Reviewer's report

Title: A systematic review of the effectiveness of individual, community and societal level interventions at reducing socioeconomic inequalities in obesity amongst children

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Reviewer: Judith de Meij

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Report
The paper "A systematic review of the effectiveness of individual, community and societal level interventions at reducing socioeconomic inequalities in obesity amongst children" addresses a very important topic: the inequalities in obesity among youth and the lack of policy ready evidence on what works to reduce inequalities.

Is the question posed by the authors well defined?
The aim of the review is well defined. However, the author could have referred more to international literature to explain and describe the problem and known or hypothesized related causal determinants. For example, what is known about inequalities and effective approaches and interventions to tackle them in other public health problems? What are the most important factors and working mechanisms of successful examples in other fields (e.g. smoking behaviour)? (Major Compulsory Revision).

Are the methods appropriate and well described?
The methods are well described. The author has chosen to distinguish studies by defining 4 levels of interventions and 3 approaches to health inequalities. This has lead to a disappointing amount of studies included in this review. Would another framework probably have been more useful? In other words: is the "system" used the most appropriate to examine the effectiveness of intervention and approaches? For example: it might be interesting to know whether there is a difference in effectiveness between interventions which are targeted to disadvantaged groups and those that make use of tailored strategies, are developed in cooperation with the target group themselves or make use of participatory action research in the developmental phase.

Or whether primary prevention programmes are more/less/even effective in decreasing or halting inequalities compared to selective prevention programmes.

Another possible perspective to take into account could be the difference in use of theoretical background of interventions. Which are more likely to decrease inequalities: those who are based on Social Cognitive Theory, theory of Planned Behaviour or designs based on a more "holistic" framework, including theories of
Environment–Behaviour Relationships and factors such as automatic behaviour (habit strength) and cultural factors. (Discretionary Revisions)

Further I would suggest that process evaluation studies could have been studied as well for a better understanding of the (lack of) effect in decreasing or haltering inequalities. This might provide information for intervention developers and policy makers to increase the quality of programme design and implementation (Discretionary Revisions).

Are the data sound? Yes, the tables are clear as well. However, it is unclear how the author estimates positive outcomes of interventions which are directed at those who are disadvantaged. It is unknown whether the intervention would have had any impact on advantaged groups if the interventions would have been aimed at the entire social gradient. (Major Compulsory Revision)

Does the manuscript adhere to the relevant standards for reporting and data deposition? Yes

There is one remark to make regarding the presented results of the Jump-in intervention. The author states that the effect-evaluation of the Jump-in intervention did not found intervention effects on BMI or waist circumference. That is correct, however, significant beneficial intervention effect was found on the main outcome: organized sports participation. Moreover, effects were stronger for girls and for Moroccan and Turkish children who are less likely to participate in regular sports offers compared to the general population of school children. (Major Compulsory Revision)

Are the discussion and conclusions well balanced and adequately supported by the data? I would like to refer to my remarks at 2. The author could elaborate more on this in the discussion. (Major Compulsory Revision)

Another important question is whether different cultural backgrounds between studied low SES groups should be taken into account in the explanation and comparison of intervention outcomes, since study populations were from Asia, European and American countries.

Are limitations of the work clearly stated? The author should be more critical regarding the framework used for the systematic examination of intervention studies. (Major Compulsory Revision)

Do the authors clearly acknowledge any work upon which they are building, both published and unpublished? Yes (the protocol used for the review).

Do the title and abstract accurately convey what has been found? Yes

Is the writing acceptable? Yes

**Level of interest:** An article of importance in its field

**Quality of written English:** Acceptable
Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:

'I declare that I have no competing interests'