

PEER REVIEW HISTORY

BMJ Open publishes all reviews undertaken for accepted manuscripts. Reviewers are asked to complete a checklist review form ([see an example](#)) and are provided with free text boxes to elaborate on their assessment. These free text comments are reproduced below. Some articles will have been accepted based in part or entirely on reviews undertaken for other BMJ Group journals. These will be reproduced where possible.

ARTICLE DETAILS

| | |
|----------------------------|---|
| TITLE (PROVISIONAL) | Can the London 2012 Olympics “inspire a generation” to do more physical or sporting activities? An overview of systematic reviews |
| AUTHORS | Mahtani, Kamal; Protheroe, Joanne; Slight, Sarah; Demarzo, Marcelo; Blakeman, Thomas; Barton, Christopher; Brijnath, Bianca; Roberts, Nia |

VERSION 1 - REVIEW

| | |
|------------------------|---|
| REVIEWER | Hilary Thomson Senior Investigator Scientist MRC/CSO Social & Public Health Sciences Unit, Glasgow, UK. I declare that I was an author on one of the systematic reviews included in this review of reviews. I am not aware of other competing interests. |
| REVIEW RETURNED | 02-Oct-2012 |

| | |
|----------------------------------|---|
| THE STUDY | I cant see Appendix 1 to look at the search strategy and the reference the authors provide for search filters does not detail filters. There seems to be duplication between the secondary and primary outcomes which both include physical activity. Also were the primary outcomes used as a key screening criterion? That is if a review was identified that only addressed secondary outcomes would this have been excluded? It is not clear what the authors used as a definition for a systematic review. The methods of synthesis are not described. Given the nature of the data identified and the way the review has been presented this review has primarily provided a summary of the two reviews, and a limited narrative synthesis of reported data. Within the methods section the approach to screening, appraisal and data extraction are described under synthesis- these items are not part of the synthesis. Also it is not entirely clear whether the screening, appraisal, and data extraction were conducted by more than one reviewer for each citation requiring this or whether the work was divided across the three reviewers. What is meant by verifying “quality assessment”? |
| RESULTS & CONCLUSIONS | I question the credibility or usefulness of this paper rather than the results themselves. It is unclear what the rationale or value of this review of reviews is, and what this paper contributes to the literature or adds to what the previous reviews and commentaries have made already presented relatively recently. Two systematic reviews addressing a broader range of events and outcomes have been published in the past 2-3 years. These were large scale reviews and in the course of their searching they would have identified existing systematic reviews, and other reviews for inclusion in their own review. In addition, there have been a number of editorial and commentary pieces published over the past year in the Lancet and |

| | |
|-------------------------|--|
| | <p>the BMJ drawing attention to the nature and lack of available evidence. The authors (and many readers) would have known (even if not before but certainly after the searches) that there are very few systematic reviews addressing this topic, and what is available is relatively recent.</p> <p>In addition to the paper presenting what appears to be an premature and unnecessary review of reviews the review itself has a fairly limited scope, further limiting the usefulness of the paper. The review only included reviews which had included data from summer Olympic and Paralympic games, and not other multi-sporting events or winter Olympic games, and was the primary outcomes were limited to sport and physical activity.</p> <p>More details on the specific strengths and weaknesses of the two included reviews would be helpful and an appendix with the AMSTAR data for both reviews would be useful.</p> <p>The results with respect to reporting of the primary outcomes could benefit from further clarification. It is not always clear if the reported results relate to general conclusions of one of the two reviews or findings from studies on a specific games, or whether the outcome being referred to is a specific sporting activity, general sporting activity, or physical activity.</p> |
| GENERAL COMMENTS | <p>I question the credibility or usefulness of this paper rather than the results themselves. It is unclear what the rationale or value of this review of reviews is, and what this paper contributes to the literature or adds to what the previous reviews and commentaries have made already presented relatively recently. Two systematic reviews addressing a broader range of events and outcomes have been published in the past 2-3 years. These were large scale reviews and in the course of their searching they would have identified existing systematic reviews, and other reviews for inclusion in their own review. In addition, there have been a number of editorial and commentary pieces published over the past year in the Lancet and the BMJ drawing attention to the nature and lack of available evidence. The authors (and many readers) would have known (even if not before but certainly after the searches) that there are very few systematic reviews addressing this topic, and what is available is relatively recent.</p> <p>In addition to the paper presenting what appears to be an premature and unnecessary review of reviews the review itself has a fairly limited scope, further limiting the usefulness of the paper. The review only included reviews which had included data from summer Olympic and Paralympic games, and not other multi-sporting events or winter Olympic games, and was the primary outcomes were limited to sport and physical activity.</p> <p>More details on the specific strengths and weaknesses of the two included reviews would be helpful and an appendix with the AMSTAR data for both reviews would be useful.</p> <p>The results with respect to reporting of the primary outcomes could benefit from further clarification. It is not always clear if the reported results relate to general conclusions of one of the two reviews or findings from studies on a specific games, or whether the outcome being referred to is a specific sporting activity, general sporting activity, or physical activity.</p> |

| | |
|-----------------|---------------|
| REVIEWER | Dr Simon Till |
|-----------------|---------------|

| | |
|------------------------|---|
| | <p>Consultant in Sport/Exercise Medicine & Rheumatology Sheffield Teaching Hospitals NHS Foundation Trust</p> <p>I have no conflicts on interest.</p> |
| REVIEW RETURNED | 09-Oct-2012 |

| | |
|-------------------------|---|
| GENERAL COMMENTS | <p>I would approve publication without revision.</p> <p>My comment to the authors was that I was pleased they had raised awareness of what is a gap in knowledge at a time when it is imperative that LOCOG and the UK Government follow through on their commitments to ensure a health and physical activist legacy from what has been an their wise extremely successful Olympics and Paralympics.</p> |
|-------------------------|---|

| | |
|------------------------|--|
| REVIEWER | <p>Dr Garry A. Tew Senior Research Fellow Centre for Sport and Exercise Science Sheffield Hallam University United Kingdom</p> |
| REVIEW RETURNED | 12-Oct-2012 |

| | |
|-------------------------|--|
| GENERAL COMMENTS | <p>This well-written review of reviews by Mahtani et al. focuses on the participation legacy of the Olympic and Paralympic games. Their conclusion is much the same as the two reviews that passed their study eligibility criteria: there's little evidence to support such a legacy at present.</p> <p>Minor comments: Abstract - please rephrase the objective so that it begins "To..." rather than reading like a research question.</p> <p>Was the search limited to specific years?</p> <p>Intro - Ref #4 is an indirect reference - please cite the actual source to which you are referring to.</p> <p>Secondary outcomes - "increases in other forms of physical activity" - I'm not sure what this means</p> <p>The authors may want to highlight that London 2012 was the first games that specifically aimed at delivering a participation legacy. Olympic legacy is a relatively recent concept, and previous games have had a narrower focus, e.g. just develop transport infrastructure and sporting facilities within the host city. The authors may also wish to consider highlighting the difficulty presented by demonstrating a participation legacy, e.g. how can one be sure that an observed change in participation is attributed to the games? (Mike Weed has written an editorial in the BMJ about this.)</p> |
|-------------------------|--|

VERSION 1 – AUTHOR RESPONSE

Reviewer 1: Hilary Thomson
Senior Investigator Scientist
MRC/CSO Social & Public Health Sciences Unit, Glasgow, UK.

"I declare that I was an author on one of the systematic reviews included in this review of reviews. I am not aware of other competing interests."

We would like to thank Dr Thomson for taking the time to review our paper and for declaring her competing interest(s).

"I can't see Appendix 1 to look at the search strategy and the reference the authors provide for search filters does not detail filters." We are sorry to hear that Dr Thompson did not see Appendix 1. It is present within the word document on pages 19 – 20.

Our search filters are clearly included at the end of our search strategy. We have also added a statement to explain in more detail the filters that were used. We would like to point out that one of the authors (Nia Roberts) is an information specialist for the Cochrane Effective Practice and Organisation of Care Group. Her significant expertise was highly valued in devising and conducting an appropriately high standard search strategy.

"There seems to be duplication between the secondary and primary outcomes which both include physical activity. Also were the primary outcomes used as a key screening criterion? That is if a review was identified that only addressed secondary outcomes would this have been excluded?" We have clarified our primary and secondary outcomes to avoid any risk of duplication. The primary outcome was an increased uptake of sporting activity. Secondary outcomes included "increases in other forms of physical activity". We applied the WHO definition of "physical activity", that is "any bodily movement produced by skeletal muscles that requires energy expenditure" as referenced in the text. This was deliberately chosen to ensure that other forms of physical (e.g. dancing) or sporting (since this also comes under the WHO definition) activities were included, thus making our search as comprehensive as possible. If a relevant review contained information relating to only a secondary outcome it was still included. However, we confirm that no such review met our inclusion criteria.

"It is not clear what the authors used as a definition for a systematic review."

We used the definition quoted in the Cochrane Handbook for Systematic Reviews of Interventions. This line has now been added to the text and the handbook cited.

"The methods of synthesis are not described. Given the nature of the data identified and the way the review has been presented this review has primarily provided a summary of the two reviews, and a limited narrative synthesis of reported data. Within the methods section the approach to screening, appraisal and data extraction are described under synthesis- these items are not part of the synthesis. Also it is not entirely clear whether the screening, appraisal, and data extraction were conducted by more than one reviewer for each citation requiring this or whether the work was divided across the three reviewers."

With regards to the review synthesis process, we have taken Dr Thomson's point on board and rearranged our headings for increased clarity.

The "Methods" section is now divided into 1) Data sources and Search Strategy 2) Study selection 3) Outcomes 4) Quality assessment of included reviews 5) Data extraction and 6) Review synthesis. We have added a paragraph to this last section to help improve clarity. Within each section, we have made clear the role of each author. Each author carried out their role independently of each other. We also stated how any disagreements in the review process were resolved (e.g through discussion or referral to a third author).

"What is meant by verifying "quality assessment"?"

Unfortunately, we are unable to locate the term “verifying quality assessment” anywhere in the text.

"I question the credibility or usefulness of this paper rather than the results themselves. It is unclear what the rationale or value of this review of reviews is, and what this paper contributes to the literature or adds to what the previous reviews and commentaries have made already presented relatively recently. Two systematic reviews addressing a broader range of events and outcomes have been published in the past 2-3 years. These were large scale reviews and in the course of their searching they would have identified existing systematic reviews, and other reviews for inclusion in their own review. In addition, there have been a number of editorial and commentary pieces published over the past year in the Lancet and the BMJ drawing attention to the nature and lack of available evidence. The authors (and many readers) would have known (even if not before but certainly after the searches) that there are very few systematic reviews addressing this topic, and what is available is relatively recent."

We would like to address Dr Thomson's comment on the credibility and usefulness of our manuscript in two parts (including the reply to the query below). In regard to the credibility of our review we would like to make several points. Firstly, all authors have a wealth of experience in both quantitative and qualitative research methods, including systematic reviews, which contributed to a systematic approach to our research question. We formulated and refined our question through numerous consensus discussions between all authors, chose a clear and appropriate search strategy, set clear inclusion/exclusion criteria, used (at a minimum) dual selection and extraction of included reviews, assessed quality using the validated AMSTAR tool, compared and contrasted included reviews as a narrative, made an overall conclusion and highlighted the limitations of our own review. Secondly, and as mentioned earlier, one of the authors is also a registered information specialist with Cochrane UK and thus gave credibility to the provenance of our search strategy. Finally, the authors have a multinational mix of backgrounds e.g Brazil, Australia, USA and the UK. In keeping with the subject matter (i.e. a multi nation sporting event like the Olympics), the authors were able to offer unique insights into their own country's culture and sporting event history. We would argue that, if anything, these points strengthen the credibility of our review.

"In addition to the paper presenting what appears to be an premature and unnecessary review of reviews the review itself has a fairly limited scope, further limiting the usefulness of the paper. " We believe our review is timely, necessary and useful for several reasons. First, our study is the first overview of systematic reviews. Therefore we have used a different methodology to the systematic reviews to which Dr Thomson is referring to. The purpose of our review was to compare and contrast existing systematic reviews on this topic. Through a combination of our “characteristics of included reviews” table, “Assessment of review quality using AMSTAR” and narrative we believe that this objective has been reached. Our review is also useful as, prior to its undertaking, it was unclear whether any additional reviews existed relevant to the research question. Dr Thomson highlighted two existing systematic reviews (both included in our overview). In fact, our review highlighted a third potentially relevant review which we chose to exclude after personal communication with the author. The fact that our methodology was both systematic and had a clear audit trail has meant that any reader (or policy maker) can be confident of these results presented to them. We would go further to say that our paper helps readers not only contrasts the results between reviews but helps summarise the evidence (e.g., the study by Weed et al. was 70 pages long) and point to a consistency in the direction of effect.

Our overview is also the most up-to-date study (as of August 2012) relevant to this research question. We would like to point out that the McCartney et al. review assessed studies up to 2008, and the Weed et. al. review was published in 2009. Taken together, this suggests a three to four year knowledge gap in the literature relevant to this topic, suggesting that our overview of reviews is neither premature nor unnecessary.

Finally, the fact we have produced a methodologically sound review in the same year as the London 2012 Olympic Games is very significant. No other previous games have placed a greater emphasis

on an "Olympic legacy" than London 2012. Our review not only highlights to readers (and stake holders) that there is a paucity of overall evidence, but raises doubts over an automatic increase in uptake of sporting activity following a summer Olympic Games. Further, groups such as the London Organising Committee of the Olympic and Paralympic Games (LOCOG), may build on this finding to fill the gaps of evidence and put greater impetus to fulfil their desire for a lasting legacy.

"The review only included reviews which had included data from summer Olympic and Paralympic games, and not other multi-sporting events or winter Olympic games, and was the primary outcomes were limited to sport and physical activity."

The fact and justification for limiting our research question to just the summer Olympic Games has been clearly pointed out in the opening paragraph of our "Limitations of this review" section within the discussion section.

More details on the specific strengths and weaknesses of the two included reviews would be helpful and an appendix with the AMSTAR data for both reviews would be useful.

"The results with respect to reporting of the primary outcomes could benefit from further clarification. It is not always clear if the reported results relate to general conclusions of one of the two reviews or findings from studies on specific games, or whether the outcome being referred to is a specific sporting activity, general sporting activity, or physical activity. "

An appendix with the result of our quality assessment using the AMSTAR tool is present in Table 2. We have researched other existing reviews of systematic reviews, and feel that the combination of our 1) "characteristics of included studies" table and 2) AMSTAR summary for each review is in keeping with other reviews of systematic reviews, although we welcome any further additional suggestions for improvement.

"The rationale that if there had been an increase in activity following games that there would have been significantly more data identified does not make sense."

We thank Dr Thomson for pointing this out. We have removed this line from the discussion to avoid any confusion and feel the remaining paragraph makes our point clearly.

"An issue arising throughout the paper is describing reviews as studies. The paper should be revised to ensure clarity when the authors are referring to a review, a review or reviews, a primary study, or a non-empirical paper. " We have taken Dr. Thomson's excellent point on board and have now clearly differentiated between reviews and studies.

Reviewer 2: Dr Simon Till

Consultant in Sport/Exercise Medicine & Rheumatology Sheffield Teaching Hospitals NHS Foundation Trust

"I have no conflicts on interest.

I would approve publication without revision. "

We are grateful to Dr Till for taking the time to review our manuscript and thank him for recommending our paper for publication.

My comment to the authors was that I was pleased they had raised awareness of what is a gap in knowledge at a time when it is imperative that LOCOG and the UK Government follow through on their commitments to ensure a health and physical activist legacy from what has been an their wise extremely successful Olympics and Paralympics.

We also thank him for pointing out that our paper has raised awareness of a current knowledge gap in the literature.

Reviewer 3: Dr Garry A. Tew
Senior Research Fellow
Centre for Sport and Exercise Science
Sheffield Hallam University
United Kingdom

"This well-written review of reviews by Mahtani et al. focuses on the participation legacy of the Olympic and Paralympic games. Their conclusion is much the same as the two reviews that passed their study eligibility criteria: there's little evidence to support such a legacy at present."

We are grateful to Dr Tew for taking the time to review our manuscript. We also thank him for his helpful comments for improvements.

"Minor comments:

Abstract - please rephrase the objective so that it begins "To..." rather than reading like a research question."

We have updated our objective as requested. It now reads: "To examine if there is there an increased participation in physical or sporting activities following an Olympic or Paralympic games."

"Was the search limited to specific years?"

We excluded citations prior to 1987 as we felt it was highly unlikely that a systematic review that met our inclusion criteria would exist prior to this date. Full details of our search strategy and filters can be found in appendix 1.

"Intro - Ref #4 is an indirect reference - please cite the actual source to which you are referring to."

We have corrected reference 4 and now cite the original document from which the report was taken.

"Secondary outcomes - "increases in other forms of physical activity" - I'm not sure what this means"

By "increases in other forms of physical activity," we meant we wished to be as inclusive as possible in our secondary outcomes. For clarity, we have now added the lines "We followed the WHO definition of "physical activity", that is any bodily movement produced by skeletal muscles that requires energy expenditure. This was to include other forms of physical activity to include those sports not mentioned above as well as non-Olympic physical activities such e.g. dance, skipping etc."

"The authors may want to highlight that London 2012 was the first games that specifically aimed at delivering a participation legacy. Olympic legacy is a relatively recent concept, and previous games have had a narrower focus, e.g. just develop transport infrastructure and sporting facilities within the host city. The authors may also wish to consider highlighting the difficulty presented by demonstrating a participation legacy, e.g. how can one be sure that an observed change in participation is attributed to the games? (Mike Weed has written an editorial in the BMJ about this.) " Thank you for highlighting the point regarding the emphasis placed on legacy for the London 2012 Olympic Games and the challenges in recording this data. We have now incorporated this reflection in to our discussion which now reads: "We also noted that the London 2012 Olympic Games, more so than previous ones, have placed a greater emphasis on leaving a legacy. As a result pressure will mount on ensuring that this is achieved. We note that the 2010 Department for Culture Media and Sport document outlining the UK Governments plans for a legacy after the Olympic Games included numerous proposals to improve mass participation in sport and increased activity. However the government proposals from 2010 contrast with recent reports, following the 2012 games, of a decline in sports diversity and coaching as a result of funding cuts.¹⁷ Part of the problem may lie in the difficulty in measuring this impact. As

pointed out in the 2010 editorial several confounders are likely to contribute to an apparent increase in sports participation.¹⁸ For example a free swimming programme for under 16 and over 60 year olds may simply result in people who already swim, now swimming for free or more often. This then does not meet the remit of facilitating more people to participate.¹⁸

VERSION 2 – REVIEW

| | |
|------------------------|--|
| REVIEWER | Hilary Thomson, Senior Investigator Scientist, MRC/CSO Social & Public Health Sciences Unit, Glasgow, UK |
| REVIEW RETURNED | 27-Nov-2012 |

| | |
|-------------------------|--|
| GENERAL COMMENTS | <p>The authors have prepared a detailed and considered response to the comments. First of all I apologise for not seeing Appendix 1 or Table 2 when I first commented on the original submission- I think my printer must have been on the blink! (or else me)</p> <p>The authors go to some length to describe the rigor of the systematic review method in defence to my concerns about the contribution this paper makes. My concern is not about the methods the authors used, but rather around the appropriateness of conducting and value of a review of reviews so soon after it has been well established, by systematic reviews and other commentaries, that there is little evidence of the impacts of Olympic events (and other multi-sporting events). Moreover, the scope of review is clearly stated but is quite narrow, examining only physical activity outcomes. This further questions the value of this contribution. However, I note that the other two referees, both with different interests to myself (both sport & exercise experts) found this paper interesting.</p> <p>I have two minor comments related to my earlier comments. Add in the text what the Cochrane definition of a systematic review is, i.e. would be helpful to the reader not to have to source the text. What does verification of quality assessment mean? (see text “Quality assessment of included reviews was carried out independently by two authors (CB, BB) and verified by a third (KRM).</p> |
|-------------------------|--|

VERSION 2 – AUTHOR RESPONSE

We have corrected the points made and now attach a revised manuscript.

We have added the description of a systematic review and the line now reads "We used the Cochrane Handbook for Systematic Reviews of Interventions for a definition of a systematic review, that is “a systematic review attempts to identify, appraise and synthesize all the empirical evidence that meets pre-specified eligibility criteria to answer a given research question”

We have also changed the paragraph regarding quality assesment to read with increased clarity. To that end it now reads "We used the AMSTAR measurement tool to assess the quality of the included reviews. This 11-point assessment tool is, to the best of our knowledge, the only one validated tool for this purpose. The assessment was carried out independently by two authors (CB, BB). Any disagreement between authors was referred to a third author (KRM) and a final decision was made."