

Background

It is widely known that regular physical activity is crucial for adults to maintain optimal physical and mental health [1, 2], with previous research indicating that there is a positive relationship between regular physical activity participation and lower stress levels [3, 4]. Whilst all adults face daily stressors, parents have additional stress

Data collection

Physical activity

Device-assessed physical activity data were collected via ActiGraph GT3X+ accelerometers, using a 5-second epoch. Parents were mailed accelerometers and asked to wear them continuously on their right hip (attached to a band) for an eight day period, removing only for water-based activities. Non-wear time was considered to be 20 min of consecutive zero counts. Wake time accelerometer data were extracted and processed using a Microsoft Excel macro. The minimum requirement to be included for analyses for this study was any four days of greater than or equal to 10 hours of wake time wear. Validated accelerometer cut points of > 1952 counts/minute were used to determine weekly moderate-vigorous physical activity (MVPA) minutes. Accelerometer data were adjusted for wear time using the residuals method [

Results

Participant characteristics

In total, 1507 parents (1358 mothers, 149 fathers, 133 mother-father dyads) were recruited to the Let's Grow trial and 1481 (1338 mothers, 143 fathers, 128 mother-father dyads) were included in this study. Participants were excluded from this study on the basis of missing data; missing parenting confidence scales ($n=5$ general parenting confidence scale, $n=1$ physical activity-specific parenting scale), missing self-reported physical activity

($n=13$) and missing sibling status ($n=6$). One additional participant was excluded due to identifying as a grandparent. A further 349 parents did not provide valid accelerometer data, hence the sample for analyses involving accelerometer data was 1132 (1019 mothers, 113 fathers, 94 mother-father dyads). All descriptive characteristics were similar across both the main sample and the subsample with valid accelerometer data (data not shown).

Therefore, only descriptive characteristics of the main sample are outlined in Table 1.

The only significant differences between mothers and fathers in demographic characteristics were that moth-

physical activity-specific parenting confidence for mothers ($\beta = 0.09$, $CI_{95} = 0.03, 0.15$). There were no other associations found between either assessment of physical activity or parenting confidence for mothers or fathers. Fathers did however have a significantly lower score than mothers in the self-management domain (mothers $m = 14.64$, $SD \pm 2.09$; fathers $m = 14.10$, $SD \pm 2.50$; $t(246) = 2.04$, $p = 0.04$). All mother-father dyad associations are presented in Table 3.

Discussion

This study examined associations between parents' physical activity levels, both self-reported and device measured, and their general and physical activity-specific parenting confidence. Increasing understanding of these associations is important to better support parents to achieve optimal health outcomes for both themselves and their children. This study found that mothers were significantly less active than fathers in both device-assessed and self-reported measures. Mothers scored higher than fathers in the general parenting confidence domains of personal agency and self-management, in addition to having the domains of self-management and self-su -

the exception of fathers having lower self-management scores. While the lower self-management score for fathers was also found in the larger sample, it being evident in the dyad sub-sample highlights the significance of this finding and speaks to the fact that fathers have lower self-management scores than mothers, even when parenting the same child. This is likely to be a significant finding given its presence in the larger sample also.

This study featured a large sample of mothers from across Australia, and is strengthened by the inclusion of fathers. The inclusion of mother-father dyads provided valuable insight into both general and physical activity-specific parenting confidence, given both parents are living within the same household and therefore have the same level of family function and are parenting the same child(ren). This study was limited by the highly active nature of participants as indicated by device-assessed activity. This may mean that findings are not generalisable to all parents. Additionally, this study's cross-sectional design limits its ability to determine the direction of associations. Finally, this study was limited by the small mother-father dyad sub-sample, as well as the small sample of fathers, as the limited size of these samples might not have provided enough statistical power to identify associations. In addition, the results may not be applicable to a wider population due to potential lack of diversity among the participating fathers. Considering the scarcity of existing research on fathers, the findings presented here play a crucial role in increasing the knowledge base in this area.

Conclusion

This study aimed to better understand the associations between parental physical activity and parenting confidence.

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