**Table S3. Reviewed total physical activity articles (N=100) – Quality assessment**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **#** | **Study name and authors**  | **Study design [weight: cross-sectional = 0; longitudinal = 1; quasi-experimental = 2]** | **Stratification of recruitment sites by relevant environmental attributes[weight 1]** | **Adequate response rate (>60%) or shown to be representative of the population[weight 1]** | **Outcome measures shown to be reliable and valid[weight 1]** | **Adjustment for socio-demographic covariates (at least age, gender, and education considered)[weight 1]** | **Adjustment for self-selection[weight 1]** | **Appropriate analytical approach – accounting for clustering (if needed)[weight 1/3]** | **Appropriate analytical approach – accounting for distributional assumptions[weight 1/3]** | **Appropriate analytical approach –analyses conducted and presented correctly (e.g., formal testing of moderators; presentation of point estimates and *p*-values, 95% CIs)[weight 1/3]** | **Did not (inappropriately) categorise continuous environmental exposure[weight 1]**  | **Total quality score (maximum of 9)**  |
| 1 | Active Living StudyNathan et al., 2014 [1] | Cross-sectional | Y | N | Y | Y | Y | Y | Y | Y | Y | 6 |
| 2 | Active Living StudyNathan et al., 2014 [2] | Cross-sectional | Y | N | Y | Y | N | Y | Y | Y | Y | 5 |
| 3 | Active Living StudyNathan et al., 2014 [3] | Cross-sectional | Y | N | Y | Y | Y | Y | Y | Y | Y | 6 |
| 4 | AGESHanibuchi et al., 2011 [4] | Cross-sectional | N | N | Y | Y | N | N | Y | N (significance of interaction effects were not provided) | Y | 4.33 |
| 5 | AIBL studyCerin et al., 2016 [5] | Cross-sectional | N | N | Y | Y | N | Y | Y | Y | Y | 4 |
| 6 | ALECS studyCerin et al., 2016 [6] | Cross-sectional | Y | Y | Y | Y | Y | Y | Y | Y | Y | 7 |
| 7 | Australian Time Use Survey 2006Espinel et al., 2015 [7] | Cross-sectional | N | Y | N (PA diary; unvalidated) | Y | N | Y (not needed) | Y | Y | Y | 4 |
| 8 | Behavior Change Consortium Initiative – Rhode Island TrailKing et al., 2006 [8] | Cross-sectional | N | N | Y | Y | N | Y | N | Y | Y | 4.67 |
| 9 | BEPAS SeniorsVan Cauwenberg et al., 2016 [9] | Cross-sectional | Y | N | Y | Y | Y | Y | Y | Y | Y | 6 |
| 10 | BEPAS SeniorsVan Holle et al., 2016 [10] | Cross-sectional | Y | N | Y | Y | N | Y | Y | Y | Y | 5 |
| 11 | British Regional Heart Study & British Women’s Heart Health StudyJefferis et al., 2014 [11] | Cross-sectional | Y | N | Y | N (education missing) | N | Y (included region in models) | Y | Y | N | 3 |
| 12 | Canada’s General Social Survey Time UseSpinney & Millward 2014 [12] | Cross-sectional | Y | Y (across many variables, albeit %female: 65.8, 63.2, 60.2, 58.8) | N | Y (in main logistic regression analysis) | N | Y | Y | Y | Y | 5 |
| 13 | CCHS 2008/2009Winters et al., 2015 [13] | Cross-sectional | N | Y (albeit ↑% higher educated) | N | Y | N | N | Y | Y | Y | 3.67 |
| 14 | CHIS 2003 dataLi et al., 2015 [14] | Cross-sectional | N | Y (albeit Asians oversampled) | N | Y | N | N | Y (observed overdispersion) | N (no formal test of moderation by ethnicity) | N (exposure variables categorised without justification) | 2.33 |
| 15 | CNDSMendes de Leon et al., 2009 [15] | Cross-sectional | N | Y (61% female) | N | Y | N (years in neighbourhood) | Y | Y | Y | Y | 4 |
| 16 | DIY StreetsThompson et al., 2012 [16] | Quasi-experimental | Y (comparison streets) | N (large discrepancies across some demographics, e.g., ethnicity—2008: 24.5% vs. 11.1% not white British) | N | N | N | N | N (initial tests were non-parametric, then same variables fitted to a regression model without mention of, e.g., transformation) | N (missing b-values for multiple variables, no 95% CIs) | Y | 4 |
| 17 | Easy Steps to HealthMerom et al., 2015 [17] | Cross-sectional | N | N (73% female; inactive participants only -- <120 min/wk) | Y | Y | N | Y | Y | Y | N | 3 |
| 18 | EPOSA – Dutch trialTimmermans et al., 2016 [18] | Cross-sectional | Y | Y (although urban (n=176; 71%) participants were oversampled vs. rural (n=53; 22%)) | Y | Y | N | N | Y | Y | Y | 6.67 |
| 19 | Great Britain older adults 1 (name assigned)Sugiyama & Ward Thompson 2007 [19] | Cross-sectional | Y  | N | N | N | N | N | Y | N (no data reported related to chi-square test) | Y | 2.33 |
| 20 | Great Britain older adults 1 (name assigned)Sugiyama et al., 2009 [20] | Cross-sectional | Y | N | N | Y (sex was not associated with outcome, hence exclusion from final model) | N | N | Y | Y | N (all environmental exposures categorised without justification) | 2.67 |
| 21 | HAN Walking StudySatariano et al., 2010 [21] | Cross-sectional | Y | N (albeit 77% female; ↑% higher educated) | N | Y | N | Y (study site included in models) | Y | N (many missing point estimates and associated CIs and p-values) | N (no justification for categorising exposure variables) | 2.67 |
| 22 | Harvard Alumni StudyLee et al., 2009 [22] | Cross-sectional & longitudinal | Y (conveniently recruited, however, there was variability in urbanisation) | N | Y | Y | N | N | Y | Y | Y | 5.67 |
| 23 | Health and Retirement studyLatham et al., 2015 [23] | Cross-sectional | N | Y (albeit 67% female; only those reporting mobility impairment included) | N | Y | N | Y | Y | Y | Y | 4 |
| 24 | Health and Wellbeing Surveillance SystemNathan et al., 2012 [24] | Cross-sectional | Y | Y | Y | Y | N | Y (not needed) | Y | Y | Y | 6  |
| 25 | Health and Wellbeing Surveillance SystemVillanueva et al., 2014 [25] | Cross-sectional | Y | Y | Y | Y | N | Y (not needed) | Y | Y | Y (despite categorising walkability, the authors also reported the continuous variable) | 6 |
| 26 | Hong Kong Elderly Study Cerin et al., 2013 [26] | Cross-sectional | Y | Y | Y | Y | N | Y | Y | Y | Y | 6 |
| 27 | Kasama StudyTsunoda et al., 2012 [27] | Cross-sectional | N | N (excluded those with difficulty walking) | Y | Y | N | Y (not needed) | Y | Y (no moderators considered) | N (categorised all exposure variables without justification) | 3 |
| 28 | KNHANES 2007/2008Yeom et al., 2011 [28] | Cross-sectional | Y | Y | Y | N | N | Y | Y | Y | Y | 5 |
| 29 | LL-FDI studyMorris et al., 2008 [29] | Cross-sectional | N | N | Y | N | N | Y | Y | N | Y | 2.67 |
| 30 | LL-FDI studyHall & McAuley, 2010 [30] | Cross-sectional | N | N | Y | N | N | Y (not needed) | Y | Y | Y | 3 |
| 31 | Malaysian National Health and Morbidity Survey III 2006 dataKaur et al., 2015 [31] | Cross-sectional | Y | Y | Y | Y | N | N | Y | Y | Y | 5.67 |
| 32 | Melbourne older adults study 1 (name assigned)Bird et al., 2009 [32] | Cross-sectional | N | N | Y | N | N | N | Y | Y | Y | 2.67 |
| 33 | Melbourne older adults study 1 (name assigned)Bird et al., 2010 [33] | Cross-sectional | N | N | Y (albeit translated version) | N | N | N | N | N | Y | 2 |
| 34 | MOBILIZE Boston studyProcter-Gray et al., 2015 [34] | Cross-sectional | N | Y | N | Y | N | N | Y | Y | Y | 3.67 |
| 35 | Neighbourhoods and Physical Activity in Elderly MenMichael et al., 2010 [35] | Longitudinal | N | N | Y | Y | N | Y | Y | N (many missing values related to RR and 95% CI) | N (environmental exposures categorised without justification) | 3.67 |
| 36 | Netherlands Housing Survey (WoON) dataJongeneel-Grimen et al., 2013 [36] | Cross-sectional | Y | Y | N | Y | N | Y | Y | N (no formal testing of moderation in older adults) | Y | 4.67 |
| 37 | Netherlands Housing Survey (WoON) dataJongeneel-Grimen et al., 2014 [37] | Cross-sectional | Y | Y | N | Y | N | Y | Y | N (no formal testing of moderation in older adults) | Y | 4.67 |
| 38 | *No study name*Aird et al., 2015 [38] | Cross-sectional | Y | N (🡩 income in some; ↓income in others) | N | N | N | N | N (no mention of assessing normality; likely skewed based on mean and range reported) | Y | Y | 2.33 |
| 39 | *No study name*Arnadottir et al., 2009 [39] | Cross-sectional | Y | Y | Y | Y | N | N | Y | Y | Y | 5.67 |
| 40 | *No study name*Asawachaisuwikrom 2001 [40] | Cross-sectional | Y | N (↓ education – elementary school completion compulsory until 1978 (Smalley, 1994)) | Y | N | N | N (no adjustment for village cluster) | Y | Y | Y | 3.67 |
| 41 | *No study name*Baceviciene & Alisauskas 2013 [41] | Cross-sectional | N | N (61% female; 39% university-educated) | Y | N | N | Y (not needed) | Y | Y | Y | 3 |
| 42 | *No study name*Bocker et al., 2016 [42] | Cross-sectional | Y | N (63% female; underrepresentation of lower-educated) | N | Y | N | Y | Y | Y | Y | 4 |
| **43** | *No study name*Carvalho Sampaio et al., 2012 [43] | Cross-sectional | Y | N | N (questionnaire) | N | N | Y (not needed) | Y | N (no formal testing of moderators) | Y | 2.67 |
| 44 | *No study name*Chad et al., 2005 [44] | Cross-sectional | N | Y  | Y | N | N | Y (not needed) | Y | N (no formal testing of moderators) | N (all environmental exposures were categorised without justification) | 2.67 |
| 45 | *No study name*Chaudhury et al., 2016 [45] | Cross-sectional | Y (population density and median household income) | N (6% response rate; 64% female; 44% degree-educated) | N | Y | N | N | Y | Y | N (categorised scale without justification) | 2.67 |
| 46 | *No study name*Chen et al.,2013 [46] | Cross-sectional | N | N | Y | N | N | Y | Y | Y | N | 2 |
| 47 | *No study name*de Melo et al., 2010 [47] | Cross-sectional | N | N (75% female + response rate not reported) | Y | Y | N | N | Y (negative binomial model fitted to skewed data) | Y | Y | 3.67 |
| 48 | *No study name*Gallagher et al., 2012 [48] | Cross-sectional | N | Y | Y | Y | N | Y (not needed) | N | Y | Y | 4.67 |
| 49 | *No study name*Gomez et al., 2010 [49] | Cross-sectional | Y | Y  | N (adapted without validation) | Y | N | Y | Y | Y | N (categorisation of exposure variables unjustified) | 4 |
| 50 | *No study name*Grant-Savela et al., 2010 [50] | Cross-sectional | N | N (↑% higher educated) | N (adapted PASE questionnaire without validation) | N | N | Y (not needed) | Y | Y | Y | 3 |
| 51 | *No study name*Inoue et al., 2011 [51] | Cross-sectional | Y | Y | N | Y | N | Y | Y | N (no formal testing of moderation) | N (exposure variable dichotomised without justification) | 3.67 |
| 52 | *No study name*King et al., 2003 [52] | Cross-sectional | N | N | Y | N | N | N | Y | Y | Y | 2.67 |
| 53 | *No study name*Koh et al., 2015 [53] | Cross-sectional | N | N | N | Y  | N | N | Y | Y | Y (even though table 1 reports “categorical” exposure variables, table 4 reports them as continuous…) | 2.67 |
| 54 | NoneKolbe-Alexander et al., 2015 [54] | Cross-sectional | Y (SES) | N (78% female) | Y | N | N | N | Y | N (no formal testing of moderators) | Y | 3.33 |
| 55 | *No study name*Lee & Park, 2015 [55] | Cross-sectional | Y | Y | Y | Y | Y (attitude toward regular walking; PA self-efficacy; intention to walk regularly)  | N | Y | N (no formal testing of moderator) | Y | 6.33 |
| 56 | *No study name*Lotfi & Koohsari, 2011 [56] | Cross-sectional | Y | N (no sociodemographic info reported) | N | N | N | N | N | N | Y | 2 |
| 57 | *No study name*Maisel et al., 2016 [57] | Cross-sectional | Y | N (74% female) | Y | Y | Y (overall neighbourhood satisfaction) | N | Y | N (no formal testing of moderators) | N | 4.33 |
| 58 | *No study name*Mowen et al., 2007 [58] | Cross-sectional | Y (SES) | N | N | N | N | Y | N | Y | Y | 2.67 |
| 59 | *No study name*Pelclova et al.,2012 [59] | Cross-sectional | N | N (88% female) | Y (albeit translated version) | N | N | N | Y | Y | N (exposure variables dichotomised without justification) | 1.67 |
| 60 | *No study name*Persson et al., 2011 [60] | Cross-sectional | N | Y (albeit 77% female) | N | Y | N | Y (borough lived included in model) | Y | N (majority of ORs and CIs missing) | N  | 2.67 |
| 61 | *No study name*Salvador et al., 2010 [61] | Cross-sectional | Y (large SES inequality in area; probability proportional to size measures) | Y | Y | Y | N | N | Y | Y | Y | 5.67 |
| 62 | *No study name*Sewo Sampaio et al., 2013 [62] | Cross-sectional | Y | N | N | N | N | Y | Y | N (actual p-values not reported) | Y | 2.67 |
| 63 | *No study name*Shin et al., 2011 [63] | Cross-sectional | N | Y | N (modified version of CHAMPS--modifications not reported) | N | N | N | Y | N | Y | 2.33 |
| 64 | *No study name*Shores et al., 2009 [64] | Cross-sectional | N | N | N | N (education not in model) | N | Y | Y | Y | Y | 2 |
| 65 | *No study name*Tanaka et al., 2016 [65] | Cross-sectional | Y | Y | Y | Y | N | N | Y | Y | Y | 5.67 |
| 66 | *No study name*Towne Jr., 2016 [66] | Cross-sectional | N | N | N | N (education not in model) | N | N | Y | Y | N (both environmental exposures were categorised without justification) | 0.67 |
| 67 | *No study name*Wang & Lee 2010 [67] | Cross-sectional | N | N | N | Y | N | Y | Y | Y | Y | 3 |
| 68 | *No study name*Wilcox et al., 2003 [68] | Cross-sectional | N | N | Y | Y | Y (decisional balance of PA: pros vs. cons) | N | Y | Y | Y | 4.67 |
| 69 | NSW Falls Prevention Baseline Survey 2009Macniven et al., 2014 [69] | Cross-sectional | N | Y (albeit 19% osteoporosis; 58% female; 56% suffering arthritis) | N | Y | Y (make time to be active) | N | Y | N (no formal test of moderation) | Y | 4.33 |
| 70 | NSW OPHSLim & Taylor 2005 [70] | Cross-sectional | N | Y | N | Y | N | Y | Y | Y | N (categorised feel safe in neighbourhood variable without justification) | 3 |
| 71 | Nurses’ Health StudyJames et al., 2013 [71] | Cross-sectional | N | Y | Y | Y | N | Y | N | Y | Y | 4.67 |
| 72 | Nurses’ Health StudyTroped et al., 2014 [72] | Cross-sectional | N | Y | Y | Y | N | Y | Y | Y | N (intersection and population density were categorised without justification) | 4 |
| 73 | Oslo Health StudyPiro et al., 2006 [73] | Cross-sectional | N | N | N | Y | N | Y | Y | Y | N | 2 |
| 74 | Physical Activity Monitor 2002Pan et al., 2009 [74] | Cross-sectional | N | N | Y | Y | Y (PA intention) | Y | Y | Y | Y | 5 |
| 75 | PACS (Physical Activity Cohort Scotland)McMurdo et al., 2012 [75] | Cross-sectional | Y | N | Y | N (education not added) | N | N | Y | Y | Y | 3.67 |
| 76 | PACSSniehotta et al., 2013 [76] | Cross-sectional | Y | N | Y | N (education not added) | Y (intention) | N | Y | Y | Y | 4.67 |
| 77 | Project OPALDavis et al., 2011 [77] | Cross-sectional | Y (amenity access and SES) | N (↑% higher educated) | Y | N | N | N (clustering at the clinical level not accounted for) | Y | Y | N  | 2.67 |
| 78 | Project OPALFox et al., 2011 [78] | Cross-sectional | Y | N  | Y | N | N | N | Y | Y | N (categorised distance to nearest shop without justification) | 2.67 |
| 79 | Project OPALThompson et al., 2011 [79] | Cross-sectional | Y | N (↑% higher educated) | Y | N | N | N | Y | Y | Y | 3.67 |
| 80 | Project RICE pilotHan et al., 2016 [80] | Cross-sectional | N | N  | Y (albeit translated version) | Y | N | Y (not needed) | Y | Y | Y | 4 |
| 81 | SHAPELi et al., 2005a [81] | Cross-sectional | Y | N | Y | N | N | Y | Y | Y | Y | 4 |
| 82 | SHAPELi et al., 2005b [82] | Longitudinal | Y | N (64% female + inadequate response rate) | Y | N (age and sex not added) | N | Y | Y | Y | Y | 5 |
| 83 | SHAPEMichael et al., 2006 [83] | Cross-sectional | Y | N (67% female + inadequate response rate) | Y | Y | N | N | Y | N (many ORs missing, and all 95% CIs not reported) | N (perceived environmental exposures categorised without justification) | 3.33 |
| 84 | SHAPENagel et al., 2008 [84] | Cross-sectional | N | N (70% female + inadequate response rate) | Y | Y | N | Y | Y | Y | Y | 4 |
| 85 | SMARTRAQFrank et al., 2010 [85] | Cross-sectional | Y | N | Y (travel survey) | Y | N | Y | Y | Y | N (categorisation from continuous walkability index) | 4 |
| 86 | SNQLSKerr et al., 2011 [86] | Cross-sectional | Y | N (71% female) | Y | N | N | N | N (outcome likely skewed) | Y | Y | 3.33 |
| 87 | SNQLSCarlson et al., 2012 [87] | Cross-sectional | Y | N (🡩 % Caucasians; higher education) | Y | Y | N | Y | N (outcome likely skewed) | N | N | 3.33 |
| 88 | SNQLSBracy et al., 2014 [88] | Cross-sectional | Y | N (🡩 % Caucasians; higher education) | Y | Y | N | Y | N (outcome likely skewed) | Y | Y | 4.67 |
| 89 | SNQLSCain et al., 2014 [89] | Cross-sectional | Y | N (↑% Caucasians; higher educated) | Y | Y | N | Y | N (outcome likely skewed) | N | Y | 4.33 |
| 90 | SNQLSCarlson et al., 2014 [90] | Cross-sectional | Y | N (🡩 % Caucasians; higher education) | Y | Y | N | Y | N (outcome likely skewed) | Y | Y | 4.67 |
| 91 | SNQLSDing et al., 2013 [91] | Cross-sectional | Y | N (🡩 % Caucasians; higher education) | Y | Y | N | Y | N (outcome likely skewed) | Y | Y | 4.67 |
| 92 | TILDAMcKee et al., 2015 [92] | Cross-sectional | Y | N | Y | Y | N | N | Y | Y | Y | 4.67 |
| 93 | TILDAMurtagh et al., 2015 [93] | Cross-sectional | Y | N | Y | Y | N | Y | Y  | Y | Y | 5 |
| 94 | UAB Study of AgingHannon et al., 2012 [94] | Cross-sectional | Y | N  | N | Y | N | N | Y  | Y | Y | 3.67 |
| 95 | VoisiNuAgeGauvin et al., 2012 [95] | Longitudinal | N | N (↑% higher educated and non-low income residents) | Y | Y | Y (proximity to friend or relative) | Y (examined spatial autocorrelation) | Y (categorisation of outcome variable justified) | Y | N (categorisation of exposure variables unjustified) | 4 |
| 96 | VoisiNuAgeJulien et al., 2015 [96] | Cross-sectional | N | N | Y | N | N | Y | Y | Y | Y | 2.67 |
| 97 | Walk the TalkHirsch et al., 2016 [97] | Cross-sectional | Y | N (low income older adults only=inadequate response rate) | Y | Y | N | N | Y | Y | Y | 4.67 |
| 98 | WHIPerry et al., 2013 [98] | Cross-sectional | N | N (participants keen to be a part of research + inadequate response rate) | Y (reliable) | Y | N | Y | N | Y | Y | 3.67 |
| 99 | WISER studyDe Melo 2013 [99] | Longitudinal | N | Y | Y | N | N | N | N (outcome variable poorly defined: increased steps vs. decreased steps—no specified amount reported) | Y | Y | 4.33 |
| 100 | ZHTS 2014Zhang et al., 2014 [100] | Cross-sectional | N | Y | N | Y | Y (pro-walking) | N | Y (insignificant overdispersion reported, zero-inflated Poisson model adopted) | Y | N | 3.67 |

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