



**IPAN**  
INSTITUTE FOR PHYSICAL  
ACTIVITY AND NUTRITION



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## Institute for Physical Activity and Nutrition, Deakin University: Submission to the Review to Inform a Better and Fairer Education System

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The Institute for Physical Activity and Nutrition (IPAN), Deakin University, welcomes the opportunity to have input into the Review to Inform a Better and Fairer Education System (The Review). In IPAN, we conduct world-leading research into all aspects of physical activity and nutrition across the lifespan, from conception to old age, with a particular focus on education settings.

Our research is ranked well above world standard<sup>1</sup> by the Australian Research Council and is ranked number 1 Department in the world for Exercise and Sport Sciences<sup>2</sup>. It spans from the lab to real-world settings, including studying the biological mechanisms behind exercise and nutrition; using technology and exercise to prevent and manage chronic conditions; providing innovative solutions to improve nutrition, increase physical activity and reduce sedentary behaviour in our community, including in schools; and develop evidence-based food policy.

Through our research, we strive to improve health outcomes in populations all over the world. Our team collaborates nationally and internationally across disciplines. We're also committed to nurturing a new generation of leading researchers, through a supportive and dynamic research environment.

At IPAN we believe every school student, no matter their postcode or social setting, should have access to evidence-based education practice. In particular that student wellbeing through physical activity and good nutrition are key influences on student behaviour and learning outcomes.

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<sup>1</sup> Australian Research Council (2019). State of Australian University Research 2018–19: ERA National Report. Australian Research Council, Canberra

<sup>2</sup> <https://www.shanghairanking.com/news/grsssd/2022>

# Response to the five key areas from the Terms of Reference for ‘The Review to Inform a Better and Fairer Education System’

1. **What targets and reforms should be included in the next NSRA to drive real improvements in student outcomes, with a particular focus on students who are most at risk of falling behind and in need of more assistance – for students from low socio-economic backgrounds, regional, rural and remote Australia, students with disability, First Nations students and students from a language background other than English.**

## *Incorporating physical activity across the school day*

The majority of Australian children (74%) and adolescents (89%) do not meet the Australian government-recommended levels of at least 60 minutes of physical activity every day (Australian Institute of Health and Welfare, 2023). Of concern, some children are systematically less active than others. For example, children with a disability (Wouters et al., 2019a), and children from CALD communities, have lower levels of physical activity, which may lead to further health and education disparities (ABS 2013). Our research suggests that this worsened during nationwide COVID-19 restrictions (Arundell et al 2021). Our pre-COVID research has also shown that students sit for approximately 75-80% of the school day (Contardo Ayala et al 2019). As such, the school day offers an ideal opportunity to enhance children’s physical activity and simultaneously improve their learning, mental health and wellbeing outcomes (van Sluijs et al 2021).

Physical activity plays an important role in children’s learning (Singh et al., 2019), as well as their mental health and wellbeing (Andermo et al 2020). Physical activity has been positively associated with increased academic-related outcomes, including cognitive skills (e.g., executive functioning, attention, memory, comprehension), attitude (e.g., motivation, self-concept, satisfaction and enjoyment), academic behaviour (e.g., organisation), engagement in learning (e.g., on-task time), and academic achievement (e.g., standardised test scores) (Singh et al., 2019). Students who engage in more physical activity also have a higher school attendance in comparison to their less active peers (Centeio et al 2017).

**Recommendation:** Due to the important role physical activity plays in learning, it should be considered a crucial student outcome, and measured in the next NSRA. The TransformUs program could provide a timely, cost-effective and practical solution, with impacts measured by a simple single item survey.

## *Providing children with good nutrition at school*

Adequate nutrient and food intake play an important role in general health and wellbeing of children, including brain development, cognitive function, school attendance and school achievement (Australian Institute of Family Studies 2020; Bryan 2004). Yet two-thirds (67%) of Australian teachers report having students come to school hungry or without having eaten breakfast, and estimate that these students lose more than two hours a day in learning (Foodbank 2015).

More than half of Australian households with dependent children experienced some form of food insecurity in 2022. While some schools provide free breakfast and/or lunches to students in need via food relief programs such as, there are still a substantial number of children missing out on essential food and nutrients Foodbank (e.g. free breakfast is provided to just under than half of all schools in Victoria) (Foodbank 2022). A systematic review of 21 studies conducted in developed nations (Australia, United States, Canada, United Kingdom) found that even marginal levels of food insecurity in children, was associated with impaired academic performance, hyperactivity, inattention, increased absences from school, and mental health concerns (Shankar 2017). Even when food is brought to school, children do not receive sufficient time to finish their lunch (more than 60% of parents report children who attend primary school receive 10 minutes or

less) (Burton 2022) and many bring unhealthy, energy dense, nutrient poor foods to consume (Saginorski 2005).

Providing sufficient time (15-20 minutes) to consume lunch and providing healthy meals to all students will provide all children fair and equitable access to essential nourishment during a school day that has potential to impact attendance (Anzman-Frasca, S 2015), academic achievement (Bleiweiss-Sande 2019, Potmey 2015, Kay-shilts 2009), attention, behaviour and concentration (School Food Matters, Tasmania 2021-2022; Anzman-Frasca 2015 ) and mental health and wellbeing (Peirce 2021).

**Recommendation:** Due to the crucial role food and nutrition plays in mental health, learning and overall wellbeing, all schools should provide sufficient time for students to consume lunch (15-20 minutes).

## 2. How the next agreement can contribute to improving student mental health and wellbeing, by addressing in-school factors while acknowledging the impact of non-school factors on wellbeing.

### *Whole-of-school approaches to increase students' physical activity*

'The Strategy' (National Mental Health Commission, 2021) emphasises the important role that educational settings play in promoting mental health and wellbeing in children. Physical activity and nutrition both play a critical role in student wellbeing. A whole-of-school approach to increasing physical activity and offering good nutrition can provide a proactive and prevention focused approach to child mental health.

Our Institute reviewed evidence for the World Health Organisation and identified six domains with good evidence of effectiveness that support the promotion of physical activity through a whole-of-school approach: 1. Quality physical education 2. Active travel to and from school 3. Active before- and after-school programmes 4. Opportunities for physical activity during recess, recreation and lunch times 5. Incorporating physical activity into classrooms 6. Inclusive physical activity approaches for those people with additional needs (World Health Organisation, 2021).

**Recommendation:** Whole-of-school approaches to increase physical activity and improve nutrition and food intake, as a means of enhancing student wellbeing, should be considered as part of a national reform agenda. For example, Deakin University, IPAN's TransformUs initiative could be scaled up nationally.

### **Whole-of-school physical activity case study: TransformUs**

IPAN's [TransformUs](#) uses innovative strategies within the classroom, school and home settings to get students moving more and sitting less. It helps students learn better as well as improves their health and wellbeing. Strategies involve incorporating movement into everyday class lessons – so the delivery of the lesson changes, not the content. TransformUs provides active homework options and supports parents to incorporate movement and reduce sitting at home.

It is designed to be delivered by all primary classroom teachers in Victoria and it does not focus on sport or physical education. Professional learning and full curriculum aligned lesson plans are available after registering online. TransformUs is currently reaching over 500 primary schools and 1600 teachers across Victoria and is currently being adapted for secondary schools and for students with additional needs.

### *Nutrition education to improve students' nutrition and food intake at school*

Approximately 10-15 hours of classroom based food and nutrition education (FNE) annually can improve children's knowledge and understanding of food, nutrition, and health (Perera et al., 2015, de Vlieger et al., 2019). Some food and nutrition (FN) content such as food groups, healthy eating, and food production appears within the Health and Physical Education (HPE), and Technologies Learning Areas of the Australian primary school curriculum (ACARA, 2015, ACARA, 2022). However, implementation of the curriculum and individual learning activities is at the discretion of individual states/territories, schools, and teachers (ACARA, 2013). While teachers agree FN is as important as maths, English and science (Driscoll et al., 2023, yet to be published), teachers report competing priorities, a lack of confidence, lack of resources and lack support from school leadership to implement FN education (Love et al., 2020). They suggest that implementation would require quality resources, support from school leadership and enforced implementation (Driscoll et al., yet to be published).

Voluntary standards and guidelines are inadequate approaches for advocating change (Turner and Chaloupka, 2012, Perera et al., 2015, Poelman et al., 2021), and more incentive to implement FNE in the classroom is required (Watts et al., 2012, Perera et al., 2015, Porter et al., 2018). A myriad of existing nutrition resources mapped to the curriculum exist around Australia that have been successfully implemented in the classroom (e.g. FreshEd in WA, FEAST across Australia). Along with school leadership support and enforced implementation, this would enable all children receive adequate food and nutrition training for lifelong learning and health and wellbeing.

**Recommendation:** Incorporating nutrition education underpins student health and wellbeing. It is recommended 10-15 hours of classroom-based food and nutrition education is included annually in the primary school curriculum.

### *Greening school environments to improve mental health and wellbeing*

'Greening' school environments and areas surrounding schools by increasing the amount and diversity of trees, plants and green spaces offers unique opportunities to help children re-connect with nature, and has the potential to improve physical activity, health, social, wellbeing and education outcomes. There is momentum worldwide for greening school grounds, especially for those most impacted by inequity and environmental injustice. For example, the United States aims to establish a green schoolyard in every community by 2050 (Stevenson et al 2020). Evidence shows that transforming school grounds into nature-rich environments can reduce exposure to air pollutants and improve physical and mental health, social behaviour, academic performance, pro-environmental behaviours, and teacher motivation (Bikomeye et al 2021). Importantly, these benefits may extend to school employees (teachers and support staff) and to nearby residents when school grounds are accessible to the community. It is therefore critical to better understand how to effectively 'green' school grounds for optimal impact for students, staff and nearby residents and the broader environment.

**Recommendation:** Recognise the contribution of school grounds, especially trees, plants and green space in improving student mental health and wellbeing, especially for schools in disadvantaged areas.

### *Supporting active travel to and from school*

The way children travel to and from school contributes to their mental health and well-being. Walking or cycling to school is positively associated with children's psychological well-being and their physical activity levels. Promoting active travel on the journey to and from school also reduces the number of vehicles around the school and therefore children's exposure to transport-related air pollution. This is particularly important as exposure to traffic related air pollution effects children's neurological development (Rivas et al., 2018). In

Australia, only 37% of primary school children use active travel as their usual mode of travel to school (Schranz et al., 2018).

Our research has shown that distance to school is one of the strongest and consistent predictors of school active travel (Timperio et al., 2006). School location and zoning policies should minimise distance to school (Marshall et al., 2010; Giles-Corti et al., 2011). Parental fears of traffic safety are also a key deterrent to active travel. Schools should be accessible by dedicated walking and cycling infrastructure (including protected bike lanes) that are set back from the road and on quieter streets to reduce exposure to air pollution. The streets that surround schools should have safe and frequent road crossings and reduced traffic speed (ref). School drop off zones should be located away from schools so that all children can walk for part of the journey, to reduce traffic related air pollution at school and to ensure a safer journey for all children. One solution is 'open streets' in which the streets surrounding schools are closed to vehicular traffic at drop off and pick up times. To achieve this horizontal integration is needed between urban planning, transport and health.

**Recommendation:** As part of a whole of school physical activity plan, schools should include an active travel policy to encourage children to walk or cycle to school and provide the community with supportive environment which supports active travel resulting in improved psychological wellbeing and physical activity levels.

### 3. How the next agreement can support schools to attract and retain teachers.

The Australian Department of Education, Skills and Employment's recommendation is to 'Strengthen Initial Teacher Education degrees to deliver confident, effective, classroom ready graduates' (Recommendation 7) (The Australian Government, 2021). The Expert Panel considers that if this recommendation is implemented, teacher workforce shortages will be significantly alleviated. Initial Teacher Education (ITE) is internationally recognised as pivotal in developing effective teaching approaches and positive student outcomes and is crucial to creating a skilled, passionate teaching workforce that can meet the needs of all learners. Despite the importance of ITE, the quality of courses has often been criticized for being poorly connected with practice, not informed by evidence, thereby inadequately preparing new graduates to be quality and classroom ready teachers (Teacher Education Ministerial Advisory Group, 2014). ITE has changed considerably over the last decade, and many have argued the need for further new innovative approaches to ITE (Yeigh & Lynch, 2017).

*TransformUs Higher Ed* (Lander et al 2019) is an extension of the effective TransformUs program and targets ITE to equip future teachers with innovative pedagogies and strategies that increase physical activity in the classroom. *TransformUs Higher Ed* positions physical activity as a teaching tool, a vehicle for increased student engagement and mechanism to create a positive classroom environment, as such *TransformUs Higher Ed* supports pre-service teachers to operationalise the Australian Professional Standards for Teachers-Graduate descriptors (AITSL, 2017). Feasibility, effectiveness and implementation research has demonstrated that *TransformUs Higher Ed* is an effective way to develop the teaching competence and confidence of the future generation of teachers (Lander et al, 2019, 2020, 2022). *TransformUs Higher Ed* is in five Australian universities, has been integrated into three teaching degrees (Bachelor of Education Primary, Secondary and Masters), over 20 different units and has delivered outcomes for ~1,500 undergraduate teachers so far. As such, *TransformUs Higher Ed* has the potential to support schools and retain teachers by creating confident, competent and classroom-ready graduates.

**Recommendation:** Strengthening Initial teacher education (ITE) may curtail the high attrition rates, create a pipeline of high-quality teachers into the industry, and ensure teachers are 'job ready' to increase retention. For example, TransformUs Higher Ed has the potential to support schools and retain teachers by creating confident, competent and classroom-ready graduates.

**Recommendation:** Support the workforce with evidence based effective professional learning. For example, TransformUs online professional learning (via website and app) to improve teacher practice and student learning could be scaled up nationally.

#### 4. How data collection can best inform decision-making and boost student outcomes.

The Victorian Government has set clear [Education State Targets](#), to focus their efforts on the range of factors that allow students to develop and achieve their best. The targets measure students' development of the skills needed to succeed in life, as well as measuring their health and resilience.

One focus area in the Education State Targets is physical active: 'By 2025 the proportion of students doing physical activity for an hour a day, five times a week, will grow by 20%'. Further, the Victorian Government's [Active Schools Framework and Toolkit](#) supports schools to take a whole-school approach to promote physical activity. There is a direct link between physical activity, wellbeing and learning, as such achieving this target will give assurance that the Education State investment is meeting its goals of better learning and life outcomes for all students – wherever they go to school (State Government of Victoria, 2022). However, progress towards such targets needs to be tracked using broader measures than literacy and numeracy. Therefore, population-level data about children's physical activity are recommended. Short self-report instruments could be used by all schools to report on students' physical activity. The Prochaska scale is a brief self-report instrument for assessing compliance with physical activity guidelines and has been validated in Australian children by our researchers (Ridgers, Timperio, Crawford, Salmon, 2012). National level routine collection of valid physical activity data will not only track schools and students' development towards the target but will also ensure that resources are allocated where they are most needed, particularly in relation to students who are most at risk of falling behind and in need of more assistance (World Health Organisation, 2021).

**Recommendation:** Routine collection of physical activity data is recommended using a validated, simple measure. For example, the Prochaska single item physical activity measure (validated in Australia by Ridgers, Timperio, Crawford, Salmon, 2012).

#### 5. How to ensure public funding is delivering on national agreements and that all school authorities are transparent and accountable to the community for how funding is invested and measuring the impacts of this investment.

An anonymous public database should report on how funding is being spent and the outcomes of this expenditure. Effectiveness (or lack of effectiveness) of funded programs needs to be openly reported to inform repeated investment, de-implementation of ineffective initiatives and development of future initiatives. To assist schools and districts with reporting outcomes, a digital platform is needed (with clear metrics to assess the impact). Data can also be used by schools to make decisions at the local level.

To help with reporting the above, an embedded monitoring and evaluation system is needed in schools. This would also serve as an implementation strategy, as while the data and impacts are accountable for show where public money is spent, this also has a knock-on effect that schools may be more likely to improve outcomes sustainability because of monitoring and evaluation. In addition to being sustainable, initiatives should also reduce inequity between schools and also between students in schools.

**Recommendation:** Develop a digital platform for reporting on measurable outcomes at the school and district level. This platform should feed into an anonymous public database that reports on funding investments and their effectiveness (or lack of effectiveness).

## References

1. Australian Curriculum, Assessment and Reporting Authority (ACARA). (2012). The shape of the Australian curriculum. Sydney, NSW, Australia. Available at [Shape of the Australian Curriculum v4.0 \(acara.edu.au\)](https://acara.edu.au)
2. Australian Curriculum, Assessment and Reporting Authority (ACARA). (2013). Curriculum design paper. Sydney, NSW, Australia. Available at [07\\_04\\_Curriculum\\_Design\\_Paper\\_version\\_3\\_1\\_June\\_2012.pdf \(acara.edu.au\)](https://acara.edu.au)
3. Australian Curriculum, Assessment and Reporting Authority (ACARA). (2015). Design and technologies: Sequence of content F-10. The shape of the Australian curriculum. Sydney, NSW, Australia. Available at [Design and Technologies \(Version 8.4\) | The Australian Curriculum \(Version 8.4\)](https://acara.edu.au)
4. Andermo, S., Hallgren, M., Nguyen, T., et al. (2020). School-related physical activity interventions and mental health among children: a systematic review and meta-analysis. *Sports Med Open*.6(1):25.
5. Anzman-Frasca, S., Djang, H. C., Halmo, M. M., Dolan, P. R., & Economos, C. D. (2015). Estimating impacts of a breakfast in the classroom program on school outcomes. *JAMA Pediatrics*, 169(1): 71–77.
6. Australian Bureau of Statistics (2013). Australian Health Survey. Available at [Australian Health Survey: Physical Activity, 2011-12 financial year | Australian Bureau of Statistics \(abs.gov.au\)](https://abs.gov.au)
7. Australian Government (2023) National Mental Health Commission. Available at [Home - National Mental Health Commission](https://www.nhmrc.gov.au)
8. Australian Institute of Health and Welfare. (2023). Physical Activity. Available at [Physical activity snapshot - Australian Institute of Health and Welfare \(aihw.gov.au\)](https://aihw.gov.au)
9. Arundell, L., Salmon, J., Timperio, A., Sahlqvist, S., Uddin, R., Veitch, J., ... Parker, K. (2022). Physical activity and active recreation before and during COVID-19: The Our Life at Home study. *Journal of Science and Medicine in Sport*, 25(3): 235–241. <https://doi.org/10.1016/j.jsams.2021.10.004>
10. Australian Institute of Family Studies. (2020). Understanding Food Insecurity in Australia. Australian Government. Available at [https://aifs.gov.au/sites/default/files/publication-documents/2009\\_cfca\\_understanding\\_food\\_insecurity\\_in\\_australia\\_0.pdf](https://aifs.gov.au/sites/default/files/publication-documents/2009_cfca_understanding_food_insecurity_in_australia_0.pdf)
11. Australian Institute for Teaching and School Leadership (AITSL). (2017). Australian Professional Standards for Teachers: Graduate Career Stage. Melbourne: AITSL: Available at: [Graduate \(aitsl.edu.au\)](https://aitsl.edu.au)
12. Bikomeye, J.C., Balza, J., & Beyer, K.M. (2021). The Impact of Schoolyard Greening on Children’s Physical Activity and Socioemotional Health: A Systematic Review of Experimental Studies. *International Journal of Environmental Research and Public Health*, 8(2):535.
13. Bleiweiss-Sande et al., (2019). Associations between food group intake, cognition, and academic achievement in elementary schoolchildren. *Nutrients*. 11(11): 2722
14. Bryan, J., Osendarp, S., Hughes, D., Calvaresi, E., Baghurst, K., Van Klinken, J.-W. (2004). Nutrients for Cognitive Development in School-aged Children. *Nutr. Rev.* 62, 295–306.
15. Centeio, E & McCaughy, N. (2017). Implementing Comprehensive School Physical Activity Programs: A Wayne State University Case Study. *Journal of Physical Education, Recreation & Dance*. 88:(1): 42-49, DOI: [10.1080/07303084.2017.1250536](https://doi.org/10.1080/07303084.2017.1250536)
16. Contardo Ayala, A., Salmon, J., Dunstan, D., Arundell, L., Parker, K., Timperio, A. (2029). Longitudinal Changes in Sitting Patterns, Physical Activity, and Health Outcomes in Adolescents. *Children*. 2;6(1). doi:10.3390/children6010002.
17. Department of Education, Skills and Employment. (2022). Information about the Quality Initial Teacher Education Review. Australian Government
18. De Vlieger, N et al. (2019). Nutrition education in the Australian New South Wales primary curriculum: An exploration of time allocation, translation and attitudes in a sample of teachers. *Health Promotion Journal of Australia*, 30, 94-101.
19. Foodbank (2015). Hunger in the classroom. Foodbank report 2015. <https://www.foodbank.org.au/wp-content/uploads/2019/05/Foodbank-Hunger-in-the-Classroom-Report-May-2015.pdf?state=vic>
20. Giles-Corti, B., Wood, G., Pikora, T., Learnihan, V., Bulsara, M., Van Niel, K., Timperio, A., McCormack, G., & Villanueva, K. (2011). School site and the potential to walk to school: The impact of street connectivity and traffic exposure in school neighbourhoods. *Health and Place*, 17(2): 545-550. <https://doi.org/10.1016/j.healthplace.2010.12.011>

21. Kay-Shilts et al. (2009). Pilot study: EatFit impacts Sixth Graders' Academic performance on Achievement of mathematics and English Education Standards. *Journal of Nutrition Education and Behaviour*.41(2): 127-131
22. Lander, N., Mazzoli, E., Cassar, S., Symington, N., and Salmon, J. (2020). Embedding active pedagogies within pre-service teacher education: implementation considerations and recommendations. *Children* 7:207. doi: 10.3390/children7110207
23. Lander, N., Koorts, H., Mazzoli, E., Moncrieff, K., and Salmon, J. (2019). The feasibility and impact of embedding pedagogical strategies targeting physical activity within undergraduate teacher education: transform-Ed! *Pilot Feasibility Stud* 5, 125–116. doi: 10.1186/s40814-019-0507-5
24. Lander, N.J., Mazzoli, E., Essiet, I.A., Telford, A., Ridley, K., Symington, N., and Salmon, J. (2023) Equipping future teachers with innovative strategies that increase physical activity in the classroom: a hybrid implementation trial across three Australian universities. *Front. Educ.* 8:1093234. doi: 10.3389/educ.2023.1093234
25. Levay, A., Chapman, G., Seed, B., Wittman, H. (2018). It's just the right thing to do: Conceptualizing a theory of change for a school food and beverage sales environment intervention and implications for implementation evaluation. *Evaluation and Program Planning*.70, 73-82.
26. Love, P et al. (2020). Food and nutrition education opportunities within Australian primary schools. *Health promotion International*, 35, 1291-1301
27. Marshall, S.J. & Ramirez, E. (2011). Reducing Sedentary Behavior: A New Paradigm in Physical Activity Promotion. *American Journal of Lifestyle Medicine*. 5(6):518-530. doi:[10.1177/1559827610395487](https://doi.org/10.1177/1559827610395487)
28. Perera, T et al (2015). Improving Nutrition Education in U.S Elementary School: Challenges and Opportunities. *Journal of Education and Practice*, 6, 41-50
29. Peirce et al. (2021). New Zealand Healthy School Lunch pilot Ka Ora, Ka Ako Interim Evaluation. New Zealand Ministry of Education.
30. Poelman A et al., (2021). Teacher evaluation of an experiential vegetable education program for Australian primary schools: does face to face training add value above digital training? *Nutrients*, 3;13(5):1648. doi: 10.3390/nu13051648.
31. Porter, K. J., Koch, P. A. & Contento, I. R (2018). Why and how schools make nutrition education programs 'work'. *Journal of School Health*. 88, 23-33
32. Potmeyer et al. (2016). Breakfast Intake and Composition is associated with superior academic achievement in elementary schoolchildren. *Journal of the American College of Nutrition*. 35(4):326-333
33. Rivas-Drake et al., (2018). Equity & Social and Emotional Learning: A Cultural Analysis. Available at [Frameworks-Equity.pdf \(casel.org\)](#)
34. Ridgers, N.D., Timperio, A., Crawford, D., Salmon, J. (2012) Validity of a brief self-report instrument for assessing compliance with physical activity guidelines amongst adolescents. *JSAMS* 15: 136-141.
35. School Food Matters (2021-2022). School Food Matters Annual Report: Supporting Schools to Thrive. Available at [SFM Annual Report 21-22.pdf \(schoolfoodmatters.org.au\)](#)
36. Singh, A.S., Saliassi, E., van den Berg V, et al. (2019). Effects of physical activity interventions on cognitive and academic performance in children and adolescents: a novel combination of a systematic review and recommendations from an expert panel. *Br J Sports Med*.53(10):640-647.
37. Shankar, P., Chung, R., Frank, D.A. (2017). Association of Food Insecurity with Children's Behavioral, Emotional, and Academic Outcomes: A Systematic Review. *J. Dev. Behav. Pediatr.* 38,135–150.
38. Schranz, N et al. (2018). Results from Australia's 2018 Report Card on Physical Activity for Children and Youth. *Journal of Physical Activity and Health*, 15(s2), s315 317.<https://doi.org/10.1123/ipag.2018-0418>
39. State Government of Victoria (2022). Education State Targets. Available at: [Education State targets | Victorian Government \(www.vic.gov.au\)](#)
40. Stevenson, R.J., Francis, H.M., Attuquayefio, T., Gupta, D., Yeomans, M.R., Oaten M.J., Davidson T. (2020). Hippocampal-dependent appetitive control is impaired by experimental exposure to a Western-style diet. *R Soc Open Sci*. 19;7(2):191338. doi: 10.1098/rsos.191338.
41. Teacher Education Ministerial Advisory Group. (2014). Action Now: Classroom Ready Teachers. A Companion to Research in Teacher Education.
42. Timperio, A., K. Ball, J. Salmon, R. Roberts, B. Giles-Corti, D. Simmons, L. A. Baur, and D. Crawford. (2006). Personal, family, social, and environmental correlates of active commuting to school. *American Journal of Preventive Medicine* 30(1): 45–51.



43. van Sluijs EMF., Ekelund U., Crochemore-Silva I, et al. (2021). Physical activity behaviours in adolescence: current evidence and opportunities for intervention. *Lancet*.398(10298):429-442.
44. Watts SO et al. (2012). An assessment of nutrition education in selected countries in New York State elementary schools (Kindergarten through fifth grade). *Journal of Nutritional education and Behaviour*, 44, 474-480.
45. World Health Organization. (2021). Promoting physical activity through schools: a toolkit. World Health Organization. <https://apps.who.int/iris/handle/10665/350836>. License: CC BY-NC-SA 3.0 IGO
46. Wouters, M, Evenhuis, HM, Hilgenkamp, TIM. (2019). Physical activity levels of children and adolescents with moderate-to-severe intellectual disability. *J Appl Res Intellect Disabil*. 32: 131– 142. <https://doi.org/10.1111/jar.12515>
47. Yeigh, T., and Lynch, D. (2017) "Reforming Initial Teacher Education: A Call for Innovation, *Australian Journal of Teacher Education*: 42(12): 7. <https://doi.org/10.14221/ajte.2017v42n12.7>