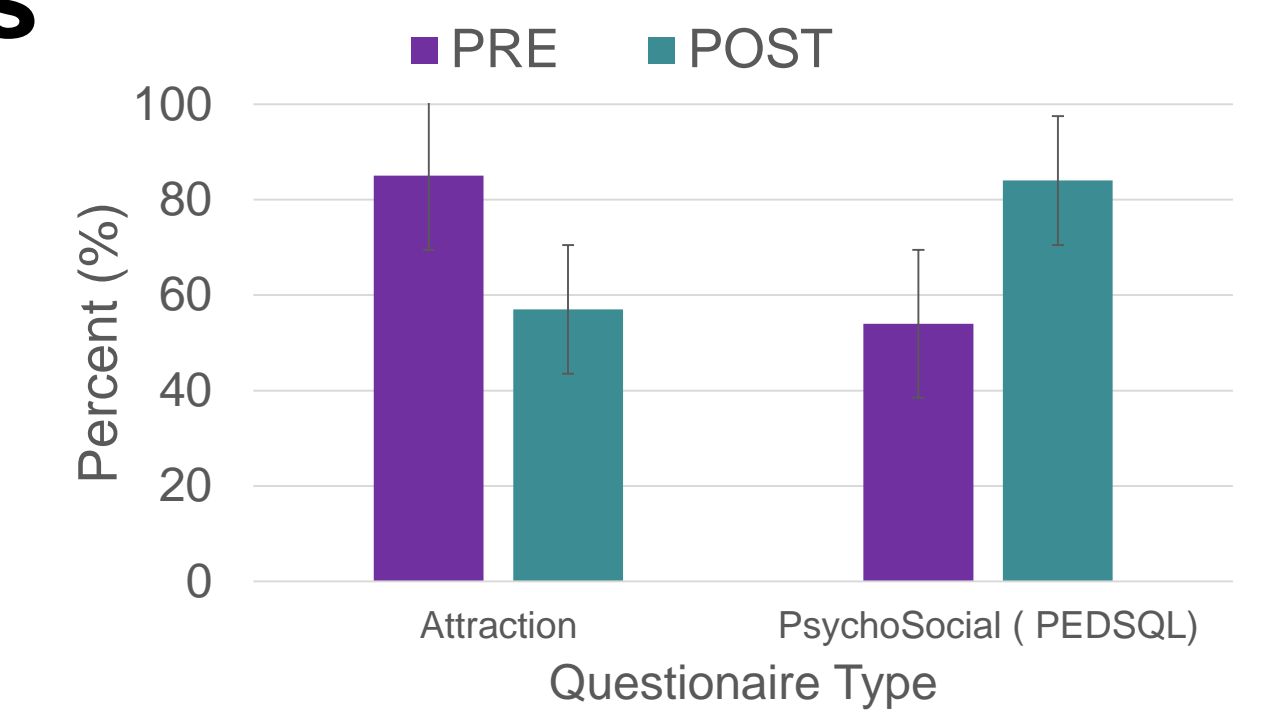


Figure 2. Children's Attractiveness to Physical Activity & PEDQL Questionnaire Scores

A 2-tailed paired samples test was conducted, and the results indicated that the scores for the Children's Attractiveness to Physical Activity questionnaire decreased a statistically significant amount (p= 0.000). While the scores for the PEDQL questionnaire increased a statistically significant amount (p= 0.001). PEDSQL is composed of 4 indicators, Physical, Emotional, Social, and School Functioning. A 2-tailed paired samples test was conducted, and the results indicated that the mean score for Physical Functioning did not change a statically significant amount (p=0.417), neither did the scores for Emotional Functioning (p=0.081), or for the Social Functioning (p=0.737), or for the School Functioning (p=0.466)

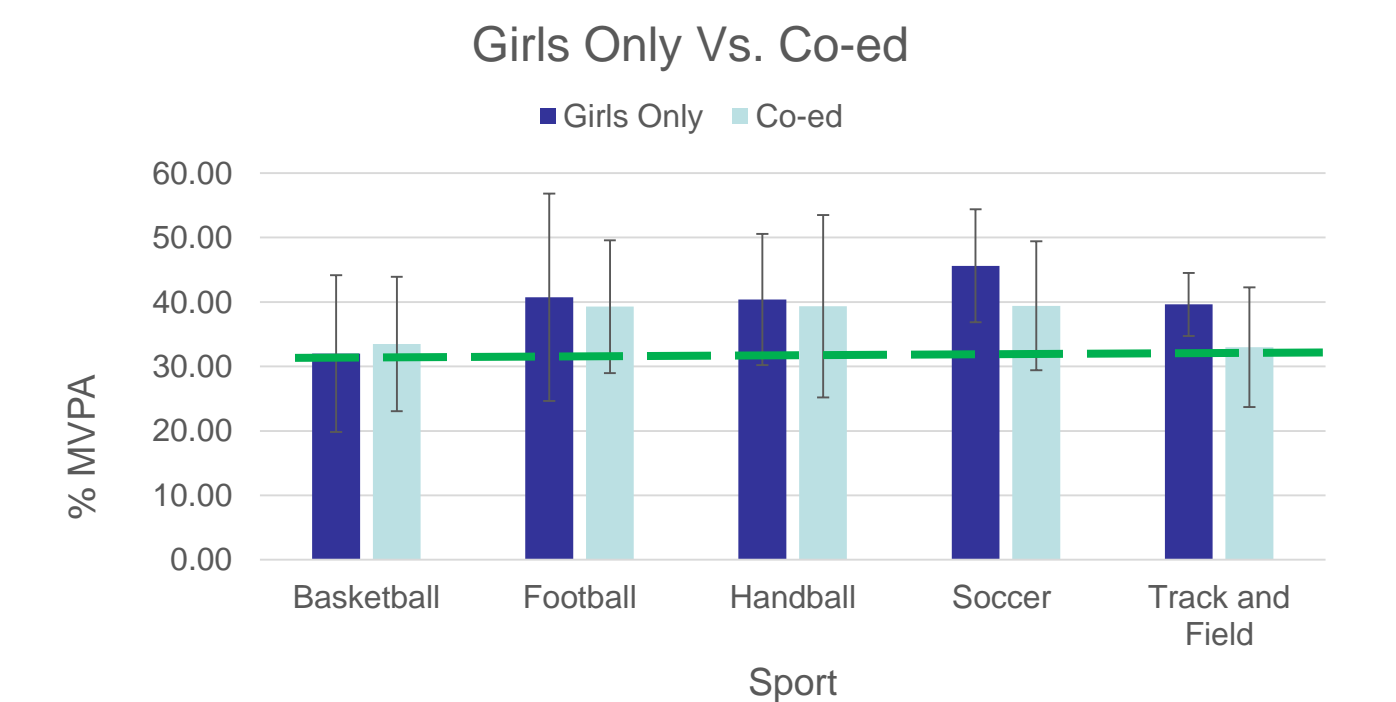


Figure 3. Percentage of Time Girls Spent in Moderate to Vigorous Physical Activity (%MVPA) in a Girls only program vs. Co-ed program. Figure 3 represents the calculated amount of time (in percentage) the girls from the girl's only program spent in moderate to vigorous intensity for each sport compared to a co-ed program ran the previous summer. Moderate to vigorous physical activity is defined as greater than 3.99 METs. A 2-tailed paired samples test was conducted indicating that there was no statistical significant difference between the two groups (p = 0.169). The green line drawn on the graph demonstrates the average amount of time the literature indicates children participate in moderate to vigorous intensity during physical activity (30% of the total time). An independent sample test was run on the overall percent MVPA for each program. There was no statistical difference for girls MVPA participation (significance of 0.956).

References

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