Title:
Barriers and facilitators to physical activity for children and young people with asthma: an evidence synthesis

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Definitions:
Physical activity Defined as any bodily movement produced by skeletal muscles that requires energy expenditure.

Children and young people Defined as individuals aged 0-18 years.
Asthma Defined as A chronic inflammatory condition presenting with one or more of wheeze, breathlessness, chest tightness and cough (BTS guidelines). Asthma attacks all age groups but often starts in childhood. It is a disease characterised by recurrent attacks of breathlessness and wheezing which vary in severity and frequency from person to person. In an individual, they may occur from hour to hour and day to day. This condition is due to inflammation of the air passages in the lungs and affects the sensitivity of the nerve endings in the airways so they become easily irritated. In an attack, the lining of the passages swell causing the airways to narrow and reducing the flow of air in and out of the lungs

Review questions:
1. To identify barriers and facilitators (e.g. medical, social) to physical activity for children and young people with asthma
2. To provide examples and ideas of interventions to improve physical activity for children and young people with asthma based upon their acceptability to children and young people with asthma.

Searches
Searches will be conducted from 01/01/1995 to the month of submission in;
• Relevant academic databases: Cochrane Library, Medline, EMBASE, PsychINFO, WebofScience

References will be hand-searched for possible additional publications. Expert researchers in the field and user groups will be contacted to identify any additional relevant reports or papers, including unpublished material, and to offer expert opinion.
Keywords will be generated for each concept based on typically used terminology in relevant literature as well as thesaurus based synonyms.

These include; physical activity (e.g. physical activity, exercise, sport) and children (e.g. child, young people, teenager, adolescent, young women, young men).

The main search strategy will be based on the following terms and will be adapted to the requirements of the particular databases:

Asthma

AND

Exercise OR Sport OR Physical Activity OR Physical Activities

AND

Child OR Children OR Adolescent* OR Young People OR Teenager* OR Young Person* OR Young Women OR Young Men

1. exp asthma/
2. asthma.mp. [mp=title, abstract. Subject headings, heading word, drug trade name, original title, device manufacturer, device trade name, keyword]
3. 1 or 2
4. (exercise or sport or physical activity or physical activities).mp. [mp=title, abstract. Subject headings, heading word, drug trade name, original title, device manufacturer, device trade name, keyword]
5. exp. Exercise/
6. 4 or 5
7. 3 and 6
8. Limit 7 to child
9. Child/
10. (children or child or adolescent* or young people or teenager* or young person* or young women or young men).mp. [mp=title, abstract. Subject headings, heading word, drug trade name, original title, device manufacturer, device trade name, keyword]
11. 9 or 10
12. 7 and 11
13. 8 or 12
14. Limit 13 to yr='1995-Current'

Inclusion criteria:

- Studies that identify barriers to CYP exercise participation
- Studies published in English, or with translation available.
Exclusion criteria:

- No data on CYP or non-extractable.
- Non-English language paper (where translation not available).
- No data specifically on the barriers that prevent their participation in exercise.
- Papers published prior to 1995.
- Studies in which child athlete are the population studied.
- Studies in which persons with exercise induced bronchoconstriction are the population studied.

Participants/Population-
CYP with asthma aged up to 18 years and/or their families or other individuals able to comment on the barriers that limit their exercise participation.

Exposures-
The central aim of the review is to systematically outline self-reported barriers and facilitators to CYP with asthma undertaking physical activity. This will include (but not be limited to) barriers that arise from their own beliefs, from family influences, from arrangements in their school/community and from medical effects.

Comparators-
Not applicable.

Types of studies to be included
All study types including intervention, observational or descriptive studies where barriers are clearly identified. The majority of the literature however is anticipated to be qualitative interviews.

Context: There will be no restriction to inclusion based upon context in which the study was conducted. For example studies in healthcare, education and home settings will all be included.

Primary outcomes-
The review aims to identify barriers and facilitators to physical activity for children and young people with asthma.

Secondary outcomes-
To provide examples and ideas of interventions to improve physical activity for children and young people with asthma.

Data extraction:
The titles and abstracts of identified studies will be divided into two cohorts. Each cohort screened independently by one researcher who then will independently screen 5% of studies in the other cohort to establish reliability.
Any discrepancies will be resolved through discussions with the wider research team.

If screened for inclusion, papers will be allocated to one of two cohorts, each to be assessed by one researcher, who will then independently assess 10% of the other cohort to establish reliability. A third researcher will screen 20% of studies in each cohort. Any discrepancies will be resolved through discussions with the wider research team.

**Data extraction**
A data extraction form will be piloted on a minimum of 10 papers, following which any amendments will be made. A single reviewer will extract the data with each extraction checked by a second reviewer.

**Risk of Bias (quality assessment)**
Studies that are screened for inclusion will undergo quality assessment. Quality assessments will be undertaken by one researcher, with a second researcher assessing an overlapping sample (20%) of the studies to establish reliability.

We will measure the risk of bias in RCTs using the ‘Risk of Bias’ tool described in Chapter 8 of the Cochrane Handbook of Systematic Reviews and Interventions. It assesses six components: (1) Random sequence generation, (2) Concealment of allocation, (3) Blinding, (4) Incomplete outcome data, (5) Selective outcome reporting and (6) Additional sources of bias.

For non-randomised studies, we will utilise the A Cochrane Risk Of Bias Assessment Tool: for Non-Randomized Studies of Interventions (ACROBAT-NRSI) which assesses biases due to (1) Confounding, (2) Participant selection, (3) Intervention measurement, (4) Departures from intended interventions, (5) Missing Data, (6) Outcome measurements and (7) Reporting of study results.

For qualitative studies, the Centre for Reviews and Dissemination (CRD) emphasises the importance of using a structured approach to quality assessment when assessing inclusion in reviews. However, it acknowledges the lack of consensus on the definition of poor quality. Some argue that using rigid quality criteria may lead to the unnecessary exclusion of papers and suggest that instead of excluding papers on quality grounds, a critique be included in the narrative to allow the reader to decide. This will be utilised in this review.

**Strategy for Data Synthesis**
We anticipate a variety of research designs utilising both qualitative and quantitative methods. Results from the studies regarding reported barriers and facilitators will be summarized and tabulated. Narrative synthesis will be utilized to analyse the reported barriers and facilitators.

**Analysis of subgroups or subsets**
If the necessary data are available, associations of barriers and facilitators to particular age groups, ethnicities and social groups will be analysed.
Keywords: asthma; physical activity; children; young people; barriers; facilitators; engagement