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Global status and asso factors of physical activity levels among children and adolescents with physical disabilities: a systematic review and meta-analysis

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ADMINISTRATIVE INFORMATION

Support - No.

Review Stage at time of this submission - Formal screening of search results against eligibility criteria.

Conflicts of interest - None declared.

INPLASY registration number: INPLASY202610098

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 30 January 2026 and was last updated on 30 January 20263

INTRODUCTION

Review question / Objective Review question-What is the global status of physical activity levels among children and adolescents with physical disabilities, what factors influence these levels, and how do these factors affect physical activity levels?

Objective-This study aims to systematically summarize and quantitatively integrate evidence on the global status of physical activity levels and influencing factors among children and adolescents with physical disabilities.

Condition being studied Limb defects and limb loss in children and adolescents, including congenital limb deficiencies and acquired amputations, which may affect their physical activity levels.

METHODS

Search strategy The search strategy will focus on terms related to children and adolescents with amputations, limb defects, or limb loss, as well as terms concerning physical activity and sports participation. The search strategy will be adapted as necessary for each electronic database.

Participant or population The population includes children and adolescents with limb defects or limb loss, aged 0–18 years.

Intervention Not applicable.

Comparator Not applicable.

Study designs to be included This review encompasses observational studies, including cross-sectional and longitudinal cohort studies, as

well as experimental studies, such as randomized controlled trials (RCTs). Quantitative observational studies, including cross-sectional and longitudinal designs.

Eligibility criteria

Inclusion criteria

1. Studies reporting physical activity levels in the target population.
2. Studies exploring factors associated with physical activity levels in the target population.

Exclusion criteria

1. Qualitative studies.
2. Reviews, systematic reviews, meta-analyses, editorials, commentaries, or theoretical papers.
3. Case studies.
4. Conference abstracts, theses, dissertations, and other non-peer-reviewed literature.
5. Studies involving populations with physical disabilities other than limb defects or limb loss, such as cerebral palsy.

Information sources

1. Electronic databases, including PubMed, the Cochrane Library, Web of Science Core Collection, Scopus, Embase, and CNKI, will be systematically searched.
2. If necessary, the corresponding authors of the included studies will be contacted to obtain complete data.

Main outcome(s) Physical activity levels among children and adolescents with physical disabilities, measured using objective or subjective indicators, including daily physical activity duration, moderate-to-vigorous physical activity (MVPA), step counts, energy expenditure, and scores from validated physical activity questionnaires.

Additional outcome(s) Factors associated with physical activity levels among children and adolescents with physical disabilities, including individual, familial, social, environmental, and clinical factors.

Quality assessment / Risk of bias analysis 1. The methodological quality and risk of bias of the included studies will be independently assessed by two reviewers. Any disagreements will be resolved through discussion or consultation with a third reviewer.

2. For observational studies (cross-sectional and cohort studies), the Newcastle–Ottawa Scale (NOS) or the Joanna Briggs Institute (JBI) Critical Appraisal Tools will be used to evaluate study quality.

3. For randomized controlled trials (RCTs), the Cochrane Risk of Bias Tool (RoB 2.0) will be applied to assess the risk of bias.

Strategy of data synthesis 1. Data synthesis will be conducted using Review Manager (RevMan) and/or Stata software. When sufficient homogeneous data are available, a meta-analysis will be performed.

2. For continuous outcomes, pooled effect sizes will be calculated using mean difference (MD) or standardized mean difference (SMD) with 95% confidence intervals (CIs). For dichotomous outcomes, risk ratios (RR) or odds ratios (OR) with 95% CIs will be used.

3. Statistical heterogeneity will be assessed using the I^2 statistic and the chi-square test. A fixed-effects model will be applied when heterogeneity is low ($I^2 < 50\%$); otherwise, a random-effects model will be used.

4. If meta-analysis is not feasible due to substantial heterogeneity or insufficient data, a narrative synthesis will be conducted.

5. For studies reporting factors associated with physical activity levels, effect sizes such as correlation coefficients, regression coefficients, odds ratios, or risk ratios will be extracted and synthesized where possible. If quantitative pooling is not feasible, a qualitative synthesis will be conducted.

Subgroup analysis Subgroup analyses will be conducted, where data are available, to explore potential sources of heterogeneity. Subgroups will be defined based on age, sex, type of limb disability, geographical region, measurement methods of physical activity, and study design. Specifically, subgroup analyses may include comparisons according to:

- (1) age groups (children vs. adolescents),
- (2) sex (male vs. female),
- (3) type of limb disability (limb defects vs. limb loss),
- (4) geographical regions (e.g., continents or income levels of countries),
- (5) physical activity assessment methods (objective vs. subjective measures), and
- (6) study design (cross-sectional vs. cohort vs. intervention studies).

Sensitivity analysis 1. Sensitivity analyses will be performed to evaluate the robustness of the pooled estimates of physical activity levels among children and adolescents with physical disabilities. Analyses will be conducted by excluding studies with high risk of bias, low methodological quality, or small sample sizes.

2. Furthermore, sensitivity analyses will be conducted by removing studies with extreme values of physical activity outcomes and by applying alternative statistical models (fixed-effects vs. random-effects models). The consistency of the results will be examined to determine the stability of the findings.

Language restriction No, all language will be included.

Country(ies) involved China.

Keywords Physical activity; Children and adolescents; Physical disabilities; Amputation; Limb defects; Limb deficiency; Limb loss; Systematic review; Meta-analysis; Associated factors.

Contributions of each author

Author 1 - long chen - Author 1 drafted the manuscript and finish the main body of the article.

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Author 2 - guixuan shi - The author helped dealing with the search data.

Author 3 - yuanyuan zhang - The author contributed to the development of the selection criteria, and the risk of bias assessment strategy.

Author 4 - xi zhang - The author contributed to the development of the selection criteria, and the risk of bias assessment strategy too.

Author 5 - hui su - The author helped finish the part of results.

Author 6 - qinghua xu - The author read, provided feedback.

Author 7 - xinkai yu - The author read, provided feedback and approved the final manuscript.