

Dec 22, 2022

Interventions promoting physical activity among adolescents in Sub-Saharan Africa: a scoping review protocol

DOI

<https://dx.doi.org/10.17504/protocols.io.n92ldpzpn15b/v1>

Cécile Longchamps¹, Oumar Bassoum², Adama Faye², Valéry idde^{1,2}

¹Université Paris Cité, IRD, Inserm, Ceped, F-75006 Paris, France;

²Institute of Health and Development (ISED), Cheikh Anta Diop University, Dakar, Senegal



Cécile Longchamps

Create & collaborate more with a free account

Edit and publish protocols, collaborate in communities, share insights through comments, and track progress with run records.

Create free account

OPEN  ACCESS



DOI: <https://dx.doi.org/10.17504/protocols.io.n92ldpzpn15b/v1>

Protocol Citation: Cécile Longchamps, Oumar Bassoum, Adama Faye, Valéry idde 2022. Interventions promoting physical activity among adolescents in Sub-Saharan Africa: a scoping review protocol. **protocols.io**

<https://dx.doi.org/10.17504/protocols.io.n92ldpzpn15b/v1>

License: This is an open access protocol distributed under the terms of the **Creative Commons Attribution License**, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited

Protocol status: Working

Created: October 20, 2022

Last Modified: December 22, 2022

Protocol Integer ID: 71559

Keywords: Adolescence, Sub-Saharan Africa, physical activity, health promotion, program evaluation , physical activity in africa, physical activity among adolescent, promoting physical activity, existing health promotion intervention, health promotion intervention, health intervention, improving adolescent, key characteristics of the intervention, adolescent, intervention, health benefit, health, evaluating intervention, school adolescent, world health organization, african region, specific african context, teenager, public health, relevant african journal, africa, physical inactivity, global pandemic, proposed scoping review

Abstract

Objective: To describe the existing health promotion interventions that aim to promote physical activity among adolescents in Sub-Saharan Africa and to document their design, evaluation, and the results of their evaluation.

Introduction: The World Health Organization estimates that Africa will experience a 27% increase over the next 10 years, that is 28 million additional deaths due to non-communicable diseases. Physical inactivity is one of the main modifiable risk factors for many non-communicable diseases and is considered a global pandemic, including among adolescents. In the African Region, 85% of in-school adolescents aged 11–17 years are insufficiently physically active, above the worldwide average of 81%. Improving adolescents' physical activity will bring health benefits to them today, into their adulthood and to the next generation. However, implementing and evaluating interventions to promote teenager's physical activity in Africa is challenging. A better understanding of "which interventions work and how" to improve physical activity among adolescents in the specific African context is needed.

Inclusion criteria: Health promotion interventions targeting people aged between 10 and 19 years living in Sub-Saharan Africa and aiming to promote physical activity at a populational level will be included.

Methods: The proposed scoping review will be conducted in accordance with the JBI methodology for scoping reviews. All studies designs published in English, French, Spanish and Portuguese, will be considered, without date limitation. The databases to be searched include MEDLINE, CINAHL, Web of science, and African Index Medicus-WHO. Some relevant African journals not referenced in these databases will also be screened as well as other potentially relevant Internet sources. Data will be extracted using a data extraction tool developed by the reviewers based on validated frameworks and tools to describe and evaluate health interventions. Thematic and normative analysis will be performed.

Results and perspectives: The results of this scoping review will identify key characteristics of the interventions promoting physical activity among adolescents in Sub-Saharan Africa, their design and evaluation, as well as the available evidence. They will allow to identify knowledge gaps and determine priorities to guide further research. They will be shared to scientific community but also to public health practitioners and stakeholders through a policy brief.

Introduction

- 1 Non-communicable diseases (NCDs) cause 41 million deaths annually in the world, representing 71% of all deaths, and more than three quarters of these deaths take place in lower-middle-income countries (LMIC)¹. The African region is undergoing an epidemiological transition with a double burden of communicable and noncommunicable diseases threatening overstretched health systems that remain fragile. The World Health Organisation (WHO) estimates that Africa will experience a 27% increase over the next 10 years, that is 28 million additional deaths due to NCDs. By 2030, these conditions will exceed deaths due to communicable, maternal, perinatal and nutritional diseases combined².
Target 3.4 of the Sustainable Development Goals (SDG) 3 aims to reduce by one-third premature mortality from NCDs by 2030 through prevention and treatment³. One of the recommended strategies recommended by WHO in the Global Action Plan for the prevention of control of NCDs 2013-2020⁴ to achieve this objective is to promote physical activity (PA). WHO defines physical activity as "any bodily movement produced by skeletal muscles that requires energy expenditure. [...] all movement including during leisure time, for transport to get to and from places, or as part of a person's work"⁵. Indeed, physical inactivity, defined as insufficient PA levels to meet the present PA recommendations⁶, is one of the main modifiable risk factors for many NCDs, including type-2 diabetes, cardiovascular diseases, cancers, musculoskeletal but also mental health disorders. Physical inactivity is considered a global pandemic^{7,8}, including among adolescents. In the African Region, 22% of adults and 85% of in-school adolescents aged 11–17 years above the worldwide average of 81% are physically inactive^{9,10}, with socioeconomic and gender disparities^{10,11}. These levels of inactivity are increasing because of economic development, increased household wealth, rapid unplanned urbanization, etc. and a gap is observed between girls/women (26% of African women not sufficiently active) and boys/men (18%) due to cultural norms and fewer opportunities to be active¹¹. Thus, over 200 000 deaths are attributed to physical inactivity every year in the African Region¹¹.
WHO aim to achieve a 15% relative reduction in the global prevalence of physical inactivity by 2030⁹ and identified adolescents, defined by WHO as the people aged between 10 and 19 years included¹², as a group which must be specific targeted by programs aiming to promote physical activity¹⁰. A recent WHO analysis shows that the prevalence of obesity among children and teenagers will range from 5% to 16.5% in the African region if no robust measures are taken¹³. A review highlighted the high prevalence of mental health problem in Sub-Saharan adolescents: 27% of depression, 30% of anxiety disorders, 21% of suicidal ideation¹⁴. Improving physical activity may help to prevent this double burden - obesity and mental health disorders - in African

adolescents. Moreover, it is known that “PA practice in the early stages of life is associated with health benefits of the individual and its community”¹⁵ and that investment in adolescent health ensures a “triple dividend: today, into adulthood, and for the next generation” due to genomic imprinting^{16,17}.

Therefore, promoting health and especially physical activity among adolescents is a priority. Health promotion is defined by WHO as “the process of enabling people to increase control over, and to improve, their health. It moves beyond a focus on individual behavior towards a wide range of social and environmental interventions.”¹⁸ However, designing such interventions to improve physical activity levels in adolescents is challenging because of:

- The complexity of the adolescence: adolescents experience great biological, mental, and social change^{21–23} but these transitions are variable, and the timing of significant changes in an adolescent’s life has biological, cultural, or economic determinants²⁴.
- The complexity of the WHO 2020 recommendations⁶:
- from age 5 up to 17: 60 minutes per day of moderate- to vigorous-intensity, primarily aerobic, PA across the week is recommended. On at least three days a week, vigorous-intensity aerobic PA and strengthening muscle and bone should be incorporated.
- from 18 years onward : at least 150–300 minutes of moderate-intensity aerobic PA or at least 75–150 minutes of vigorous-intensity aerobic PA (or an equivalent combination) throughout the week is recommended⁶.
- The diversity of types of interventions (educational, environmental...) and domains (leisure, transport...) where PA may occur: during physical education classes, walking or cycling to school, at sports clubs or at home, and doing household chores.
- The difficulty to measure PA levels: mainly by self-report (adolescent or caregiver report), pedometers or accelerometers are increasingly used, with results often deviating from self-reports if compared²⁵.
- The complexity of the context where the interventions are implemented.

Then, a better understanding of “which interventions work and how” to improve physical activity among adolescents in the specific African context is needed.

A preliminary search of MEDLINE, the Cochrane Database of Systematic Reviews, JBI Evidence Synthesis and PROSPERO was conducted and no current or underway systematic or scoping reviews addressing all types of interventions promoting physical activity among adolescents in the African context were identified. One recent systematic review (Klingberg, 2019²⁶) looked at any behavioural childhood obesity prevention interventions (nutrition, physical activity...) in Africa. Seventeen articles describing 14 interventions in three countries (South Africa, Tunisia and Uganda) were included. Some beneficial effects on physical activity and anthropometric outcomes were described but the quality of evidence was predominantly weak. Barriers and facilitators to successful interventions were described and mainly resource-related.

This review highlights the need to alternative settings to schools and a need for more rigorous designs for evaluating effectiveness and implementation. However, studies targeting adolescents with obesity were excluded and some aiming to improve physical activity not in an obesity prevention purpose (e.g. to improve mental health) may be excluded. Another narrative review reports only mobile health interventions addressing childhood and adolescents obesity in Sub-Saharan Africa and Europe (Reddy, 2021²⁷). Seven studies were reported from Europe and no eligible studies from Sub-Saharan Africa. Another systematic review looked at the school-based interventions targeting nutrition and physical activity, and body weight status of African children (Adom, 2019²⁸) but it focused only on 6 to 15 years old and excluded non based-school interventions. Three studies reported physical activity outcomes and the effectiveness of the interventions were inconsistent. Finally, we've found a systematic review and meta-analysis on the association of the built environment in Africa (Adebusoye, 2022²⁹). Six cross-sectional studies were included and seven built environment constructs were reported: residential density, street connectivity, crime safety, availability of physical activity facilities and infrastructure, walkability, esthetics, and traffic safety. The article concludes that there is a lack of consistent evidence of association between built environment constructs and physical activity in African settings and recommends further high-quality studies.

The purpose of this scoping review is to to describe the health promotion interventions that aim to promote PA among adolescents in Sub-Saharan Africa and to document their design, evaluation and the results of the evaluation. Physical activity promotion is an emergent field in Africa. A scoping review will allow us to explore various and heterogenous sources of literature and types of studies, by combining rigor and flexibility. By summarizing the information through a scoping review, it will be possible to clarify key concepts, to identify key characteristics of the interventions, their design and evaluation, as well as available evidence and knowledge gaps to determine priorities to guide further research. They will be shared to scientific community but also to public health practitioners and stakeholders thank to a policy brief.

Review questions

- 2 This review aims to answer the following question: what is known about interventions, programs and policies promoting physical activity among adolescents in Sub-Saharan Africa, their design, evaluation, implementation and effectiveness? More specifically:
 - What are the health promotion interventions promoting physical activity among adolescents in Sub-Saharan Africa?
 - How were they formulated, designed?
 - How are they evaluated?
 - What do we know about their implementation, effectiveness and efficiency?

Eligibility criteria

- 3 This scoping review will include:
- health promotion interventions intend to promote PA at a population level
 - among adolescents, i.e. people aged between 10 and 19 years included as defined by WHO
 - in Sub-Saharan Africa as defined by the World Bank³⁰

Will be excluded of this review:

- interventions that are not specifically targeted to adolescents
- interventions that are primarily only intended to treat a condition, except for obesity (diabetes, asthma, depression...)

Interventions that exclusively target adolescents with specific comorbidities that cause inequalities in the participation to physical activity will be included during the screening of abstracts. Their definitive inclusion will be discussed in relation to the other articles included.

Methods

- 4 The proposed scoping review will be conducted in accordance with the JBI methodology for scoping reviews³¹.

4.1 Types of sources

This scoping review will consider all study designs.

4.2 Search strategy

The search strategy will aim to locate both published and unpublished studies. An initial limited search of MEDLINE (PubMed) was undertaken to identify articles on the topic. The text words contained in the titles and abstracts of relevant articles, and the index terms used to describe the articles were used to develop a full search strategy including the following keywords and index terms .

A	B
<i>Concept</i>	<i>Keyword/index terms</i>
Physical activity	"physical activit* OR sport* OR fitness OR physical exercis* OR active lifestyle* OR physical training OR physical education OR physical inactivity OR sedentar* OR active commuting OR active travel"

A	B
Health promotion interventions	"prevent*" OR "promot*" OR intervention*" OR program* OR "polic*" OR "campaign*" OR "evaluat*" OR implementation OR "efficacy" OR effectiveness OR efficiency OR "feasibility" OR "pilot" OR "impact"
Adolescents	"adolescen*" OR "teenager*" OR young adult* OR youth*
Sub-Saharan Africa	Africa* OR "Sub-Sahara*" OR Burundi* OR Angola* OR Benin* OR Comor* OR Cameroon* OR Burkina* OR Cape Verde* OR "Cabo Verde*" OR Eritrea* OR Chad* OR Ivory Coast OR "Côte d'Ivoire" OR "Ivorian*" OR Ethiopia* OR Congo* OR Sudan* OR Gambia* OR Kenya* OR Ghana* OR Madagascar OR "Malagasy*" OR Guinea* OR Malawi* OR Guinea-Bissau OR Bissau OR Gabon* OR Liberia* OR Mozambi*" OR Sao Tome and Principe OR Mali* OR Botswana* OR Maurit* OR Rwanda* OR Lesotho* OR "Basotho*" OR Niger* OR Seychell* OR Namibia* OR Somali* OR Uganda* OR Swazi* OR "Eswatini" OR Senegal* OR Tanzania* OR Sierra Leone OR Zambia* OR Togo* OR Zimbabwe*

The research equation was developed for MEDLINE (Pubmed) and will be adapted for each included database and/or information source (Appendix : Search strategy). The research equations will be reviewed by librarians³².

Studies published in English, French, Spanish and Portuguese, the main languages of scientific publication in Africa, will be included, without date limitation.

The databases to which the French Research Institute for Development and the Senegalese Institute for Health and Development have access and to be searched include MEDLINE, CINHALL, Web of science, Global Health and African Index Medicus- WHO. Because of problem in displaying search results on the African Journals Online (AJOL), we identified African journals most relevant for this review referenced in this database and not referenced in the previous mentioned databases to be screened: the African Journal for physical activity and health sciences, the South African journal for research in sport, physical education and recreation, the South African of Sports Medicine. The reference list of all included sources of evidence will be screened for additional studies. An ongoing search will also be conducted of other potentially relevant Internet sources, including the websites of the WHO regional office for Africa, the United Nations International Children's Emergency Fund (UNICEF), the International Society for Physical Activity and Health (ISPAH) and the Global Observatory for Physical Activity (GoPA). We've tried to access to the African Physical Activity Network's website, but the site and the network do not exist anymore. Also, manual searches will be carried out in reference lists of articles or documents relevant to the objectives of this review.

4.3 Study/Source of evidence selection

Following the search, all identified citations will be collated and uploaded into Covidence (www.covidence.org/) and duplicates removed. Following a pilot test, titles and abstracts will then be screened by two independent reviewers for assessment against the inclusion criteria for the review. The full text of selected citations will be assessed in detail against the inclusion criteria by two reviewers. Reasons for exclusion of sources of evidence at full text that do not meet the inclusion criteria will be recorded and reported in the scoping review. Any disagreements that arise between the reviewers at each stage of the selection process will be resolved through discussion, or with an additional reviewer/s. The results of the search and the study inclusion process will be reported in full in the final scoping review and presented in a Preferred Reporting Items for Systematic Reviews and Meta-analyses extension for scoping review (PRISMA-ScR) flow diagram³³.

4.4 Data Extraction

Data will be extracted from papers included in the scoping review by two independent reviewers using a data extraction tool developed by the reviewers. The data extracted will include details about:

- Characteristics of the article: name of the first author, year of publication, affiliations of the authors.
- Design of the intervention, such as the definition of PA and theoretical frameworks used, the approaches used to develop the interventions.
- Components of the intervention, using the template for intervention description and replication of population health and policy interventions (TIDieR-PHP) checklist²⁰ and other relevant elements to describe physical activity interventions^{6,34–36}.
- Design of the evaluation, based on the Mixed Methods Appraisal Tool (MMAT) 2018³⁷.
- Implementation using the most relevant items of the Consolidate Framework for Implementation Research (CFIR) framework³⁸, elements to document the context³⁹.
- Effectiveness, extracting the expected and unexpected effects, and other relevant elements to evaluate physical activity interventions^{6,34–36}.
- Other results of the evaluation, such as efficiency, transferability, perennity...
- Social equity considerations, including sex/gender equity, in the design, implementation and evaluation of the interventions, using the REFLEX-ISS^{40,41}.

The draft data extraction tool will be modified and revised as necessary during the process of extracting data from each included evidence source. Modifications will be detailed in the scoping review. Any disagreements that arise between the reviewers will

be resolved through discussion, or with an additional reviewer/s.

4.5 Data Analysis

A descriptive and a deductive thematic analysis will be performed to answer the scoping review's objectives. A particular attention will be paid to the analysis of the determinants targeted by the interventions⁴², the equity, the characteristics of the settings⁴³, the degree of intersectoriality⁴⁴, the barriers and facilitators to design, implement and evaluate the interventions, and the level of international cooperation of the studies⁴⁵. We will also perform a normative analysis to compare practices to WHO 2020 guidelines on physical activity⁶.

Results will be presented with maps, graphics, diagrams, or tables.

Acknowledgements

- 5 We would like to thank Emilie Brunet, librarian at the French Institute for Research and Development, and Sylvestre Kouakou, lecturer in information sciences at the University Cheick Ante Diop, who supported us in the formulation of research equations, as well as Emmanuelle Roger, librarian at the University of Versailles Saint-Quentin-en-Yvelines, for his advice on bibliographic research.

Conflicts of interest

- 6 There is no conflict of interest in this project.

References

- 7 1.Non communicable diseases. <https://www.who.int/news-room/fact-sheets/detail/noncommunicable-diseases>.
2.Noncommunicable Diseases Africa. *WHO | Regional Office for Africa* <https://www.afro.who.int/health-topics/noncommunicable-diseases>.
3.Health - United Nations Sustainable Development. <https://www.un.org/sustainabledevelopment/health/>.
4.Global Action Plan for the Prevention and Control of NCDs 2013-2020. <https://www.who.int/publications-detail-redirect/9789241506236>.
5.Physical activity. <https://www.who.int/news-room/fact-sheets/detail/physical-activity>.
6.World Health Organization. *WHO guidelines on physical activity and sedentary behaviour*. (World Health Organization, 2020).
7.Kohl, H. W. *et al*. The pandemic of physical inactivity: global action for public health. *Lancet Lond. Engl.* **380**, 294–305 (2012).

8. Lee, I.-M. *et al.* Effect of physical inactivity on major non-communicable diseases worldwide: an analysis of burden of disease and life expectancy. *Lancet Lond. Engl.* **380**, 219–229 (2012).
9. World Health Organization. *Global action plan on physical activity 2018–2030: more active people for a healthier world.* (World Health Organization, 2018).
10. Framework for the implementation of the GAPPA in the African region, WHO, 2020.pdf.
11. Promoting physical activity in the African region, WHO Africa, 2022.
12. Adolescent health. <https://www.who.int/health-topics/adolescent-health>.
13. Obesity rising in Africa, WHO analysis finds. *WHO | Regional Office for Africa* <https://www.afro.who.int/news/obesity-rising-africa-who-analysis-finds>.
14. Jörns-Presentati, A. *et al.* The prevalence of mental health problems in sub-Saharan adolescents: A systematic review. *PloS One* **16**, e0251689 (2021).
15. Barbosa Filho, V. C. *et al.* Promoting physical activity for children and adolescents in low- and middle-income countries: An umbrella systematic review. *Prev. Med.* **88**, 115–126 (2016).
16. Senaldi, L. & Smith-Raska, M. Evidence for germline non-genetic inheritance of human phenotypes and diseases. *Clin. Epigenetics* **12**, 136 (2020).
17. Patton, G. C. *et al.* Our future: a Lancet commission on adolescent health and wellbeing. *Lancet Lond. Engl.* **387**, 2423–2478 (2016).
18. Health Promotion, WHO. <https://www.who.int/westernpacific/about/how-we-work/programmes/health-promotion>.
19. International Classification of Health Interventions, WHO. <https://www.who.int/standards/classifications/international-classification-of-health-interventions>.
20. Campbell, M. *et al.* TIDieR-PHP: a reporting guideline for population health and policy interventions. *BMJ* k1079 (2018) doi:10.1136/bmj.k1079.
21. Steinberg, L. Cognitive and affective development in adolescence. *Trends Cogn. Sci.* **9**, 69–74 (2005).
22. Sheehan, P. *et al.* Building the foundations for sustainable development: a case for global investment in the capabilities of adolescents. *Lancet Lond. Engl.* **390**, 1792–1806 (2017).
23. Sawyer, S. M. *et al.* Adolescence: a foundation for future health. *Lancet Lond. Engl.* **379**, 1630–1640 (2012).
24. Van Sluijs, E. M. F. *et al.* Physical activity behaviours in adolescence: current evidence and opportunities for intervention. *Lancet Lond. Engl.* **398**, 429–442 (2021).
25. Muzenda, T., Kamkuemah, M., Battersby, J. & Oni, T. Assessing adolescent diet and physical activity behaviour, knowledge and awareness in low- and middle-income countries: a systematised review of quantitative epidemiological tools. *BMC Public Health* **22**, 975 (2022).
26. Klingberg, S., Draper, C., Micklesfield, L., Benjamin-Neelon, S. & van Sluijs, E. Childhood Obesity Prevention in Africa: A Systematic Review of Intervention Effectiveness and Implementation. *Int. J. Environ. Res. Public. Health* **16**, 1212 (2019).

- 27.Reddy, P. *et al.* Mobile Health Interventions Addressing Childhood and Adolescent Obesity in Sub-Saharan Africa and Europe: Current Landscape and Potential for Future Research. *Front. Public Health***9**, 604439 (2021).
- 28.Adom, T., De Villiers, A., Puoane, T. & Kengne, A. P. School-Based Interventions Targeting Nutrition and Physical Activity, and Body Weight Status of African Children: A Systematic Review. *Nutrients***12**, E95 (2019).
- 29.Adebusoye, B., Chattopadhyay, K., Ekezie, W., Phalkey, R. & Leonardi-Bee, J. Association of built environment constructs and physical activity among children and adolescents in Africa: a systematic review and meta-analysis. *JBIM Evid. Synth.* (2022) doi:10.11124/JBIES-21-00295.
- 30.Focus: Sub-Saharan Africa, Open Knowledge Repository, World Bank. <https://openknowledge.worldbank.org/pages/focus-sub-saharan-africa>.
- 31.Peters, M. *et al.* Chapter 11: Scoping Reviews. in *JBIM Manual for Evidence Synthesis* (eds. Aromataris, E. & Munn, Z.) (JBIM, 2020). doi:10.46658/JBIMES-20-12.
- 32.Rethlefsen, M. L., Murad, M. H. & Livingston, E. H. Engaging Medical Librarians to Improve the Quality of Review Articles. *JAMA***312**, 999 (2014).
- 33.Tricco, A. C. *et al.* PRISMA Extension for Scoping Reviews (PRISMA-ScR): Checklist and Explanation. *Ann. Intern. Med.***169**, 467–473 (2018).
- 34.Kosowan, L. *et al.* Informing the Physical Activity Evaluation Framework: A Scoping Review of Reviews. *Am. J. Health Promot. AJHP***36**, 340–366 (2022).
- 35.Horodyska, K. *et al.* Good practice characteristics of diet and physical activity interventions and policies: an umbrella review. *BMC Public Health***15**, 19 (2015).
- 36.Physical Activity Evaluation Handbook. 73.
- 37.Hong, Q. N. *et al.* The Mixed Methods Appraisal Tool (MMAT) version 2018 for information professionals and researchers. *Educ. Inf.***34**, 285–291 (2018).
- 38.Proctor, E. *et al.* Outcomes for implementation research: conceptual distinctions, measurement challenges, and research agenda. *Adm. Policy Ment. Health***38**, 65–76 (2011).
- 39.Craig, P. *et al.* Taking account of context in population health intervention research: guidance for producers, users and funders of research. <https://www.journalslibrary.nihr.ac.uk/nihr-research/canadian-institutes-of-health-research-cihr-and-nihr-collaboration.htm> (2018) doi:10.3310/CIHR-NIHR-01.
- 40.Guichard, A. *et al.* Adaptation et conditions d'utilisation d'un outil d'analyse des interventions au regard des inégalités sociales de santé: *Santé Publique***S1**, 121–130 (2018).
- 41.Guichard, A., Ridde, V., Nour, K. & Lafontaine, G. Mieux prendre en considération les inégalités sociales de santé outils Réflex_ISS. 27.
- 42.World Health Organization. *A conceptual framework for action on the social determinants of health*. <https://apps.who.int/iris/handle/10665/44489> (2010).
- 43.Poland, B., Krupa, G. & McCall, D. Settings for health promotion: an analytic framework to guide intervention design and implementation. *Health Promot. Pract.***10**, 505–516 (2009).

44. Corbin, J. H., Jones, J. & Barry, M. M. What makes intersectoral partnerships for health promotion work? A review of the international literature. *Health Promot. Int.* daw061 (2016) doi:10.1093/heapro/daw061.

45. Dimitris, M. C., Gittings, M. & King, N. B. How global is global health research? A large-scale analysis of trends in authorship. *BMJ Glob. Health* **6**, e003758 (2021).

Appendix

8 Appendix 1: Search strategy

A	B
MEDLINE (PubMed)	("exercise"[MeSH Terms] OR "sedentary behavior"[MeSH Terms] OR "sports"[MeSH Terms] OR "physical activit*" [Title/Abstract] OR "sport*" [Title/Abstract] OR "fitness" [Title/Abstract] OR "physical exercis*" [Title/Abstract] OR "active lifestyle*" [Title/Abstract] OR "physical training" [Title/Abstract] OR "physical education" [Title/Abstract] OR "physical inactivity" [Title/Abstract] OR "sedentar*" [Title/Abstract] OR "active commuting" [Title/Abstract] OR "active travel*" [Title/Abstract]) AND ("preventive health services" [MeSH Terms] OR "preventive medicine" [MeSH Terms] OR "primary prevention" [MeSH Terms] OR "health promotion" [MeSH Terms] OR "Health Services Research" [MeSH Terms] OR "prevent*" [Title/Abstract] OR "promot*" [Title/Abstract] OR "program development" [MeSH Terms] OR "program evaluation" [MeSH Terms] OR "feasibility studies" [MeSH Terms] OR "pilot projects" [MeSH Terms] OR "intervention*" [Title/Abstract] OR "program*" [Title/Abstract] OR "polic*" [Title/Abstract] OR "campaign*" [Title/Abstract] OR "evaluat*" [Title/Abstract] OR "implementation" [Title/Abstract] OR "efficacy" [Title/Abstract] OR "effectiveness" [Title/Abstract] OR "efficiency" [Title/Abstract] OR "feasibility" [Title/Abstract] OR "pilot" [Title/Abstract] OR "impact" [Title/Abstract]) AND (adolescent [MeSH Terms] OR "young adult" [MeSH Terms] OR "adolescent health" [MeSH Terms] OR "adolescent behavior" [MeSH Terms] OR "youth sports" [MeSH Terms] OR "adolescen*" [Title/Abstract] OR "teenager*" [Title/Abstract] OR "young adult*" [Title/Abstract] OR "youth*" [Title/Abstract]) AND (Africa [MeSH Terms] OR "Africa South of the Sahara" [MeSH Terms] OR "Africa*" [All Fields] OR "Sub-Sahara*" [All Fields] OR Burundi* [All Fields] OR Angola* [All Fields] OR Benin* [All Fields] OR Comor* [All Fields] OR Cameroon* [All Fields] OR Burkina* [All Fields] OR "Cape Verde*" [All Fields] OR "Cabo Verde*" OR Eritrea* [All Fields] OR Chad* [All Fields] OR "Ivory Coast" [All Fields] OR "Côte d'Ivoire" [All Fields] OR Ivorian* [All Fields] OR Ethiopia* [All

A	B
	Fields] OR Congo*[All Fields] OR Sudan*[All Fields] OR Gambia[All Fields]* OR Kenya*[All Fields] OR Ghana*[All Fields] OR Madagascar[All Fields] OR Malagasy*[All Fields] OR Guinea*[All Fields] OR Malawi*[All Fields] OR "Guinea-Bissau"[All Fields] OR Bissau[All Fields] OR Maurit*[All Fields] OR Gabon*[All Fields] OR Liberia*[All Fields] OR Mozambi*[All Fields] OR "Sao Tome and Principe"[All Fields] OR Mali*[All Fields] OR Botswana*[All Fields] OR Rwanda*[All Fields] OR Lesotho*[All Fields] OR Basotho*[All Fields] OR Niger*[All Fields] OR Seychell*[All Fields] OR Namibia*[All Fields] OR Somali*[All Fields] OR Uganda*[All Fields] OR Swazi*[All Fields] OR Eswatini[All Fields] OR Senegal*[All Fields] OR Tanzania*[All Fields] OR "Sierra Leone*" [All Fields] OR Zambia*[All Fields] OR Togo*[All Fields] OR Zimbabwe*[All Fields]) No filter
CINAHL	(TI ("physical activit*" OR "sport*" OR "fitness" OR "physical exercis*" OR "active lifestyle*" OR "physical training" OR "physical education" OR "physical inactivity" OR "sedentar*" OR "active commuting" OR "active travel") OR AB ("physical activit*" OR "sport*" OR "fitness" OR "physical exercis*" OR "active lifestyle*" OR "physical training" OR "physical education" OR "physical inactivity" OR "sedentar*" OR "active commuting" OR "active travel") OR MW ("physical activit*" OR "sport*" OR "fitness" OR "physical exercis*" OR "active lifestyle*" OR "physical training" OR "physical education" OR "physical inactivity" OR "sedentar*" OR "active commuting" OR "active travel")) AND (TI ("prevent*" OR "promot*" OR "intervention*" OR "program*" OR "polic*" OR "campaign*" OR "evaluat*" OR "implementation" OR "efficacy" OR "effectiveness" OR "efficiency" OR "feasibility" OR "pilot" OR "impact") OR AB ("prevent*" OR "promot*" OR "intervention*" OR "program*" OR "polic*" OR "campaign*" OR "evaluation" OR "implementation" OR "efficacy" OR "effectiveness" OR "efficiency" OR "feasibility" OR "pilot" OR "impact") AND (TI ("adolescen*" OR "teenager*" OR "young adult*" OR "youth*") OR AB ("adolescen*" OR "teenager*" OR "young adult*" OR "youth*") OR MH ("adolescen*" OR "teenager*" OR "young adult*" OR "youth*")) AND ("Africa*" OR "Sub-Sahara*" OR Burundi* OR Angola* OR Benin* OR Comor* OR Cameroon* OR Burkina OR "Cape Verde*" OR "Cabo Verde*" OR Eritrea* OR Chad* OR "Ivory Coast" OR "Côte d'Ivoire" OR Ivorian* OR Ethiopia* OR Congo* OR Sudan* OR Gambia* OR Kenya* OR Ghana* OR Madagascar

A	B
	OR Malagasy* OR Guinea* OR Malawi* OR "Guinea-Bissau" OR Bissau OR Maurit* OR Gabon* OR Liberia* OR Mozambi* OR "Sao Tome and Principe" OR Mali* OR Botswana* OR Rwanda* OR Lesotho* OR Basotho* OR Niger* OR Seychell* OR Namibia* OR Somali* OR Uganda* OR Swazi* OR Eswatini OR Senegal* OR Tanzania* OR "Sierra Leone*" OR Zambia* OR Togo* OR Zimbabwe*) No filter
Global Index Medicus Africa WHO	(tw:(physical activit*) OR tw:(sport*) OR tw:(fitness) OR tw:(physical exercis*) OR tw:(active lifestyle) OR tw:(physical training) OR tw:(physical education) OR tw:(physical inactivity) OR tw:(sedentar*) OR tw:(active commuting) OR tw:(active travel*)) AND (tw: (prevent*) OR tw:(promot*) OR tw:(intervention*) OR tw:(program*) OR tw:(polic*) OR tw: (campaign*) OR tw:(evaluat*) OR tw:(implementation) OR tw:(efficacy) OR tw: (effectiveness) OR tw:(efficiency) OR tw:(feasibility) OR tw:(pilot) OR tw: (impact)) AND (tw:(adolescen*) OR tw:(teenager*) OR tw:(young adult*) OR tw:(youth*)) Filter: Indice: AIM (Africa)
Web of science	(TS=("physical activit*") OR TS=(sport*) OR TS=(fitness) OR TS=("physical exercis*") OR TS=("active lifestyle*") OR TS=("physical training") OR TS=("physical education") OR TS=("physical inactivity") OR TS=(sedentar*) OR TS=("active commuting") OR TS=("active travel")) AND (TS=(prevent*) OR TS=(promot*) OR TS=(intervention) OR TS=(program*) OR TS=(polic*) OR TS=(campaign*) OR TS=(evaluat*) OR TS=(implementation) OR TS=(efficacy) OR TS=(effectiveness) OR TS=(efficiency) OR TS=(feasibility) OR TS=(pilot) OR TS=(impact)) AND (TS=(adolescen*) OR TS=(teenager*) OR TS=("young adult*") OR TS=(youth*)) AND (ALL=(Africa*) OR ALL=(Sub-Sahara*) OR ALL=(Burundi*) OR ALL=(Angola*) OR ALL=(Benin*) OR ALL=(Comor*) OR ALL= (Cameroon) OR ALL=(Burkina*) OR ALL=("Cape Verde*") OR ALL=("Cabo Verde*") OR ALL=(Eritrea*) OR ALL=(Chad*) OR ALL=("Ivory Coast") OR ALL=("Côte d'Ivoire") OR ALL=(Ivorian*) OR ALL=(Ethiopia*) OR ALL= (Congo*) OR ALL=(Sudan*) OR ALL=(Gambia*) OR ALL=(Kenya*) OR ALL=(Ghana*) OR ALL=(Madagascar) OR ALL=(Malagasy*) OR ALL=(Guinea*) OR ALL=(Malawi*) OR ALL=("Guinea-Bissau") OR ALL=(Bissau) OR ALL=(Maurit*) OR ALL=(Gabon*) OR ALL=(Liberia*) OR ALL=(Mozambi*) OR ALL=("Sao Tome and Principe") OR ALL=(Mali*) OR ALL=(Botswana*) OR ALL= (Rwanda*) OR ALL=(Lesotho*) OR ALL=(Basotho*) OR ALL=(Niger*) OR ALL=(Seychell*) OR ALL=(Namibia*) OR ALL=

A	B
	(Somali*) OR ALL=(Uganda*) OR ALL=(Swazi*) OR ALL=(Eswatini) OR ALL=(Senegal*) OR ALL=(Tanzania*) OR ALL=("Sierra Leone*") OR ALL=(Zambia*) OR ALL=(Togo*) OR ALL=(Zimbabwe*)) Exact search
Global Health	(title:("physical activit*" OR "sport*" OR "fitness" OR "physical exercis*" OR "active lifestyle*" OR "physical training" OR "physical education" OR "physical inactivity" OR "sedentar*" OR "active commuting" OR "active travel") OR ab:("physical activit*" OR "sport*" OR "fitness" OR "physical exercis*" OR "active lifestyle*" OR "physical training" OR "physical education" OR "physical inactivity" OR "sedentar*" OR "active commuting" OR "active travel")) AND (title:("prevent*" OR "promot*" OR "intervention*" OR "program*" OR "polic*" OR "campaign*" OR "evaluat*" OR "implementation" OR "efficacy" OR "effectiveness" OR "efficiency" OR "feasibility" OR "pilot" OR "impact") OR ab:("prevent*" OR "promot*" OR "intervention*" OR "program*" OR "polic*" OR "campaign*" OR "evaluat*" OR "implementation" OR "efficacy" OR "effectiveness" OR "efficiency" OR "feasibility" OR "pilot" OR "impact") OR subject:("prevent*" OR "promot*" OR "intervention*" OR "program*" OR "polic*" OR "campaign*" OR "evaluat*" OR "implementation" OR "efficacy" OR "effectiveness" OR "efficiency" OR "feasibility" OR "pilot" OR "impact")) AND (title:("adolescen*" OR "teenager*" OR "young adult*" OR "youth*") OR ab:("adolescen*" OR "teenager*" OR "young adult*" OR "youth*") OR suject:("adolescen*" OR "teenager*" OR "young adult*" OR "youth*")) AND (Africa* OR "Sub-Sahara*" OR Burundi* OR Angola* OR Benin* OR Comor* OR Cameroon* OR Burkina* OR Libya* OR "Cape Verde*" OR "Cabo Verde*" OR Eritrea* OR Chad* OR "Ivory Coast" OR "Côte d'Ivoire" OR Ivorian* OR Ethiopia* OR Congo* OR Sudan* OR Gambia* OR Kenya* OR Ghana* OR Madagascar OR Malagasy* OR Guinea* OR Malawi* OR "Guinea-Bissau" OR Bissau OR Maurit* OR Gabon* OR Liberia* OR Mozambi* OR "Sao Tome and Principe" OR Mali* OR Botswana* OR Rwanda* OR Lesotho* OR Basotho* OR Niger* OR Seychell* OR Namibia* OR Somali* OR Uganda* OR Swazi* OR Eswatini OR Senegal* OR Tanzania* OR "Sierra Leone*" OR Zambia* OR Togo* OR Zimbabwe*) No filter

