



# PHYSICAL ACTIVITY OF CHILDREN FROM A RURAL TOWN, SOUTH AFRICA



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## Introduction & Objective:

Physical activity plays an integral role in the normal physical, mental, social and cognitive development of children. Low- and middle-income countries, like South Africa, are witnessing the fastest rise in overweight children, and one of the main reasons identified in evidence-based literature is inactivity. The aim of this study was to determine the physical activity measured in boys and girls, from three different age groups, living in a small rural South African town. The study population's physical activity levels were directly compared to recommended international physical activity levels. The influence of BMI and adiposity, gender and age on activity measurements was also investigated. Study objectives included the measurement of pedometer data: total steps, aerobic steps, aerobic walking time, calories and distance.

## Method:

Seventy-eight rural children, divided into three groups according to age (i.e. 5-6 year olds, 9-11 years olds & 12-14 year olds), were issued a piezo-electric pedometer for seven complete days. Age, gender & anthropometric variables were analysed by descriptive statistics and the children were classified according to the IOTF body mass index. Steps per day were compared to international levels. Correlation statistics were performed to examine the association between physical activity and adiposity. The Mann-Whitney 2-tailed test was used to assess gender differences. Linear regression analyses were performed to determine the role of the predictors (BMI, gender & age) on the pedometer-measured dependent variables.

## Results:

The physical activity levels of this group of rural South African boys and girls are far lower than the recommended international levels. (Fig.1) No correlation was found between physical activity and adiposity. The older boys were statistically more active than the older girls (groups 9-11 & 12-14 years). Physical activity levels differ between different age groups; 9-11 year old children were more physically active than those in the other age groups. Girls tend to be more aerobically active the older they get, although their daily activity levels decline with age. BMI, gender and age can explain moderate to large portions of variance in average total steps ( $R^2=0.119$ ;  $p=0.024$ ), calories ( $R^2=0.402$ ;  $p<0.001$ ) and distance ( $R^2=0.333$ ;  $p<0.001$ ), but not in aerobic steps count ( $p=0.153$ ) and aerobic walk time ( $p=0.135$ ). (Table1)

Table 1: Group characteristics, IOTF classification and pedometer descriptive statistics

Descriptive Variables	Group A: 12 - 14 years		Group B: 9 - 11 years		Group C: 5 - 6 years	
	Boys	Girls	Boys	Girls	Boys	Girls
Gender (n)	13	18	12	18	8	9
Mean Age in Months (SD)	153.3 (6.1)	149.6 (6.7)	125.2 (8.9)	123.2 (9.9)	66.5 (5.4)	65.8 (3.7)
Mean BMI (SD)	19.4 (4.5)	20 (3.3)	17.1 (4.5)	16.7 (3.0)	16 (0.7)	15.9 (2.1)
Underweight (< 18.5)	8%	6%	16.5%	28%	0%	11%
Normal (18.5 - 24.9)	61%	67%	67%	56%	100%	67%
Overweight (25 - 29.9)	23%	27%	0%	11%	0%	11%
Obesity (30 - 34.9)	8%	0%	16.5%	5%	0%	11%
Morbid Obesity ( $\geq 35$ )	0%	0%	0%	0%	0%	0%
Mean Total Steps /Day (SD)	7888 (2188)	6450 (2083)	11601(2454)	8526 (2196)	6704 (3115)	5906 (2751)
Mean Aerobic Steps /Day (SD)	655 (1130)	499 (868)	865 (1073)	286 (333)	141 (242)	98 (128)
Mean Aerobic Walking Time (min) /Day (SD)	6.61 (10.97)	4.92 (8.51)	8.97 (11.37)	2.87 (3.23)	1.52 (2.54)	0.93 (1.20)
Mean Calories (KCal) /Day (SD)	203.59 (101.95)	146.81 (51.43)	212.79 (62.29)	157.33 (56.39)	84.19 (39.43)	70.99 (34.78)
Mean Distance (m) /Day (SD)	5753 (1931)	4454 (1415)	7637 (1943)	5556 (1375)	2007 (934)	1767 (825)

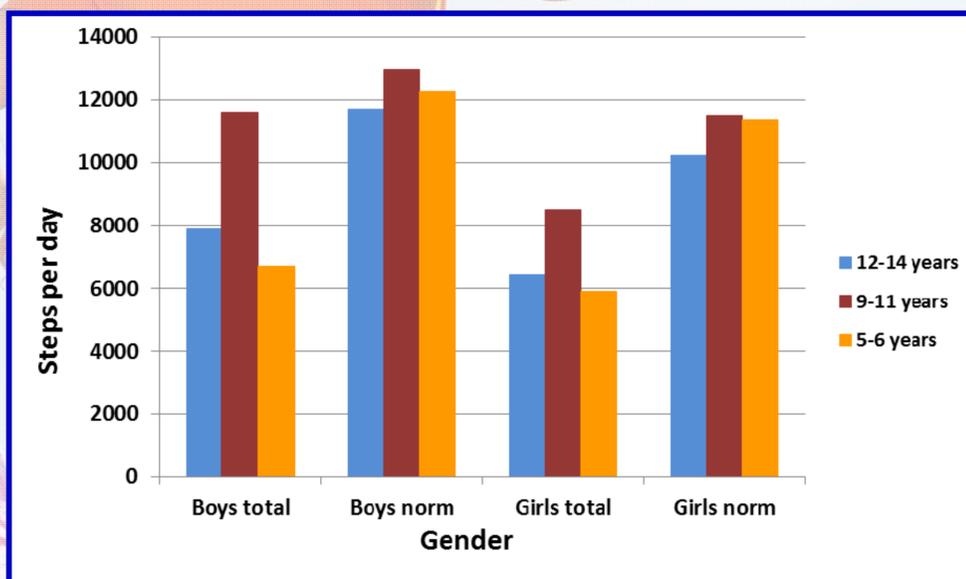


Figure 1: Comparison of a rural South African population's step counts (Boys total and Girls total) with the CANPLAY data norms (Boys norm and Girls norm) for different age groups.

## Conclusion:

The children in this study were less physically active than the recommended international physical activity levels. There was no correlation between physical activity and adiposity. The analyses of the pedometer data indicated that gender and age influence the activity of children. The age group 9-11 may be the ideal age to focus gender specific intervention programs to increase physical activity and combat obesity and other health risks associated with obesity, i.e. diabetes mellitus.

## References:

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