

Characterizing baseline physical activity in family child care homes serving 2-5 year-old ethnically diverse children

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Introduction

- Family child care homes (FCCH) are associated with higher child BMI vs. center-based care.
- Healthy Start/Comienzos Sanos evaluates an intervention to improve diet and physical activity (PA) of children 2-5 years old in FCCH.
- FCCH providers receive tailored bilingual written materials, videos, and motivational counseling by bilingual peer support coaches.
- FCCHs observed at three timepoints (baseline, 8 months, 12 months). Activities documented with Environment and Policy Assessment and Observation (EPAO) tool. PA measured by triaxial accelerometer.
- Objectives of the current analysis include:**
 - 1: Define categories of play according to EPAO observations of baseline data
 - 2: Determine association between baseline categories and minutes of accelerometer-measured moderate-to-vigorous PA (MVPA) in children
 - 3: Identify baseline child care home policies that increase MVPA
- Hypothesis:** 1) Organized physical games will result in the most vigorous PA; 2) PA measured by accelerometer will be higher in outdoor vs indoor play.

EPAO Tool and PA assessment

- 75 items delineate child care nutrition and PA environments, policies/practices measured over 2 full days. Activity context codes indicate if/how play is instructed and how the structure is used during free play time.
- 1+ child/FCCH wears triaxial accelerometer, has their BMI calculated, and provides demographic data with parental consent and child assent.

Results

Baseline EPAO data was analyzed for trends in play behavior and these behavioral variables were compared with respect to their effects on min/hr of MVPA and sedentary activity.

Child enrollment demographics

(N=192)	Mean (SD) or %
Mean Age (Years)	3.33 (1.01)
Sex	53% M; 47% F
Race/Ethnicity	
American Indian	1.50%
Black/African American	13.30%
Native Hawaiian/Pacific Islander	0.70%
White/Caucasian	32.50%
Other*	42.50%
>1 Race	7.70%
Hispanic	85%

Figure 1: Child demographics reported by parental guardian. *Most respondents wrote an ethnicity like "Latino," "Puerto Rican," etc. rather than a race category. To avoid duplicating responses, category was not recoded.

Accelerometer-measured activity

	Sedentary	Light	Moderate	Vigorous	MVPA
Mean (min/hr)	34.6	18.4	4.5	2.5	7.0
Std. Deviation (min/hr)	9.7	6.9	2.4	1.6	3.7

Figure 4: Mean min/hr of activity categories measured by triaxial accelerometer.

How do children spend their time?

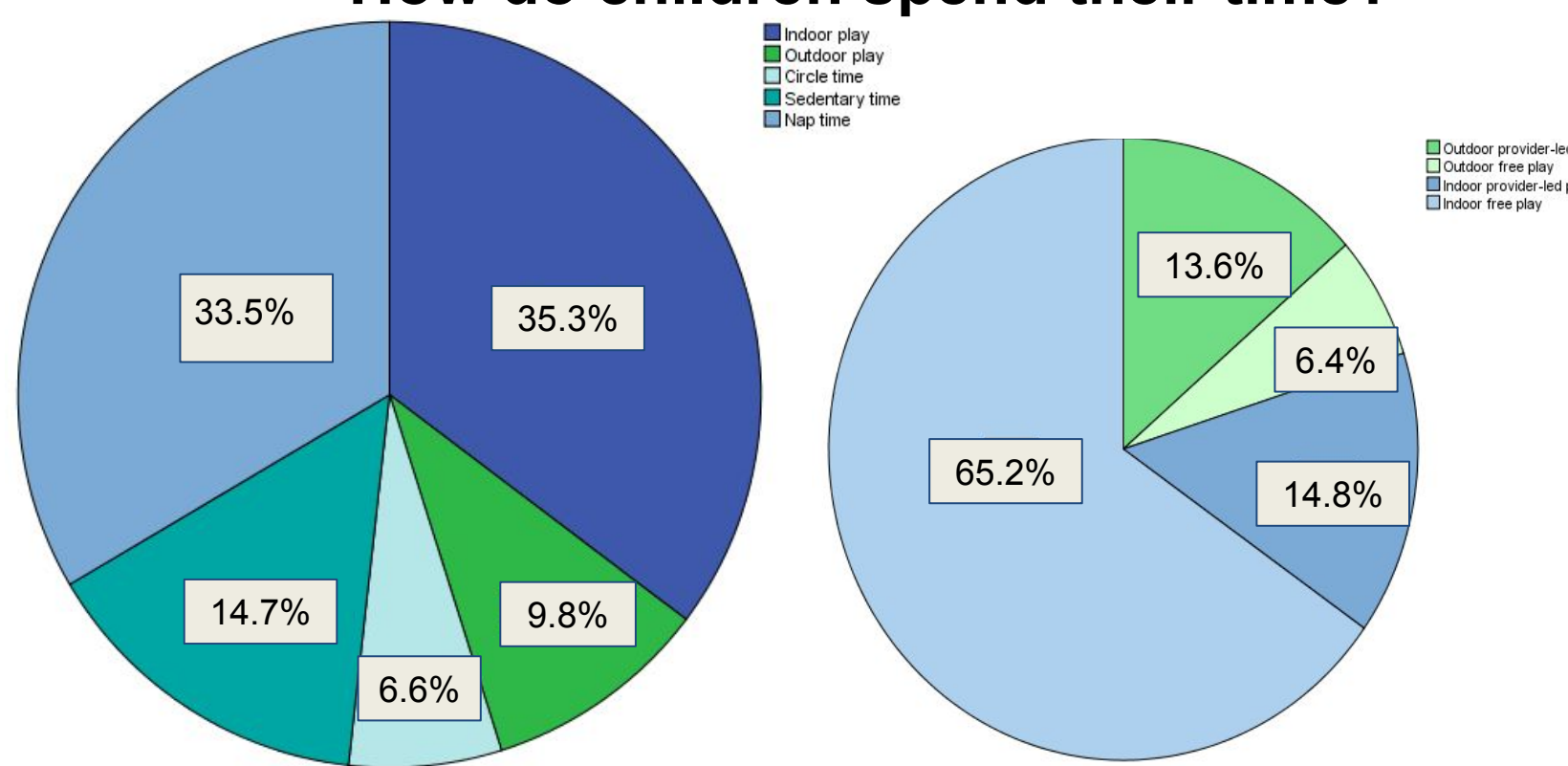


Figure 2: EPAO time breakdown.

Figure 3: EPAO structure of play.

Which is more vigorous? Comparing indoor/outdoor and provider led/free play

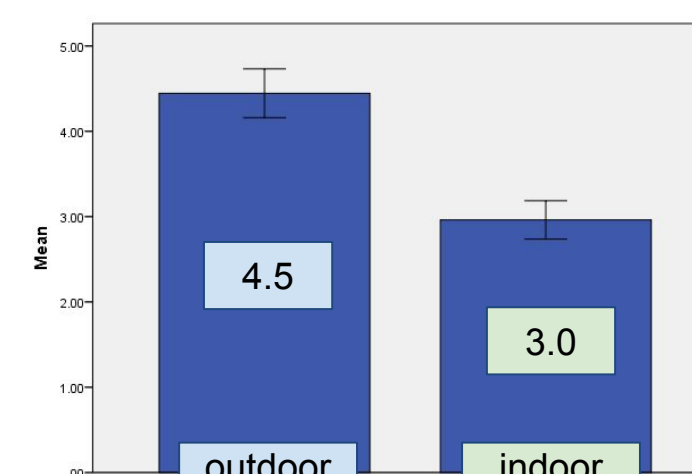


Figure 5: Mean EPAO AL outdoors vs in. Error bars = 95% CI.

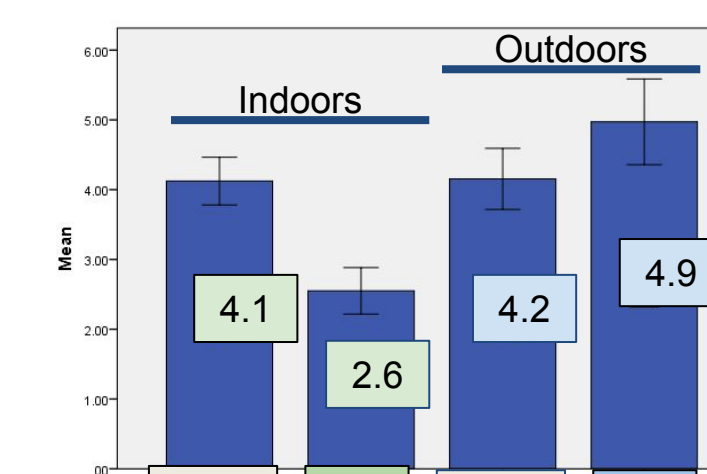


Figure 6: Mean EPAO AL by play structure. PL = provider led; F = free play. Error bars = 95% CI.

Categories of outdoor play observed

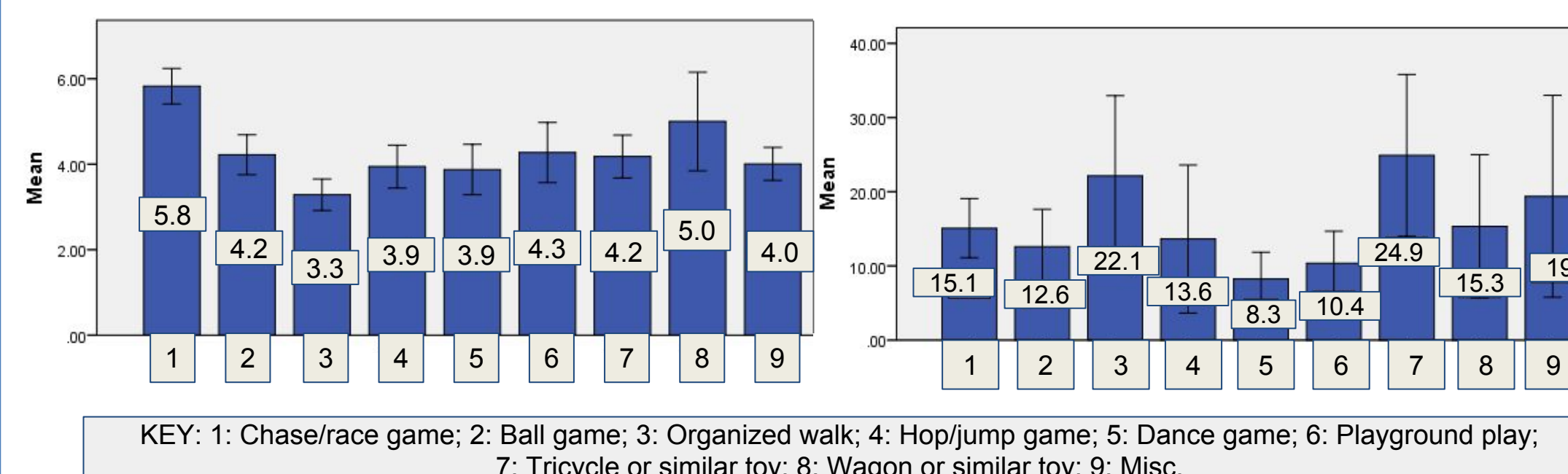


Figure 7: Mean AL by activity category code. Error bars = 95% CI.

Figure 8: Mean time (min) spent in activity by activity category code. Error bars = 95% CI

Correlations findings:

- No differences in MVPA or sedentary min/hr found between age, sex, race, or ethnicity categories ($p > 0.05$).
- Correlations between 9 outdoor play categories and 1) min/hr MVPA and 2) min/hr sedentary activity were analyzed separately.
 - No association found between play categories and min/hr MVPA ($p > 0.05$).
 - Hop/Jumping games were negatively correlated with min/hr sedentary activity ($p = 0.03$).

Summary

- Children spend the most time in indoor play and nap time (Fig. 2)
- Most play is indoors and unstructured. Outdoors, more time is spent in activities led by providers (Fig. 3)
- Outdoor play is more vigorous than indoor play, as predicted ($p = 0.02$) (Fig. 5)
- Provider-led play is more vigorous than free play indoors ($p = 0.01$), but outdoor free play has the highest activity level (Fig. 6)
- Children achieve 23.5 (SD 13.8) minutes of MVPA per day on average, far below recommendations of 60 minutes
- Chase/race games are the most vigorous and organized walks are the least vigorous (Fig. 7)
- Children spend the most active play time on tricycles (Fig. 8)
- There are no differences in min/hr MVPA between different outdoor play categories

Future Directions

- Data collection continues
- Change in PA variables over time (8 & 12 months) will be assessed
- Results will be used to create policy recommendations and future interventions for FCCHs and other child care settings:
 - Increase unstructured outdoor play time
 - Increase structured indoor play time

References

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- RI Department of Health. The burden of overweight and obesity in Rhode Island 2011 [January 30 2017]. Available from: <http://www.health.ri.gov/publications/burdenofobesity/2011OverweightAndObesity>.
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