

## Supplementary files

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### Supplement to: Ding, et.al

Ding Ding, Andrea Ramirez Varela, Adrian E. Bauman, Ulf Ekelund, I-Min Lee, Gregory Heath, Peter T. Katzmarzyk, Rodrigo Reis, Michael Pratt. “Physical activity and global health: lessons learned from the Lancet series and directions for future research”

### Appendix 1: Search formulas for correlates and determinants of physical activity –update for low- and middle-income countries

**Search Formula 1: <A by title/abstract > and <B by title/abstract > and <C by title/abstract >**

**A.** physical activity OR physically active OR physical inactivity OR physically inactive OR exercis\* OR sport\* OR walk OR walking OR sedentary OR sitting OR television OR TV OR active transport\* OR commut\* OR bicycle OR bicycling OR bike OR biking OR active living

**AND**

**B.** correlate OR correlates OR determinant OR determinants OR attribute OR attributes OR factor OR factors OR psychological OR psychosocial OR self-efficacy OR social support OR attitude OR attitudes OR barrier OR barriers OR motivation\* OR enjoy\* OR walkability OR stage of change OR transtheoretical OR planned behaviour OR planned behavior OR learning theory OR built environment OR built environmental OR perceived environment OR perceived environments OR environmental perception OR environmental perceptions OR physical environment OR physical environments OR objective environment OR objective environments OR neighbourhood environment OR neighbourhood environments OR neighborhood environment OR neighborhood environments OR community environment OR community environments OR residential environment OR residential environments OR exercise facility OR exercise facilities OR sports facility OR sports facilities OR physical activity facility OR physical activity facilities OR sports club OR sports clubs OR park OR parks OR trail OR trails OR open space OR open spaces OR work environment OR work environments OR working environment OR working environments OR worksite environment OR

worksite environments OR occupational environment OR occupational environments OR school environment OR school environments OR socioeconomic status OR social class OR ses OR income OR social capital

## AND

### C. Low to middle income countries key words

– Angola OR Albania OR Algeria OR Samoa OR Argentina OR Azerbaijan OR Belarus OR Belize OR Bosnia OR Herzegovina OR Botswana OR Brazil OR Bulgaria OR China OR Colombia OR Rica OR Cuba OR Dominica OR Dominican OR Ecuador OR Fiji OR Gabon OR Grenada OR Hungary OR Iran OR Iraq OR Jamaica OR Jordan OR Kazakhstan OR Lebanon OR Libya OR Macedonia OR Malaysia OR Maldives OR Marshall OR Mauritius OR Mexico OR Montenegro OR Namibia OR Palau OR Panama OR Peru OR Romania OR Serbia OR Seychelles OR South Africa OR Lucia OR Vincent OR Grenadines OR Suriname OR Thailand OR Tonga OR Tunisia OR Turkey OR Turkmenistan OR Tuvalu OR Venezuela OR Armenia OR Bhutan OR Bolivia OR Cameroon OR Cabo OR Congo OR Côte OR d'Ivoire OR Djibouti OR Egypt OR Salvador OR Georgia OR Ghana OR Guatemala OR Guyana OR Honduras OR Indonesia OR India OR Kiribati OR Kosovo OR Kyrgyz OR Lao OR Lesotho OR Mauritania OR Micronesia OR Moldova OR Mongolia OR Morocco OR Nicaragua OR Nigeria OR Pakistan OR Papua OR Guinea OR Paraguay OR Philippines OR Samoa OR Tomé OR Senegal OR Solomon OR Sudan OR Lanka OR Sudan OR Swaziland OR Syrian OR Timor OR Leste OR Ukraine OR Uzbekistan OR Vanuatu OR Vietnam OR Gaza OR Yemen OR Zambia OR Afghanistan OR Bangladesh OR Benin OR Burkina OR Burundi OR Cambodia OR Central African OR Chad OR Comoros OR Congo OR Eritrea OR Ethiopia OR Gambia OR Guinea OR Guinea OR Bissau OR Haiti OR Kenya OR Korea OR Liberia OR Madagascar OR Malawi OR Mali OR Mozambique OR Myanmar OR Nepal OR Niger OR Rwanda OR Sierra OR Leone OR Somalia OR Tajikistan OR Tanzania OR Togo OR Uganda OR Zimbabwe OR Angolan OR Angolese OR Albanian OR Skipetar OR Algerian OR Algerine OR American Samoan OR Argentine OR Argentinian OR Argentino OR Azerbaijani OR Belarusian OR Belarussian OR Belizean OR Bosnian, Herzegovinian OR Botswanian OR Motswana OR Batswana OR Brazilian OR Bulgar OR Bulgarian OR Chinese OR Colombian OR Costa Rican OR Cuban OR Dominican OR Dominican OR Ecuadorian OR Fijian OR Gabonese OR Grenadian OR Hungarian OR Iranian OR Persian OR Irani OR Iraqi OR Jamaican OR Jordanian OR Kazakhstani OR Lebanese OR Libyan OR Macedonian OR Malaysian OR Maldivian OR Marshallese OR Mauritian OR Mexican OR Montenegrin OR Namibian OR Palauan OR Panaman OR

Panamanian OR Peruvian OR Romanian OR Serb OR Serbian OR Seychellois OR South African OR Saint Lucian OR Vincentian OR Saint Vincentian OR Surinamer OR Surinamese OR Thai OR Tongan OR Tunisian OR Turkish OR Turk OR Turkmen OR Tuvaluan OR Venezuelan OR Armenian OR Bhutanese OR Bolivian OR Cameroonian OR Cabo Verdean OR Congolese OR Ivorian OR Djiboutian OR Egyptian OR Salvadoran OR Georgian OR Ghanaian OR Guatemalan OR Guyanese OR Honduran OR Indonesian OR Indian OR I-Kiribati OR Kosovar OR Kyrgyz OR Kyrgyzstani OR Lao OR Laotian OR Mosotho OR Basotho OR Mauritanian OR Micronesian OR Moldovan OR Mongolian OR Moroccan OR Nicaraguan OR Nigerian OR Pakistani OR Papua New Guinean OR Paraguayan OR Filipino OR Samoan OR Sao Tomean OR Senegalese OR Solomon Islander OR South Sudanese OR Sri Lankan OR Sudanese OR Swazi OR Syrian OR Timorese OR Ukrainian OR Uzbekistani OR Ni-Vanuatu OR Vietnamese OR Yemeni OR Zambian OR Afghan OR Bangladeshi OR Beninese OR Burkinabe OR Burundian OR Cambodian OR Central African OR Chadian OR Comoran OR Congolese OR Eritrean OR Ethiopian OR Gambian OR Guinean OR Bissau-Guinean OR Haitian OR Kenyan OR North Korean OR Liberian OR Malagasy OR Malawian OR Malian OR Mozambican OR Burmese OR Nepali OR Nigerien OR Rwandan OR Sierra Leonean OR Somali OR Tajikistani OR Tanzanian OR Togolese OR Ugandan OR Zimbabwean

## **Search Formula 2: Search Formula 1 + filter Systematic Reviews + filter Humans**

### **Appendix 2: Inclusion criteria for correlates and determinants of physical activity – update for low- and middle-income countries (LMICs)**

1. Publication years: 2016.12.31 - 2019.03.01
2. Publication from LMICs. Studies for which the sample include LMICs. Classification of income level of countries was based on the World Bank classification.
3. Studies which main focus was on physical activity (including sedentary behavior)
4. Physical activity was supposed to be outcome, dependent variables. We did not include paper which examined correlates/determinants of physical fitness.
5. Correlates/determinants means sociodemographic, biological, psychological, behavioral, social, and environmental factors those were examined as independent variables We did not include studies which examined the association of PA as

independent variables with obesity and cardiovascular risk factors as dependent variables.

6. No language limitation

8. All age groups (children:5-12, adolescents:12-18, adults:18-64, older adults:65)

9. Publications which examined healthy people, we did not include patients. We included papers using obese population.

10. DATABASES: PubMed, WOS, Scopus

### **Appendix 3: Study flow: Systematic search for correlates/determinants of physical activity- update for low- and middle-income countries**

18483 articles identified through systematic search

18311 results after removing duplicates (172 duplicates removed)

300 selected for abstract screening

52 of text articles assessed for eligibility

52 Final selection of text for reading

40 original studies, 12 literature reviews

### **Appendix 4: Search formulas for physical activity interventions – update for low- and middle-income countries**

**Search Formula 1: <A by title/abstract > and <B by title/abstract > and <C by title/abstract >**

**A.** physical activity OR physically active OR physical inactivity OR physically inactive OR exercis\* OR sport\* OR walk OR walking OR sedentary OR sitting OR television OR TV OR active transport\* OR commut\* OR bicycle OR bicycling OR bike OR biking OR active living

**AND**

**B. experiment OR intervention OR program\***

**AND**

**C. Low to middle income countries key words**

– Angola OR Albania OR Algeria OR Samoa OR Argentina OR Azerbaijan OR Belarus OR Belize OR Bosnia OR Herzegovina OR Botswana OR Brazil OR Bulgaria OR China OR Colombia OR Rica OR Cuba OR Dominica OR Dominican OR Ecuador OR Fiji OR Gabon OR Grenada OR Hungary OR Iran OR Iraq OR Jamaica OR Jordan OR Kazakhstan OR Lebanon OR Libya OR Macedonia OR Malaysia OR Maldives OR Marshall OR Mauritius OR Mexico OR Montenegro OR Namibia OR Palau OR Panama OR Peru OR Romania OR Serbia OR Seychelles OR South Africa OR Lucia OR Vincent OR Grenadines OR Suriname OR Thailand OR Tonga OR Tunisia OR Turkey OR Turkmenistan OR Tuvalu OR Venezuela OR Armenia OR Bhutan OR Bolivia OR Cameroon OR Cabo OR Congo OR Côte OR d'Ivoire OR Djibouti OR Egypt OR Salvador OR Georgia OR Ghana OR Guatemala OR Guyana OR Honduras OR Indonesia OR India OR Kiribati OR Kosovo OR Kyrgyz OR Lao OR Lesotho OR Mauritania OR Micronesia OR Moldova OR Mongolia OR Morocco OR Nicaragua OR Nigeria OR Pakistan OR Papua OR Guinea OR Paraguay OR Philippines OR Samoa OR Tomé OR Senegal OR Solomon OR Sudan OR Lanka OR Sudan OR Swaziland OR Syrian OR Timor OR Leste OR Ukraine OR Uzbekistan OR Vanuatu OR Vietnam OR Gaza OR Yemen OR Zambia OR Afghanistan OR Bangladesh OR Benin OR Burkina OR Burundi OR Cambodia OR Central African OR Chad OR Comoros OR Congo OR Eritrea OR Ethiopia OR Gambia OR Guinea OR Guinea OR Bissau OR Haiti OR Kenya OR Korea OR Liberia OR Madagascar OR Malawi OR Mali OR Mozambique OR Myanmar OR Nepal OR Niger OR Rwanda OR Sierra OR Leone OR Somalia OR Tajikistan OR Tanzania OR Togo OR Uganda OR Zimbabwe OR Angolan OR Angolese OR Albanian OR Skipetar OR Algerian OR Algerine OR American Samoan OR Argentine OR Argentinian OR Argentino OR Azerbaijani OR Belarusian OR Belarussian OR Belizean OR Bosnian, Herzegovinian OR Botswanian OR Motswana OR Batswana OR Brazilian OR Bulgar OR Bulgarian OR Chinese OR Colombian OR Costa Rican OR Cuban OR Dominican OR Dominican OR Ecuadorian OR Fijian OR Gabonese OR Grenadian OR Hungarian OR Iranian OR Persian OR Irani OR Iraqi OR Jamaican OR Jordanian OR Kazakhstani OR Lebanese OR Libyan OR

Macedonian OR Malaysian OR Maldivian OR Marshallese OR Mauritian OR Mexican OR Montenegrin OR Namibian OR Palauan OR Panaman OR Panamanian OR Peruvian OR Romanian OR Serb OR Serbian OR Seychellois OR South African OR Saint Lucian OR Vincentian OR Saint Vincentian OR Surinamer OR Surinamese OR Thai OR Tongan OR Tunisian OR Turkish OR Turk OR Turkmen OR Tuvaluan OR Venezuelan OR Armenian OR Bhutanese OR Bolivian OR Cameroonian OR Cabo Verdean OR Congolese OR Ivorian OR Djiboutian OR Egyptian OR Salvadoran OR Georgian OR Ghanaian OR Guatemalan OR Guyanese OR Honduran OR Indonesian OR Indian OR I-Kiribati OR Kosovar OR Kyrgyz OR Kyrgyzstani OR Lao OR Laotian OR Mosotho OR Basotho OR Mauritanian OR Micronesian OR Moldovan OR Mongolian OR Moroccan OR Nicaraguan OR Nigerian OR Pakistani OR Papua New Guinean OR Paraguayan OR Filipino OR Samoan OR Sao Tomean OR Senegalese OR Solomon Islander OR South Sudanese OR Sri Lankan OR Sudanese OR Swazi OR Syrian OR Timorese OR Ukrainian OR Uzbekistani OR Ni-Vanuatu OR Vietnamese OR Yemeni OR Zambian OR Afghan OR Bangladeshi OR Beninese OR Burkinabe OR Burundian OR Cambodian OR Central African OR Chadian OR Comoran OR Congolese OR Eritrean OR Ethiopian OR Gambian OR Guinean OR Bissau-Guinean OR Haitian OR Kenyan OR North Korean OR Liberian OR Malagasy OR Malawian OR Malian OR Mozambican OR Burmese OR Nepali OR Nigerien OR Rwandan OR Sierra Leonean OR Somali OR Tajikistani OR Tanzanian OR Togolese OR Ugandan OR Zimbabwean

### **Search Formula 2: Search Formula 1 + filter Systematic Reviews + filter Humans**

### **Appendix 5: Inclusion criteria for physical activity interventions– update for low- and middle-income countries**

1. Publication years: 2016.12.31 - 2019.03.01
2. Publication from LMICs. Studies for which the sample include LMICs. Classification of income level of countries was based on the World Bank classification.
3. Studies which main focus was on interventions to increase physical activity
4. Physical activity was supposed to be outcome, dependent variables. We did not include paper which examined interventions to increase physical fitness.

5. We did not include studies which examined the association of PA as independent variables with obesity and cardiovascular risk factors as dependent variables.

6. No language limitation (currently)

8. All age groups (children:5-12, adolescents:12-18, adults:18-64, older adults:65)

9. DATABASES: PubMed

**Appendix 6: Study flow: Systematic search for physical activity interventions-update for low- and middle-income countries**

1899 articles identified through systematic search

549 selected for abstract screening

68 of text articles assessed for eligibility

68 Final selection of text for reading