

Publication

Is grip strength linked to body composition and cardiovascular risk markers in primary schoolchildren? Cross-sectional data from three African countries

JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)

ID 4645126

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Year 2022

Title Is grip strength linked to body composition and cardiovascular risk markers in primary schoolchildren? Cross-sectional data from three African countries

Journal BMJ open

Volume 12

Number 6

Pages / Article-Number e052326

Keywords community child health; public health; sports medicine

Mesh terms Body Composition; Cardiovascular Diseases, diagnosis; Child; Cross-Sectional Studies; Female; Hand Strength, physiology; Heart Disease Risk Factors; Humans; Male; Reproducibility of Results; Risk Factors; South Africa, epidemiology

Muscular strength represents a specific component of health-related fitness. Hand grip strength (HGS) is used as an indicator for musculoskeletal fitness in children. HGS can also be used as a marker of cardiometabolic risk, but most available HGS data are derived from Western high-income countries. Therefore, this study examines whether HGS is associated with body composition and markers of cardiovascular risk in children from three sub-Saharan African countries.; Cross-sectional study.; Public primary schools (grade 1-4) in Taabo (Côte d'Ivoire), Gqeberha (South Africa) and Ifakara (Tanzania).; Data from 467 children from Côte d'Ivoire (210 boys, 257 girls), 864 children from South Africa (429 boys, 435 girls) and 695 children from Tanzania (334 boys, 361 girls) were analysed.; Body composition (assessed via bioelectrical impedance analysis) was the primary outcome. Cardiovascular risk markers were considered as secondary outcome. Blood pressure was measured with an oscillometric monitor, and blood markers (cholesterol, triglycerides, glycated haemoglobin) via Afinion point-of-care testing. HGS (independent variable) was assessed with a hydraulic hand dynamometer. Inferential statistics are based on mixed linear regressions and analyses of covariance.; Across all study sites, higher HGS was associated with lower body fat, higher muscle mass and higher fat-free mass (; p; <0.001, 3.9%-10.0% explained variance), both in boys and girls. No consistent association was found between HGS and cardiovascular risk markers.; HGS assessment is popular due to its simplicity, feasibility, practical utility and high reliability of measurements. This is one of the first HGS studies with children from sub-Saharan Africa. There is a great need for further studies to examine whether our findings can be replicated, to develop reference values for African children, to establish links to other health outcomes, and to explore whether HGS is associated with later development of cardiovascular risk markers.; IS-RCTN29534081.Keywords: community child health; public health; sports medicine.

Publisher BMJ Group
ISSN/ISBN 2044-6055
URL <https://bmjopen.bmj.com/content/12/6/e052326.long>
edoc-URL <https://edoc.unibas.ch/88608/>
Full Text on edoc Available;
Digital Object Identifier DOI 10.1136/bmjopen-2021-052326
PubMed ID <http://www.ncbi.nlm.nih.gov/pubmed/35667732>
ISI-Number WOS:000807661700011
Document type (ISI) Journal Article