**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 Study  Nathan et al., 2014 [1] | Cross-sectional | Y | N | Y | Y | Y | Y | Y | Y | Y | 6 |
| 2 | Active Living Study  Nathan et al., 2014 [2] | Cross-sectional | Y | N | Y | Y | N | Y | Y | Y | Y | 5 |
| 3 | Active Living Study  Nathan et al., 2014 [3] | Cross-sectional | Y | N | Y | Y | Y | Y | Y | Y | Y | 6 |
| 4 | AGES Hanibuchi 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 study Cerin et al., 2016 [5] | Cross-sectional | N | N | Y | Y | N | Y | Y | Y | Y | 4 |
| 6 | ALECS study Cerin et al., 2016 [6] | Cross-sectional | Y | Y | Y | Y | Y | Y | Y | Y | Y | 7 |
| 7 | Australian Time Use Survey 2006 Espinel 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 Trail King et al., 2006 [8] | Cross-sectional | N | N | Y | Y | N | Y | N | Y | Y | 4.67 |
| 9 | BEPAS Seniors Van Cauwenberg et al., 2016 [9] | Cross-sectional | Y | N | Y | Y | Y | Y | Y | Y | Y | 6 |
| 10 | BEPAS Seniors Van 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 Study Jefferis 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 Use Spinney & 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 2008/2009 Winters et al., 2015 [13] | Cross-sectional | N | Y (albeit ↑% higher educated) | N | Y | N | N | Y | Y | Y | 3.67 |
| 14 | CHIS 2003 data Li 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 | CNDS Mendes 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 Streets Thompson 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 Health Merom 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 trial Timmermans 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 Study Satariano 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 Study Lee 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 study Latham 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 System Nathan et al., 2012 [24] | Cross-sectional | Y | Y | Y | Y | N | Y (not needed) | Y | Y | Y | 6 |
| 25 | Health and Wellbeing Surveillance System Villanueva 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 Study Tsunoda 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 2007/2008 Yeom et al., 2011 [28] | Cross-sectional | Y | Y | Y | N | N | Y | Y | Y | Y | 5 |
| 29 | LL-FDI study Morris et al., 2008 [29] | Cross-sectional | N | N | Y | N | N | Y | Y | N | Y | 2.67 |
| 30 | LL-FDI study Hall & 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 data Kaur 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 study Procter-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 Men Michael 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) data Jongeneel-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) data Jongeneel-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 | None Kolbe-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 2009 Macniven 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 OPHS Lim & 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 Study James et al., 2013 [71] | Cross-sectional | N | Y | Y | Y | N | Y | N | Y | Y | 4.67 |
| 72 | Nurses’ Health Study Troped 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 Study Piro et al., 2006 [73] | Cross-sectional | N | N | N | Y | N | Y | Y | Y | N | 2 |
| 74 | Physical Activity Monitor 2002 Pan 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 | PACS Sniehotta et al., 2013 [76] | Cross-sectional | Y | N | Y | N (education not added) | Y (intention) | N | Y | Y | Y | 4.67 |
| 77 | Project OPAL Davis 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 OPAL Fox 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 OPAL Thompson et al., 2011 [79] | Cross-sectional | Y | N (↑% higher educated) | Y | N | N | N | Y | Y | Y | 3.67 |
| 80 | Project RICE pilot Han et al., 2016 [80] | Cross-sectional | N | N | Y (albeit translated version) | Y | N | Y (not needed) | Y | Y | Y | 4 |
| 81 | SHAPE Li et al., 2005a [81] | Cross-sectional | Y | N | Y | N | N | Y | Y | Y | Y | 4 |
| 82 | SHAPE Li 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 | SHAPE Michael 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 | SHAPE Nagel et al., 2008 [84] | Cross-sectional | N | N (70% female + inadequate response rate) | Y | Y | N | Y | Y | Y | Y | 4 |
| 85 | SMARTRAQ Frank et al., 2010 [85] | Cross-sectional | Y | N | Y (travel survey) | Y | N | Y | Y | Y | N (categorisation from continuous walkability index) | 4 |
| 86 | SNQLS Kerr et al., 2011 [86] | Cross-sectional | Y | N (71% female) | Y | N | N | N | N (outcome likely skewed) | Y | Y | 3.33 |
| 87 | SNQLS  Carlson et al., 2012 [87] | Cross-sectional | Y | N (🡩 % Caucasians; higher education) | Y | Y | N | Y | N (outcome likely skewed) | N | N | 3.33 |
| 88 | SNQLS Bracy et al., 2014 [88] | Cross-sectional | Y | N (🡩 % Caucasians; higher education) | Y | Y | N | Y | N (outcome likely skewed) | Y | Y | 4.67 |
| 89 | SNQLS Cain et al., 2014 [89] | Cross-sectional | Y | N (↑% Caucasians; higher educated) | Y | Y | N | Y | N (outcome likely skewed) | N | Y | 4.33 |
| 90 | SNQLS Carlson et al., 2014 [90] | Cross-sectional | Y | N (🡩 % Caucasians; higher education) | Y | Y | N | Y | N (outcome likely skewed) | Y | Y | 4.67 |
| 91 | SNQLS Ding et al., 2013 [91] | Cross-sectional | Y | N (🡩 % Caucasians; higher education) | Y | Y | N | Y | N (outcome likely skewed) | Y | Y | 4.67 |
| 92 | TILDA McKee et al., 2015 [92] | Cross-sectional | Y | N | Y | Y | N | N | Y | Y | Y | 4.67 |
| 93 | TILDA Murtagh et al., 2015 [93] | Cross-sectional | Y | N | Y | Y | N | Y | Y | Y | Y | 5 |
| 94 | UAB Study of Aging Hannon et al., 2012 [94] | Cross-sectional | Y | N | N | Y | N | N | Y | Y | Y | 3.67 |
| 95 | VoisiNuAge Gauvin 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 | VoisiNuAge Julien et al., 2015 [96] | Cross-sectional | N | N | Y | N | N | Y | Y | Y | Y | 2.67 |
| 97 | Walk the Talk Hirsch 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 | WHI Perry 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 study De 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 2014 Zhang 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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