



# A good start, but a research article with pros and cons in review

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*Comment on:* Serrano-Gallén S, Arias-Palencia NM, González-Víllora S, *et al.* The relationship between physical activity, physical fitness and fatness in 3–6 years old boys and girls: a cross-sectional study. *Transl Pediatr* 2022. doi: 10.21037/tp-22-30

Submitted Jun 10, 2022. Accepted for publication Jun 28, 2022.

doi: 10.21037/tp-22-266

View this article at: <https://dx.doi.org/10.21037/tp-22-266>

Research in preschool children with respect to the effects of physical activity on fitness and health are very scarce or hardly non-existing. That the authors of the manuscript have taken the chance to do it is a highly respected goal (1). However, the authors are confronted in their research paper with several difficulties.

The first one is that the model that is used is not adequate to tackle the goal. An influence from physical activity on fitness and fatness can only be measured if the study measures pre and post over a certain period. In this study only one measurement is done, a so-called cross-sectional study. Therefore, their title was not called “the influence of...” but “the relationship between...”.

The second one is that they used preschool children, and to register the physical activity of these young children can not be measured by questionnaires or interviews (2) and not validly by questioning their parents. In this study physical activity was registered over 7 days by accelerometers. This is a valid and more objective method and appropriate to measure light, medium and heavy intensity physical activity. But they have also their limitations: not measuring during swimming and showering (children are not wearing them and also not registering during bicycling (body is not going up and down) and false registering (sitting in a car on a bumpy road).

The third one is that the population of 230 boys and girls was minimized to 150 children, only 65% who had complete data of the three categories of measurements: physical activity, fitness, and fatness. What is the effect of this huge self-selection: which child was not completing their physical activity or did not measure their fitness? Is it because of overweight or low mobility?

The fourth and last one is the problem that also a

longitudinal study with repeated measurements can not give the answer of lower physical activity can cause higher fatness or/and lower fitness.

If in this study the independent variable is physical activity, and the two dependent variables are fitness and fatness, only a longitudinal study with a control group and an intervention group can give the answer about the influence of physical activity on fitness and fatness.

The fitness parameters were motor performance tests of hand and leg muscle strength, flexibility, and speed. The cardiorespiratory fitness was measured by a shuttle run test.

All these fitness test have relative low validity. For instance, the shuttle run test in general has a correlation with directly measured maximal oxygen uptake of less than 0.60 in adolescents and we have no data in preschool children. This means that only 40% of the fitness parameter can be explained.

Also, the fatness parameters used such as BMI and waist circumference are indirect measures of overweight and obesity and have unknown validity in this age trajectory.

We hope that this first publication about the physical activity epidemiology about fitness and fatness in preschool children can be continued by more longitudinal and studies and more randomized controlled trials (RCTs) (3).

## Acknowledgments

*Funding:* None.

## Footnote

*Provenance and Peer Review:* This article was commissioned by the editorial office, *Translational Pediatrics*. The article

did not undergo external peer review.

*Conflicts of Interest:* The author has completed the ICMJE uniform disclosure form (available at <https://tp.amegroups.com/article/view/10.21037/tp-22-266/coif>). The author has no conflicts of interest to declare.

*Ethical Statement:* The author is accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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**Cite this article as:** Kemper HCG. A good start, but a research article with pros and cons in review. *Transl Pediatr* 2022;11(7):1070-1071. doi: 10.21037/tp-22-266