



Original research

Physical activity and sport participation characteristics of Indigenous children registered in the Active Kids voucher program in New South Wales



Rona Macniven^{a,b}, Bridget C. Foley^c, Katherine B. Owen^c, John R. Evans^d,
Adrian E. Bauman^c, Lindsey J. Reece^{c,*}

^a University of New South Wales, School of Public Health and Community Medicine, Australia

^b The University of Sydney, Faculty of Medicine and Health, Poche Centre for Indigenous Health, Australia

^c The University of Sydney, SPRINTER, Prevention Research Collaboration, The Charles Perkins Centre, Sydney School of Public Health, Australia

^d University of Technology Sydney, Faculty of Health, Australia

ARTICLE INFO

Article history:

Received 7 November 2019

Received in revised form 22 May 2020

Accepted 26 June 2020

Available online 3 July 2020

Keywords:

Young people

Socioeconomic

Pragmatic evaluation

Government

Aboriginal and Torres Strait Islander

Parents

ABSTRACT

Objectives: Investigate sociodemographic factors associated with physical activity and sport participation among Indigenous children registered in the New South Wales (NSW) government-funded Active Kids voucher program in 2018, including comparison with non-Indigenous children.

Design: Cross-sectional study.

Methods: The Active Kids voucher program aims to support the cost of children's sport and physical activities. All children aged 5–18 years in NSW are eligible for a voucher. To register, parent/carers report child sociodemographic characteristics, physical activity, sport participation and optional height and weight. Regression models were used to determine which sociodemographic characteristics were associated with meeting physical activity guidelines and sport participation for Indigenous and non-Indigenous children.

Results: Of the 671,375 children aged 5–18 years, 36,129 (5.4%) were Indigenous. More Indigenous children than non-Indigenous children met the physical activity guidelines before registering in the Active Kids program. Indigenous children had greater odds of meeting physical activity guidelines across all socio-economic quartiles. Among non-Indigenous children, odds reduced with social disadvantage. Indigenous children (38%) were less likely to participate in organised physical activity and sport sessions at least twice a week compared to non-Indigenous children (43%). Indigenous children living in major cities had higher sport participation levels compared with those living in outer regional and remote areas. **Conclusions:** The Active Kids voucher program achieved population representative reach among Indigenous children, whose physical activity levels were higher than non-Indigenous children across all socioeconomic quartiles. The program has potential to supplement Indigenous children's physical activity levels using organised sessions and reduce sport drop-out among older children.

© 2020 Sports Medicine Australia. Published by Elsevier Ltd. All rights reserved.

Practical implications

- The universality of the Active Kids program appears acceptable, enabling reach to children from low socioeconomic backgrounds and of all abilities which is essential to promote inclusive sport and physical activity opportunities to priority populations, including Indigenous Australians.
- This universal approach could be complimented with additional targeted approaches to achieve equitable socioeconomic reach

- For optimal success, a voucher program like Active Kids that primarily reduces the barrier of cost for sport participation, must be part of a wider, inclusive multi-component, collaborative delivery strategy; vouchers as a transaction alone are not enough and financial barriers may remain for low SES families. Integration of a complex, yet pragmatically designed evaluation, within a government-funded policy implementation is essential to capture impact, providing a unique opportunity to learn more about children's sport and physical activity participation.

* Corresponding author.

E-mail address: lindsey.reece@sydney.edu.au (L.J. Reece).

1. Introduction

Indigenous Australians comprise approximately 3% of the Australian population, with Indigenous origin self-identified through the Census.¹ Over one third (36%) of the Indigenous population are aged under 15 years old, compared with 18% of non-Indigenous Australians.¹ This young population distribution provides the potential for the emerging generation to benefit from prevention efforts to improve health outcomes. Eliminating inequity in preventable disease between Indigenous and non-Indigenous Australians remains a contemporary challenge,² requiring changes to prevention systems. In New South Wales (NSW), opportunities within the sport sector exist to create a better future for young Indigenous people. In both historical and current times, physical activity and sport are culturally important to Indigenous Australians.³

Extensive research has enabled the development of clear age appropriate, physical activity guidelines to achieve health benefit and Australian children aged 5–17 years are recommended to undertake moderate or vigorous aerobic activity for 60 min per day.⁴ Physical activity is an important health protective behaviour where the most recent national data demonstrates that Indigenous children are more physically active than non-Indigenous children.⁵ These data for children aged 5–17 years in non-remote areas show that almost one in two (48%) met the guidelines,⁴ whereas, only 35% of non-Indigenous children reached this level. Physical activity levels among remote living Indigenous children were higher than among non-Indigenous remote children; 86% aged 5–14 years and 66% aged 15–17 years achieved the guidelines but comparative data for non-Indigenous children were not available.⁵

An important component of children's total physical activity comes from participation in structured physical activities and sport outside of school;⁶ the physical, psychological and social health benefits of regular participation well documented.⁷ Australian children's sport participation is monitored using the National AusPlay survey, providing the total number of structured sport sessions a child participates in the previous 12 months.⁸ A total of 2.5 million Australian children (54%) aged 0–14 were active at least once a week through sport reducing to 15% of children frequently participating in sport three times per week.⁴ However, a limitation of Ausplay sampling methods and sample size issues means that accurate estimates for Indigenous children's sport participation at national or state levels are not available.⁹ National surveillance demonstrates Indigenous adult participation in physical activity and sport is lower than non-Indigenous adults.⁵ This highlights a need to promote participation throughout the life course, and particularly to reduce the decline in sport participation during late-childhood and adolescence, to create healthy habits for life.¹⁰

The promotion of sport and physical activity programs not only have the potential to enhance participation but can support Indigenous communities in broader ways by offering culturally acceptable, community-led activities, which can contribute to improving equity and self-determination.² A recent systematic review examined the impact of sport for Indigenous peoples in Australia. The review found some evidence between sport and increased school attendance in children as well as improved self-esteem resulting from physical activity and sport participation as well as enhanced aspects of culture.¹¹ Specific strategies utilised by the sport and physical activity programs in the review included Indigenous-led activities, positive role-models and parental/community involvement.

In NSW, the state Government has invested over \$207 million to increase sport and physical activity participation amongst all school-enrolled children for four years (2018–2022) through the Active Kids voucher program. The program is a universal sport and physical activity program aiming to help families meet the cost of

supporting their children to access sport and physical activities. Throughout 2018, families were able to register for one Active Kids voucher, valued up to \$100 per school child, to reduce the cost of sport registration or membership fees for after-school, weekend and structured fitness or physical activity.

The SPORt & Recreation INTERvention & Epidemiology Research (SPRINTER) group, a research partnership between the University of Sydney and the NSW Government Office of Sport are leading a quasi-experimental and mixed-method pragmatic evaluation of the Active Kids program in order to assess the implementation and effectiveness of the state-wide voucher program.¹² This study aims to investigate the demographic characteristics, as well as sport and physical activity levels of Indigenous and non-Indigenous participants in the Active Kids voucher program. Specifically, we examined factors associated with meeting physical activity guidelines and participating in sport among Indigenous and non-Indigenous children.

All children who were registered for an Active Kids voucher in 2018 were included in this study. To be eligible, children needed to be a NSW resident, aged between 4.5 and 18 years, enrolled in school (from Kindergarten to Year 12, including those who are home-schooled or enrolled in secondary school education at TAFE NSW), be a current Medicare card holder, and have a Service NSW account.¹³

2. Method

The Active Kids program aims to increase participation of school-enrolled children in sport and physical activity by providing parents or carers with vouchers to help cover the cost of registration and membership fees. Families were able to access one \$100 voucher for each school-enrolled child during 2018. Eligible activities include recognised sports, swimming lessons, structured fitness programs, outdoor recreation programs, approved active recreation and other structured programs of moderate to vigorous activity. Data for this cross-sectional study were obtained from the program registration database, with support from the NSW Government Office of Sport. During program registration, the child's parent or carer was required to complete an online registration form, reporting mandatory information regarding the child's Indigenous status sociodemographic characteristics, intentions of voucher use, physical activity, sport participation and optional height and weight. This study is part of a registered trial evaluating the outcomes of the Active Kids voucher program (ACTRN12618000897268) and gained ethical approval from the Human Research Ethics Committee at The University of Sydney (2017/946).

Sociodemographic characteristics included age (derived from date of birth), sex, primary language spoken at home, Indigenous status, disability status, socioeconomic status (SES), and remoteness. Quartiles of SES were derived by classifying postcode of residence using the Socio-Economic Index for Areas (SEIFA), specifically the Index of Relative Socio-Economic Disadvantage.¹³ Postcode was also used to determine location using the Accessibility and Remoteness Index of Australia (ARIA+), which groups areas based on access to services into major cities, inner regional, and outer regional and remote.¹⁴ All measures collected used existing and valid measures where applicable.

Height and weight were used to calculate body mass index (BMI) as weight divided by height, squared (i.e., kg/m²). Children were then classified as thin, healthy weight, overweight, or obese.¹⁵

Physical activity was assessed using a single item question which asked, "In a typical week, how many days was the child physically active for at least 60 minutes?" which approximates the aerobic component of the national physical activity guidelines.¹⁶

Responses were then categorised into meeting physical activity guidelines (7 days/week) and not meeting aerobic physical activity guidelines (>7 days/week).

Sport participation was reported by the parent or carer on a single item that asked “Approximately, how many organised sessions of sport or physical activity has the child participated in, in total, outside of school hours, during the last 12 months?” Responses were categorised into none, at least once a month, at least once a week, at least twice a week, or at least four times a week. Regular sport participation was defined as at least twice a week.⁸

Frequencies and proportions for sociodemographic characteristics (age, sex, language, socioeconomic status and location) and outcomes (meeting physical activity guidelines and sport participation) by Indigenous status were calculated. We used proportional reporting ratios to examine differences between Indigenous and non-Indigenous children. Univariate binary regression models were used to determine which demographic characteristics were associated with meeting physical activity guidelines and sport participation for Indigenous and non-Indigenous children. The demographic characteristics that were significantly associated with meeting physical activity guidelines and sport participation were included in the final multivariate binary regression models. All analyses were performed in SAS Enterprise Guide 9.4 (SAS Institute, Cary, NC, USA).

3. Results

In 2018, 671,375 children were registered for an Active Kids voucher, representing 53% of the NSW eligible population aged 5–18 years.¹ Of the 671,375 children who were registered for the 2018 Active Kids voucher, 36,129 (5.4%) were identified by their parent/carer as Indigenous (Table 1). This represents 51.4% of Indigenous children aged 5–18 (NSW Health Stats), so the uptake rate of the program has been similar among Indigenous and non-Indigenous children.

Indigenous children were 1.9 times more likely to live in the most disadvantaged area and 3.4 times more likely to live in outer regional or remote Australia. They were 2.5 times more likely to have a disability and 1.4 times more likely to be obese compared with non-Indigenous children (Table 1). Among all children who were registered for a voucher, Indigenous children were 1.2 times more likely to meet physical activity guidelines; 23.3% of Indigenous children met physical activity guidelines, compared to 19.0% of non-Indigenous children. Indigenous children (62%), compared to non-Indigenous children (57%), participated less than twice a week in sessions of organised physical activity and sport and were 1.4 times more likely to not participate in any sport.

Table 2 presents the odds of meeting physical activity guidelines for Indigenous and non-Indigenous children in the Active Kids voucher program. For all children, the odds of meeting physical activity guidelines declined with age. Boys were more likely to meet physical activity guidelines compared with girls. Overall, there was no socio-economic gradient in Indigenous children who reported meeting physical activity guidelines, while a socioeconomic gradient was apparent for non-Indigenous children. There were no other socio-demographic associations with meeting physical activity guidelines between Indigenous and non-Indigenous children (Table 2).

Table 3 presents the adjusted odds of participating in sport at least twice a week for Indigenous and non-Indigenous children in the Active Kids voucher program. Among both groups, the likelihood of participating in sport at least twice a week increased with age, and this increase was steeper for Indigenous children. There were no differences in sport participation between Indigenous and non-Indigenous children by sex or body mass index. For all chil-

dren, there was a clear socioeconomic gradient, with those living in the most disadvantaged areas being the least likely to participate in sport at least twice a week (OR: 0.69, 95% CIs 0.68, 0.70), this gradient was steeper for Indigenous children. Indigenous children living in major cities were 22% (OR: 1.22, 95% CIs 1.12, 1.32) more likely to play sport at least twice a week compared with those living in outer regional and remote areas, while the same trend was not seen in non-Indigenous children. Non-Indigenous children with a disability were less likely to play sport at least twice a week (OR: 0.52, 95% CIs 0.50, 0.54) compared with Indigenous children with a disability (OR: 0.65, 95% CIs 0.58, 0.72).

4. Discussion

This baseline evaluation data from the first year of the Active Kids voucher program in NSW provides information on sport and physical activity participation from a large sample of Indigenous Australian children. The universal nature of the Active Kids voucher program has achieved good population reach among Indigenous children, whose physical activity levels are higher than among non-Indigenous children and did not vary by SES. The program has potential to increase this strength by reducing financial barriers to sport participation. With initial higher physical activity participation rates, if Indigenous children can achieve equitable sport participation levels, the overall proportion of Indigenous children meeting physical activity guidelines would continue to exceed their non-Indigenous peers. Achievement of these targets by more Indigenous children age 5–18 years could lead to improved health, wellbeing and educational outcomes.^{2,11}

These findings provide new information on sport participation patterns from a sample of Indigenous children that is larger than in previous population studies. The sample size of 36,129 Indigenous children represents 5.4% of the total number of children enrolled in the Active Kids voucher program, which is similar to the population proportion of 5.7% and is approximately half of Indigenous children within this age group in NSW.¹ This reach suggests that the program is appealing and accessible for Indigenous families which can be challenging to achieve.¹⁷ This should be viewed as a strength of the program and imperative for its sustainability and success.

The findings also give key insights into similarities and differences in physical activity and sport participation patterns among Indigenous children and non-Indigenous children. The higher physical activity levels among Indigenous children are consistent with national surveillance data but had not been conclusively determined through previous smaller comparative studies in NSW,^{18,19} giving greater validity to this association. Our findings of the proportion of children meeting physical activity guidelines are also consistent with 2017 NSW data but these data were not disaggregated for Indigenous children.²⁰ While traditional active lifestyles have been disrupted since colonisation, physical activity participation appears to remain an important cultural element for Indigenous children. Yet with low proportions of children in both groups achieving the guidelines currently, large scale policies such as Active Kids voucher program could be an important policy delivery.

Correspondingly, Indigenous sport participation was lower than among non-Indigenous children. There are few data previously available regarding these comparative levels although another NSW study found that fewer Indigenous children were members of a sports team.¹⁸ This lower sport participation may be due to the costs of organised sport which is a known barrier to participation,²¹ particularly among low income families who are over-represented among Indigenous people.¹ This is consistent with the socioeconomic gradient in the present study where more disadvantaged children in both groups had lower sport partici-

Table 1
Descriptive statistics for children in the Active Kids program, 2018.

	All		Aboriginal		Non-Aboriginal	
	N	%	N	%	N	%
All children	671,375	100	36,129	5.38	626,688	93.34
Age category						
4–8	269,457	40.14	13,907	38.49	252,413	40.28
9–11	185,931	27.69	10,181	28.18	173,333	27.66
12–14	138,063	20.56	7,798	21.58	128,426	20.49
15–18	77,924	11.61	4,243	11.74	72,516	11.57
Sex						
Boys	361,852	53.9	19,652	54.39	337,854	53.91
Girls	308,543	45.96	16,455	45.55	288,355	46.01
Missing	980	0.15	22	0.06	479	0.08
Primary language spoken at home						
English	621,235	92.53	36,008	99.67	577,079	92.08
Other	50,140	7.47	121	0.33	49,609	7.92
Disability						
Yes	17,715	2.64	2,224	6.16	15,192	2.42
No	644,658	96.02	33,242	92.01	605,301	96.59
Prefer not to say	8,277	1.23	616	1.71	5,534	0.88
Missing	725	0.11	47	0.13	661	0.11
Socio-economic status						
1st (least advantaged)	99,583	14.83	9,855	27.28	88,231	14.08
2nd	140,302	20.9	12,268	33.96	125,661	20.05
3rd	158,783	23.65	7,045	19.5	149,810	23.91
4th (most advantaged)	200,566	29.87	3,002	8.31	195,726	31.23
Missing	72,141	10.75	3,959	10.96	67,260	10.73
Location						
Major Cities	440,776	65.65	14,588	40.38	421,694	67.29
Inner Regional	126,594	18.86	12,412	34.35	111,756	17.83
Outer Regional and remote	32,583	4.85	5,171	14.31	26,681	4.26
Missing	71,329	10.62	3,948	10.93	66,475	10.61
Body mass index						
Thin	36,888	5.49	1,165	3.22	35,420	5.65
Healthy weight	196,433	29.26	6,856	18.98	188,026	30
Overweight	51,113	7.61	2,638	7.3	48,067	7.67
Obese	22,017	3.28	1,631	4.51	20,166	3.22
Missing	364,924	54.35	23,839	65.98	335,009	53.46
Met physical activity guidelines						
No	542,147	80.75	27,712	76.7	507,654	81.01
Yes	129,228	19.25	8,417	23.3	119,034	18.99
Sport participation						
None	12,238	1.82	907	2.51	11,175	1.78
At least once a month	151,675	22.59	11,445	31.68	138,285	22.07
At least once a week	217,878	32.45	9,891	27.38	205,514	32.79
At least twice a week	147,616	21.99	6,206	17.18	139,799	22.31
At least four times a week	101,290	15.09	4,881	13.51	95,204	15.19
Not sure	40,467	6.03	2,791	7.73	36,513	5.83
Missing	211	0.03	8	0.02	198	0.03

participation levels, an association that was stronger among Indigenous children. These findings are also consistent with AusPlay sport and SES associations.⁸ This association was not true for Indigenous children achieving physical activity guidelines, where socioeconomic disadvantage did not affect the odds, however non-Indigenous children were less likely to achieve physical activity guidelines if living in areas of socioeconomic disadvantage. Physical activity participation is associated with higher SES²² but a recent review identified less universal and consistent SES and health patterns among Indigenous people.²³ Secondary analysis of ABS data⁵ found high physical activity levels in Indigenous children were associated with low SES in remote locations, but not major cities or regional areas.²⁴ The geographical sample difference between this ABS study and the present study, which had a more urbanised population, may account for these different associations. Future relationships between physical activity, sport participation and SES among Indigenous children should be explored in longitudinal data to further understand these patterns and determine how to enhance equitable participation.

In both groups, meeting physical activity guidelines decreased with age, but sport participation increased with age. This sport

participation finding is similar to a study in Victoria that found participation increase with age from age 4 to 14 years then declined.²⁵ Our finding of a similar age increase then a plateau from 14 years may reflect a slight selection bias in this sample of children with high sport participation levels. This study found higher physical activity and sport participation among boys compared to girls in both groups. These age and sex physical activity patterns are known among non-Indigenous children.²⁶ Emerging evidence for Indigenous children also indicates that adolescent girls appear to have the lowest levels of all children,^{18,24} with these lower activity levels appearing to commence at puberty and how Indigenous adolescent females represent an important target group. Other Australian studies have not consistently found associations between sport participation and age.²⁷ While evidence for lower sport participation levels among girls is clear,²⁸ no previous studies have specifically examined this association among Indigenous children, although gender specific sport and physical activity barriers and facilitators are evident.²⁹ These including the importance of providing sport options that are considered appropriate by young females.²⁹ The present findings therefore provide a novel cross-sectional understanding of age and sex associations with sport and phys-

Table 2
The odds of meeting physical activity guidelines for children in the Active Kids program, 2018.

	All children OR (95% CI)	Aboriginal OR (95% CI)	Non-Aboriginal OR (95% CI)
Age category			
4–8	2.04 (2, 2.09)	1.90 (1.73, 2.08)	2.06 (2.01, 2.11)
9–11	1.64 (1.60, 1.68)	1.67 (1.52, 1.83)	1.64 (1.60, 1.68)
12–14	1.19 (1.16, 1.22)	1.29 (1.17, 1.43)	1.18 (1.15, 1.21)
15–18	Ref	Ref	Ref
Sex			
Boys	1.64 (1.62, 1.66)	1.54 (1.46, 1.62)	1.65 (1.63, 1.67)
Girls	Ref	Ref	Ref
Primary language spoken at home			
English	1.63 (1.59, 1.67)		1.61 (1.57, 1.65)
Other	Ref		Ref
Disability			
Yes	0.78 (0.75, 0.81)		0.74 (0.71, 0.77)
No	Ref		Ref
Socio-economic status			
1st	0.82 (0.80, 0.83)	1.07 (0.96, 1.19)	0.79 (0.77, 0.81)
2nd	0.91 (0.89, 0.92)	1.08 (0.97, 1.19)	0.89 (0.87, 0.91)
3rd	0.90 (0.89, 0.92)	0.96 (0.87, 1.07)	0.90 (0.88, 0.92)
4th	Ref	Ref	Ref
Location			
Major Cities	0.65 (0.63, 0.66)	0.83 (0.76, 0.90)	0.64 (0.62, 0.66)
Inner Regional	0.88 (0.85, 0.90)	0.98 (0.91, 1.06)	0.87 (0.84, 0.90)
Outer Regional and remote	Ref	Ref	Ref
Body mass index			
Thin	1.04 (1.01, 1.07)	0.99 (0.86, 1.15)	1.04 (1.01, 1.07)
Healthy weight	Ref	Ref	Ref
Overweight	0.76 (0.74, 0.77)	0.74 (0.66, 0.82)	0.75 (0.73, 0.77)
Obese	0.62 (0.6, 0.64)	0.63 (0.55, 0.72)	0.61 (0.59, 0.63)

Note: Covariates that were significant in univariate analyses were included in the models. Primary language spoken at home was not significantly associated with sport participation for Aboriginal and Torres Strait Islander children.

Table 3
The odds of participating in sport at least twice a week for children in the Active Kids program, 2018.

	All children OR (95% CI)	Indigenous OR (95% CI)	Non-Indigenous OR (95% CI)
Age category			
4–8	0.51 (0.50, 0.52)	0.42 (0.39, 0.46)	0.51 (0.51, 0.52)
9–11	0.87 (0.85, 0.88)	0.68 (0.63, 0.74)	0.88 (0.86, 0.90)
12–14	0.98 (0.97, 1.00)	0.89 (0.82, 0.97)	0.99 (0.97, 1.01)
15–18	Ref	Ref	Ref
Sex			
Boys	1.05 (1.04, 1.06)	1.08 (1.03, 1.14)	1.05 (1.04, 1.06)
Girls	Ref	Ref	Ref
Primary language spoken at home			
English	1.69 (1.66, 1.73)		1.71 (1.67, 1.75)
Other	Ref		Ref
Disability			
Yes	0.53 (0.51, 0.55)	0.65 (0.58, 0.72)	0.52 (0.50, 0.54)
No	Ref	Ref	Ref
Socio-economic status			
1st	0.69 (0.68, 0.70)	0.65 (0.59, 0.71)	0.70 (0.68, 0.71)
2nd	0.80 (0.79, 0.82)	0.72 (0.66, 0.79)	0.81 (0.80, 0.82)
3rd	0.85 (0.84, 0.86)	0.74 (0.68, 0.82)	0.85 (0.84, 0.86)
4th	Ref	Ref	Ref
Location			
Major Cities	1.05 (1.02, 1.07)	1.22 (1.12, 1.32)	1.01 (0.98, 1.04)
Inner Regional	1.00 (0.98, 1.03)	0.98 (0.90, 1.06)	0.99 (0.96, 1.02)
Outer Regional and remote	Ref	Ref	Ref
Body mass index			
Thin	0.87 (0.85, 0.89)	0.89 (0.78, 1.03)	0.87 (0.85, 0.89)
Healthy weight	Ref	Ref	Ref
Overweight	0.81 (0.80, 0.83)	0.80 (0.73, 0.88)	0.81 (0.80, 0.83)
Obesity	0.61 (0.59, 0.63)	0.60 (0.53, 0.67)	0.62 (0.60, 0.63)

Note: Covariates that were significant in univariate analyses were included in the models. Primary language spoken at home was not significant associated with sport participation for Aboriginal and Torres Strait Islander children.

ical activity that should be explored in longitudinal Active Kids evaluation.

Indigenous children living in major cities were more likely to play sport at least twice a week compared with those children in outer regional and remote areas, but this association was not significant for non-Indigenous children. In both groups, the opposite association was found for physical activity and increasing urbanisation, consistent with previous data of Indigenous regional and remote Australian children's participation.^{5,24} These findings may reflect greater opportunities for urban Indigenous children to play sport in terms of organised clubs and facilities but highlight the importance of ensuring equitable opportunities for participation for those in regional and remote areas. The recent scoping review identified a range of sport program characteristics in regional and remote areas that had positive outcomes, including role modelling within the school setting and the broader importance of schools in enabling access to sporting opportunities.¹¹

This is the only known study to include disability, physical activity and sport participation data for Indigenous children and one of the few to include data from a large sample of non-Indigenous children. The question did not define disability, allowing parents/carers to self-identify disability of the child. Indigenous children with an identified disability were less likely to regularly participate in sport but no association was found for physical activity whereas among the non-Indigenous children, those with a disability had both lower physical activity and sport levels. These data suggest that strategies to engage disabled children, including the delivery of appropriate activities, are required and future Active Kids longitudinal data may determine its inclusivity and impact.

A key strength of this study is providing a larger sample of Indigenous children in Australia than previously achieved in physical activity and sport empirical studies, or in population surveillance research. With that in mind, this large-scale evaluation of a government policy has limitations, including parent/carer-reported data and some missing data, especially for BMI that was not a compulsory variable in 2018 registration. Despite BMI data missing for 54% of the sample, data are presented for a large number of children, over 306,000, including over 12,000 Indigenous children which is a very high number relative to other comparable studies. Moreover, the findings of associations between physical activity and sport participation and BMI are valid and novel regardless of the missing data. A further limitation is that parent/carer knowledge of their children's physical activity may not consider school-based activities. Participants in this cross-sectional study could be a biased sample of those who registered in the program who may participate in physical activity and sport in different ways. However, sociodemographic characteristics of the sample are broadly comparable to other population data,¹ validated measures were used¹⁶ and the large sample size increase the representativeness of the data.

Overall, the findings from this study provide important population data on Indigenous children and baseline data to inform the impact of the Active Kids voucher program in promoting inclusive physical activity opportunities and influencing physical activity and sport participation. There is a need for further research to examine the effect of the policy on sustained levels of physical activity and sport participation among Indigenous, as well as non-Indigenous, children and whether it can contribute to lifelong physical activity and sport participation. Helping to reduce financial barriers for children's sport and physical activity could achieve higher physical activity levels among children for health benefits.⁶ Further, wider social benefits that can be gained through sport, particularly for Indigenous children,¹¹ could be achieved through this policy that could contribute to improving equity.² More broadly, the Indigenous and non-Indigenous comparisons in this study highlight where strategies to increase organised physical activity and

sport participation could be focused at the whole population level, and where focused work involving Indigenous communities and targeted strategies may have greater effect.

5. Conclusion

These initial data from the Active Kids voucher program evaluation highlights the significant reach that the program achieved to Indigenous and non-Indigenous, school-enrolled children residing in NSW. This reach suggests that this universal program is appealing and accessible for Indigenous children and families, a population group often underserved by prevention systems,¹⁷ and should be viewed as a strength of the program and imperative for its sustainability and success.

This study found that Indigenous children are more physically active, however their sport participation is lower, than non-Indigenous children. The program has significant potential to increase participation in organised sport and physical activity amongst Indigenous children and elevate their current physical activity levels. Further evaluation is needed to understand the impact of the voucher on participation, health and wellbeing on Indigenous and non-Indigenous children, longitudinally.

Acknowledgements

We would like to acknowledge the Office of Sport NSW Government as the lead government agency for this cross-agency policy. SPRINTER is the strategic research partnership between the Office of Sport NSW Government and the University of Sydney and are responsible for leading the evaluation of the Active Kids voucher program. The SPRINTER research partnership receive funding from the NSW Government Office of Sport with which the Active Kids evaluation is one component of a broader portfolio of work.

Appendix A. Supplementary data

Supplementary material related to this article can be found, in the online version, at doi:<https://doi.org/10.1016/j.jsams.2020.06.016>.

References

1. Australian Bureau of Statistics (ABS). 2002.0 — census of population and housing: Aboriginal and Torres Strait Islander peoples profile, Australia, 2016, Canberra, Australian Bureau of Statistics (ABS), 2017.
2. Department of the Prime Minister and Cabinet. *Closing the gap 2019 report*, Canberra, Department of the Prime Minister and Cabinet, 2019.
3. Edwards K. Traditional games of a timeless land: play cultures in Aboriginal and Torres Strait Islander communities. *Aust Aboriginal Stud* 2009;(2):32–43.
4. Australian Government Department of Health, Available from: *National physical activity, sedentary behaviour, and sleep recommendations for children and young people (5–17 years)*, 2019 <http://www.health.gov.au/internet/main/publishing.nsf/content/health-pubhlth-strateg-phys-act-guidelines#npa517>.
5. Australian Bureau of Statistics (ABS). *Australian Aboriginal and Torres Strait Islander health survey: physical activity, 2012–2013*, Canberra, Australian Bureau of Statistics (ABS), 2014.
6. Marques A, Ekelund U, Sardinha LB. Associations between organized sports participation and objectively measured physical activity, sedentary time and weight status in youth. *J Sci Med Sport* 2016; 19(2):154–157.
7. Eime RM, Young JA, Harvey JT et al. A systematic review of the psychological and social benefits of participation in sport for children and adolescents: informing development of a conceptual model of health through sport. *Int J Behav Nutr Phys Act* 2013; 10:98.
8. Australian Sports Commission. *Sport Australia annual report 2017–2018*, 2018.
9. ORC International. *Indigenous Australians' participation in sports and physical activities*, 2017.
10. Boreham C, Riddoch C. The physical activity, fitness and health of children. *J Sports Sci* 2001; 19(12):915–929.
11. Macniven R, Canuto KWR, Bauman A et al. The impact of physical activity and sport on social outcomes among Aboriginal and Torres Strait Islander people: a systematic scoping review. *J Sci Med Sport* 2019; 17(7):1305–1311.
12. Reece L, Foley B, Bellew W et al. Active kids: evaluation protocol for a universal voucher program to increase children's participation in organised physical

- activity and sport. *Public Health Res Pract* 2020. <http://dx.doi.org/10.17061/phrp30122006>. Online early publication.
13. Australian Bureau of Statistics. 2033.0.55.001 – census of population and housing: socio-economic indexes for areas (SEIFA), Australia, 2016, Canberra, ABS, 2018.
 14. Department of Health and Aged Care. *Measuring remoteness: accessibility/remoteness index of Australia (ARIA)*. Occasional papers: new series number 14. October 2001 ed, Adelaide, Department of Health and Aged Care, 2001.
 15. Cole TJ, Lobstein T. Extended international (IOTF) body mass index cut-offs for thinness, overweight and obesity. *Pediatr Obes* 2012; 7(4):284–294.
 16. Scott JJ, Morgan PJ, Plotnikoff RC et al. Reliability and validity of a single-item physical activity measure for adolescents. *J Paediatr Child Health* 2015; 51(8):787–793.
 17. Clifford A, Pulver LJ, Richmond R et al. Smoking, nutrition, alcohol and physical activity interventions targeting Indigenous Australians: rigorous evaluations and new directions needed. *Aust NZ J Public Health* 2011; 35.
 18. Macniven R, Hearn S, Grunseit A et al. Correlates of physical activity among Australian Indigenous and non-Indigenous adolescents. *Aust N Z J Public Health* 2017; 41(2):187–192.
 19. Macniven R, Richards J, Turner N et al. Understanding physical activity levels among Aboriginal and non-Aboriginal young people. *Rural Remote Health* 2019. <http://dx.doi.org/10.22605/RRH4876>.
 20. NSW Population Health Survey (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.
 21. Somerset S, Hoare DJ. Barriers to voluntary participation in sport for children: a systematic review. *BMC Pediatr* 2018; 18(1):47.
 22. Gidlow C, Johnston LH, Crone D et al. A systematic review of the relationship between socio-economic position and physical activity. *Health Educ J* 2006; 65.
 23. Shepherd CCJ, Li J, Zubrick SR. Social gradients in the health of Indigenous Australians. *Am J Public Health* 2012; 102(1):107–117.
 24. Evans JR, Wilson R, Coleman C et al. Physical activity among indigenous Australian children and youth in remote and non-remote areas. *Soc Sci Med* 2018; 206:93–99.
 25. Eime RM, Harvey JT, Charity MJ et al. Population levels of sport participation: implications for sport policy. *BMC Public Health* 2016; 16(1):752.
 26. Cairney J, Veldhuizen S, Kwan M et al. Biological age and sex-related declines in physical activity during adolescence. *Med Sci Sports Exerc* 2014; 46(4):730–735.
 27. Vella SA, Schranz NK, Davern M et al. The contribution of organised sports to physical activity in Australia: Results and directions from the Active Healthy Kids Australia 2014 Report Card on physical activity for children and young people. *J Sci Med Sport* 2016; 19(5):407–412.
 28. Eime R, Casey M, Harvey J et al. Socioecological factors potentially associated with participation in physical activity and sport: a longitudinal study of adolescent girls. *J Sci Med Sport* 2015; 18(6):684–690.
 29. May T, Dudley A, Charles J et al. Barriers and facilitators of sport and physical activity for Aboriginal and Torres Strait Islander children and adolescents: a mixed studies systematic review. *BMC Public Health* 2020; 20(1):601.