



Contents lists available at ScienceDirect

Journal of Science and Medicine in Sport

journal homepage: www.elsevier.com/locate/jsams



Original research

Maternal correlates of young children's physical activity across periods of the day

Jill A. Hnatiuk^{a,b,*}, Nicola D. Ridgers^a, Jo Salmon^a, Kylie D. Hesketh^a

^a Centre for Physical Activity & Nutrition Research, Deakin University, Australia

^b School of Science and Health, Western Sydney University, Australia

ARTICLE INFO

Article history:

Received 15 October 2015

Received in revised form 24 March 2016

Accepted 16 June 2016

Available online xxx

Keywords:

Motor activity

Mother–child relations

Infant

Child

Preschool

ABSTRACT

Objectives: Associations between maternal correlates and young children's physical activity levels across the whole day and the segmented day were examined.

Design: Cross-sectional study

Methods: Participants were 136 mothers and their 1–3 year old children recruited between July 2013 and March 2014. Mothers reported time spent providing physical activity opportunities for their child, co-participating in and modelling physical activity and sedentary behaviours during the morning, afternoon and evening. Participants wore ActiGraph GT3X (mothers) and GT3X+ (children) accelerometers concurrently for seven consecutive days and the time spent in light- (LPA), moderate- to vigorous- (MVPA) and total (LMVPA) physical activity were assessed. Two-level (family; recruitment group) multivariate models examined associations between maternal correlates (including maternal objectively-assessed sedentary time [ST] and physical activity) and children's physical activity.

Results: Maternal self-reported co-participation in sedentary behaviour and provision of child opportunities for physical activity were associated with children's physical activity; associations varied by period and physical activity intensity. During the morning period, mothers' objectively assessed ST was negatively associated with children's MVPA and LMVPA while her LPA was positively associated with children's LPA, MVPA and LMVPA. Mothers' MVPA was negatively associated with children's LPA and LMVPA during the evening period.

Conclusions: Maternal correlates of young children's physical activity may be period- and intensity-specific. Programmes promoting physical activity for families may need to consider incorporating strategies to reduce mother–child co-participation in sedentary behaviour, increase mothers' provision of opportunities to be active and increase mothers' own LPA over ST during certain periods of the day.

© 2016 Sports Medicine Australia. Published by Elsevier Ltd. All rights reserved.

1. Introduction

Engagement in physical activity during early childhood (0–5 years of age) is recommended for favourable health and developmental outcomes.¹ Current physical activity guidelines for children under five recommend 180 min of total (i.e., light-, moderate- and vigorous-intensity [LMVPA]) physical activity across the day.^{2–4} However, many studies report low levels of daily physical activity in children under age five⁵ and recent Australian population data suggests that only 14% of children meet physical activity guidelines by the commencement of primary school.⁶ As physical activity during

early childhood has been found to track into middle childhood⁷ and adulthood,⁸ maximising physical activity early in life is a key public health priority. In order to design effective programmes to promote physical activity within this age group, a greater understanding of the factors that influence young children's physical activity is needed.⁹

Given the low levels of autonomy possessed by young children, it is often parents who act as gatekeepers of their children's health behaviours within the home environment. Parents have been hypothesised to influence their child's physical activity in three ways: providing physical activity opportunities for their child (e.g. taking the child to the park), modelling physical activity themselves (e.g. riding a bike in front of the child), or co-participating in physical activity with their child (e.g. playing active games with the child).¹⁰ In addition, mothers who spend substantial

* Corresponding author.

E-mail address: j.hnatiuk@westernsydney.edu.au (J.A. Hnatiuk).

amounts of time sedentary (either modelling such behaviour or in co-participation with their child) may negatively influence their children's activity levels. However, evidence of associations between parental correlates of young children's physical activity remains largely inconclusive to date.^{11,12} Few correlates have been repeatedly investigated in children under age five years and, of those studies conducted, the evidence is mixed. The influence of mothers on children's physical activity appears to be different to that of fathers¹³; therefore, examining the correlates for each parent separately may help to more effectively understand parental influences on children's physical activity. Mothers of young children under age five report spending a considerable portion of their day with their child,¹⁴ and are therefore likely to be an important target group for understanding how they influence their child's physical activity.

Most research examining influences on young children's physical activity focuses on the preschool population (3–5 years old) with evidence for children under age three virtually non-existent.¹⁵ This is an important research gap given the substantial developmental differences between these age groups. In addition, it has been argued that correlates of health behaviours are context specific.¹⁶ That is, global measures of physical activity correlates (such as 'barriers to overall activity levels') may not be as useful as contextual correlates which can better inform intervention programme development. For example, correlates of physical activity have been found to be period-specific,¹⁷ as well as intensity-specific¹⁸ for children under age five. However, to date, no studies have examined maternal correlates of physical activity among children under three years using a both a period- and intensity-specific approach. Therefore, the aim of this study was to examine how maternal physical activity and sedentary behaviours, practices and beliefs were associated with different intensities of young children's physical activity across different periods of the day.

2. Methods

Between July 2013 and March 2014, one-hundred and sixty-three mother-child dyads from suburbs within Melbourne and Geelong, Australia were recruited through playgroups ($n = 139$; 43% response rate), swimming classes ($n = 4$), primary school newsletters (to target younger siblings; $n = 2$) and an email circulated to university staff ($n = 18$). Information regarding potential reach of the latter three recruitment methods was not collected, therefore a response rate cannot be calculated.

Mothers were required to meet the following criteria to participate: (1) be literate in English; (2) have a child between 12 and 47 months old who was walking independently; and (3) be together with their child for at least 4 out of 7 days during the week they took part in the study. The third inclusion ensured children had sufficient exposure to maternal correlates during different time periods. Mothers provided written informed consent for themselves and their child to participate in the study. This project was approved by the Deakin University Human Research Ethics Committee (HEAG.H.22.2012).

Maternal and child demographic variables were assessed using an online ($n = 115$) or paper-based ($n = 48$) questionnaire completed by mothers. These variables included maternal date of birth, education (secondary school or less = low; trade qualification = medium; university degree or higher = high), and child date of birth, sex, age when he/she started walking, and his/her usual wake and bed time.

Twenty maternal correlates hypothesised to influence young children's physical activity¹⁰ were assessed in the morning (wake up–11 am), afternoon (11 am–4 pm) and evening (4 pm–bedtime).

These time periods were based on previously observed young children's activity patterns.¹⁹ Maternal correlates used in studies with older children^{10,20} provided the foundation for the newly derived questions used in this study. Parents reported the total time across the last week (in min and h) spent in the predefined periods of the day. The correlates included: (1) providing opportunities for the child to participate in physical activity (sum of 7 items examining time spent taking child to relevant outdoor and indoor spaces conducive to physical activity and providing social activities for the child); (2) co-participating in sedentary behaviours with the child (sum of 2 items examining time spent watching TV and playing with computer/tablet/smartphone together); (3) co-participating in quiet play activities with the child (sum of 3 items examining time spent in arts and crafts, floor play or imaginary play with child); (4) co-participating in physical activities with the child (sum of 3 items examining time spent playing active games indoors or outdoors (e.g. dancing and similar) and active transport with child); (5) modelling physical activity in front of the child (1 item examining the time child saw mother doing activity); and (6) modelling sedentary behaviour in front of the child (sum of 3 items examining time the mother spent sitting watching TV, on the computer/tablet/smartphone and any other sedentary activities). A cumulative score of the total amount of time (in h) mothers spent in the respective correlates was then created for each period of the day by summing the time spent in all the behaviours comprising the maternal correlates for the respective periods.

Mothers' physical activity was assessed every 15-s using ActiGraph GT3X accelerometers worn on the hip for seven consecutive days. Children's physical activity was simultaneously assessed using ActiGraph GT3X+ accelerometers. Data were sampled at 30 Hz and downloaded in 15-s epochs (ActiLife software v.6.5.2). These monitors are comparable in their output.²¹ Mothers were asked to ensure that they and their child wore their monitors during all waking hours except during water-based activities. Physical activity data were collected during the same week that the mother completed the survey.

Mothers' and children's physical activity data were processed with a customised Excel macro using validated cut-points for children²² and adults²³ to determine the amount of time spent in LPA, MVPA, LMVPA (both) and sedentary (mothers only) during the morning, afternoon and evening periods. Twenty minutes of consecutive zeros was considered non-wear. Given the variability in children's wake (range: 6:30 am–9:30 am) and bed (range: 6:30 pm–11:00 pm) times, the accelerometer morning period start times and evening end times were matched to the survey data where mothers reported their children's typical wake and bed times. Mothers' accelerometry data were processed using her child's wake and bed times to examine maternal influences on children's physical activity. However, the same mothers' data were also processed across her whole waking day to enable descriptive comparisons of mothers' physical activity over the full day to the times that her child was awake.

The total time (min/day) spent in each physical activity intensity was averaged across all days where the period was valid. To be included in the analyses for each time period, mothers and children were required to have four valid periods of data (3 weekdays and 1 weekend day with valid data for at least 50% of the period), consistent with previous research.^{19,24} Analyses were repeated including only those children who had both a valid period and a valid day (7.4 h¹⁹); however, as no differences in physical activity levels were observed (data not shown), the sample size was maximised and only required children to have a valid period for inclusion in the analyses.

Data were analysed using Stata 12.0. Demographic characteristics and physical activity levels of the sample were identified using

Download English Version:

<https://daneshyari.com/en/article/5574081>

Download Persian Version:

<https://daneshyari.com/article/5574081>

[Daneshyari.com](https://daneshyari.com)