**Supplementary Materials**

**Appendix 1**

*Quality assessment scoring by study in meta-analytic analyses*

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Study | Item 1 | Item 2 | Item 3 | Item 4 | Item 5 | Item 6 | QA score |
| 1 | Berg et al., 2020 | 0 | 0 | 1 | 1 | 0 | 0 | 2 |
|  |  |  |  |  |  |  |  |  |
| 2 | Taylor, 2020 | 1 | 0 | 1 | 1 | 0 | 0 | 3 |
|  |  |  |  |  |  |  |  |  |
| 3 | Invernizzi et al., 2019 | 0 | 1 | 1 | 1 | 1 | 0 | 4 |
|  |  |  |  |  |  |  |  |  |
| 4 | Pearce et al., 2019 | 1 | 1 | 1 | 0 | 0 | 0 | 3 |
|  |  |  |  |  |  |  |  |  |
| 5 | Rhodes et al., 2019 | 0 | 0 | 0 | 1 | 1 | 0 | 2 |
|  |  |  |  |  |  |  |  |  |
| 6 | Robbins et al., 2019 | 1 | 0 | 1 | 1 | 1 | 0 | 4 |
|  |  |  |  |  |  |  |  |  |
| 7 | Rodríguez et al., 2019 | 1 | 0 | 1 | 0 | 1 | 0 | 3 |
|  |  |  |  |  |  |  |  |  |
| 8 | Vazou et al., 2019 | 0 | 0 | 1 | 1 | 1 | 0 | 3 |
|  |  |  |  |  |  |  |  |  |
| 9 | Vitali, et al., 2019 | 1 | 0 | 1 | 1 | 0 | 0 | 3 |
|  |  |  |  |  |  |  |  |  |
| 10 | Faro et al., 2019 | 1 | 1 | 1 | 1 | 0 | 0 | 4 |
|  |  |  |  |  |  |  |  |  |
| 11 | Gråstén et al., 2019 | 0 | 0 | 1 | 1 | 1 | 0 | 3 |
|  |  |  |  |  |  |  |  |  |
| 12 | Andruschko et al., 2018 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
|  |  |  |  |  |  |  |  |  |
| 13 | Miragall et al., 2018 | 1 | 0 | 1 | 0 | 1 | 1 | 4 |
|  |  |  |  |  |  |  |  |  |
| 14 | Hutchinson et al., 2018 | 1 | 0 | 1 | 1 | 1 | 0 | 4 |
|  |  |  |  |  |  |  |  |  |
| 15 | Noradechanuntet al., 2017 | 1 | 1 | 1 | 1 | 1 | 0 | 5 |
|  |  |  |  |  |  |  |  |  |
| 16 | Niedermeier et al., 2017 | 0 | 1 | 1 | 1 | 1 | 1 | 5 |
|  |  |  |  |  |  |  |  |  |
| 17 | Billing, 2017 | 0 | 1 | 0 | 1 | 0 | 0 | 2 |
|  |  |  |  |  |  |  |  |  |
| 18 | Wang et al., 2015 | 0 | 0 | 1 | 1 | 0 | 1 | 3 |
|  |  |  |  |  |  |  |  |  |
| 19 | Kraft et al., 2015 | 1 | 0 | 1 | 0 | 0 | 1 | 3 |
|  |  |  |  |  |  |  |  |  |
| 20 | Jekauc, 2015 | 0 | 0 | 0 | 1 | 1 | 0 | 2 |
|  |  |  |  |  |  |  |  |  |
| 21 | Mark et al., 2013 | 1 | 1 | 1 | 1 | 1 | 1 | 6 |
|  |  |  |  |  |  |  |  |  |
| 22 | Focht, 2013 | 1 | 0 | 1 | 1 | 1 | 0 | 4 |
|  |  |  |  |  |  |  |  |  |
| 23 | Fitzsimons et al., 2012 | 0 | 0 | 1 | 1 | 1 | 1 | 4 |
|  |  |  |  |  |  |  |  |  |
| 24 | Schneider et al., 2011 | 0 | 0 | 1 | 1 | 1 | 0 | 3 |
|  |  |  |  |  |  |  |  |  |
| 25 | Louise et al., 2010 | 0 | 0 | 1 | 1 | 0 | 1 | 3 |
|  |  |  |  |  |  |  |  |  |
| 26 | Rhodes, Warburton, & Bredin, 2009 | 1 | 1 | 1 | 1 | 0 | 1 | 5 |
|  |  |  |  |  |  |  |  |  |
| 27 | Focht, 2009 | 0 | 0 | 1 | 1 | 1 | 0 | 3 |
|  |  |  |  |  |  |  |  |  |
| 28 | Edmunds et al., 2008 | 0 | 0 | 0 | 1 | 1 | 0 | 2 |
|  |  |  |  |  |  |  |  |  |
| 29 | Annesi et al., 2008 | 0 | 0 | 1 | 1 | 1 | 0 | 3 |
|  |  |  |  |  |  |  |  |  |
| 30 | Baker et al., 2008 | 0 | 1 | 1 | 1 | 1 | 1 | 5 |
|  |  |  |  |  |  |  |  |  |
| 31 | Focht et al., 2007 | 1 | 0 | 1 | 1 | 0 | 0 | 3 |
|  |  |  |  |  |  |  |  |  |
| 32 | Rose et al., 2007 | 0 | 0 | 1 | 1 | 1 | 0 | 3 |
|  |  |  |  |  |  |  |  |  |
| 33 | Robbins et al., 2006 | 0 | 0 | 1 | 1 | 0 | 1 | 3 |
|  |  |  |  |  |  |  |  |  |
| 34 | Jamner et al., 2004 | 1 | 0 | 1 | 1 | 1 | 0 | 4 |
|  |  |  |  |  |  |  |  |  |
| 35 | McAuley et al., 2003 | 1 | 0 | 0 | 0 | 1 | 1 | 3 |
|  |  |  |  |  |  |  |  |  |
| 36 | Digelidis et al., 2003 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
|  |  |  |  |  |  |  |  |  |  |
| 37 | Nichols et al., 2000 | 1 | 1 | 1 | 1 | 0 | 1 | 5 |

*Note.* Item 1 = Did the study describe the participant eligibility criteria?; Item 2 = Were the participants randomly selected (or for experimental studies, was the process of randomization clearly described and adequately carried out?); Item 3 = Did the study report the sources and details of physical activity assessment and did the instruments have acceptable reliability for the specific age group?; Item 4 = Did the study report the sources and details of assessment of potential correlates and did all of the methods have acceptable reliability?; Item 5 = Did the study report a power calculation and was the study adequately powered to detect hypothesized relationships?; Item 6 = Did the study report the numbers of individuals who completed each of the different measures and did participants complete at least 80% of physical activity measures?; QA = quality assessment; 1-2 = low, 3-4 = medium, 5-6 = high

**Appendix 2**

*General Study Characteristics*

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Study |  | Participants in Intervention Group |  | Intervention |  | Affective dimensions |  | PA |
|  | Primary Author &Year | Setting |  | PA Level | N | Female % | Mage (SD) |  | Theory | Length |  | Type | Measure |  | Type | Measure |
| 1 | Berg et al., 2020 | Internet |  | Unreported | 226 | 96.02 | 27±6.68 |  | SDT, DMP | 4 weeks |  | Positive affects | PANAS-X |  | PA  | PATCQ |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2 | Taylor, 2020 | Internet& university |  | Unreported | 19 | 100 | College freshman |  | SCT, SDT | 9 weeks |  | Enjoyment | PACES |  | PA | IPAQ |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 | Invernizzi et al., 2019 | School |  | Mixed | 62 | 46.77 | 10.5±0.5 |  | CPT | 12 weeks |  | Enjoyment | PACES |  | PA | PAQ-C |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 4 | Pearce et al., 2019 | School & home |  | Unreported | 63 | 64 | 8 to 13 |  | SMT, SCT, PMT, TTM, TPB | 8 months |  | Enjoyment | PACES |  | MVPA | Accelerometer, PAQ-C |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 5 | Rhodes et al., 2019 | Family |  | Not meeting guideline | 73 | Null | 11.5±1.3 |  | TPB, SDT | 13 weeks |  | Affective attitude | Semantic differentia |  | Equipment usage | Exercise log |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 6 | Robbins et al., 2019 | School & internet |  | Mixed | 1519 | 100 | 12.05±1.01 |  | HPM, SDT | 17 weeks |  | Enjoyment | PACES |  | MVPA | Accelerometer |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 7 | Rodríguez et al., 2019 | School |  | Mixed | 131 | 51.91 | 8.66±1.77 |  | TGM | 8 weeks |  | Affective valence | FS |  | PA | Pedometer |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 8 | Vazou et al., 2019 | School |  | Mixed | 148 | 52% | 10.39±0.98 |  | ART | 30 minutes |  | Enjoyment, affective valence | S-PACES, FS |  | PA | Accelerometer |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 9 | Vitali, et al., 2019 | School |  | Mixed | 80 | 48.75 | 10.45±0.23 |  | Null | 4 years |  | Enjoyment | PACES |  | PA | CLASS |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 10 | Faro et al., 2019 | University |  | Not meeting guideline | 34 | 100 | 27.3±4.5 |  | DMM | 4 weeks |  | Enjoyment, affect | PACES, FS |  | HR | HRM |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 11 | Gråstén et al., 2019 | School |  | Mixed | 661 | 52.60 | 12.12±0.33 |  | AGT, SEM | 2 years |  | Enjoyment | PEES |  | MVPA | HBSC, Actigraph |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 12 | Andruschko et al., 2018 | School |  | Not meeting guideline | 20 | 100 | 13.2±0.9 |  | SCT | 6 months |  | Enjoyment | Likert scale |  | PA, MVPA | Accelerometer |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 13 | Miragall et al., 2018 | Internet & university |  | Not meeting guideline | 76 | 85.5 | 22.18±3.71 |  | TTM | 3 weeks |  | Enjoyment | PACES |  | PA | Pedometer |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 14 | Hutchinson et al., 2018 | Lab |  | Meeting Guideline | 17 | 47.1 | 28.1±9.9 |  | HT, DMM | 48 hours |  | Affective valence, Remembered pleasure | FS, VAS |  | HR | HRM |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 15 | Noradechanunt et al., 2017 | Community |  | Not meeting guideline | 39 | 74.36 | 66.6±6.7 |  | Null | 12 weeks |  | Enjoyment | PACES |  | PA | PASE |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 16 | Niedermeier et al., 2017 | Outdoor, lab |  | Mixed | 42 | 48 | 32.00±11.90 |  | DMM, CM | 170 minutes |  | Mood states | FS, MSS |  | HR | HRM |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 17 | Billing, 2017 | Telephone |  | Not meeting guideline | 40 | 90 | 39±12 |  | DMM, HT, SCT | 12 weeks |  | Affect, enjoyment | FS, PACES |  | MVPA | Accelerometer, 7DPAR |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 18 | Wang et al., 2015 | School |  | Unreported | 62 | 50 | 22.3±1.51 |  | SDT, SNST | 8 weeks |  | Enjoyment | IMI |  | PA | IPAQ |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 19 | Kraft et al., 2015 | University |  | Mixed | 20 | 50 | 22.06±3.6 |  | Null | 15minutes\*3 |  | Enjoyment | VAS |  | HR, MET | HRM, Accelerometer |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 20 | Jekauc, 2015 | Community |  | Unreported | 41 | 87.8 | 46.12 |  | SDT | 8 weeks |  | Enjoyment | PACES |  | Exercise Adherence | Attendance lists |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 21 | Mark et al., 2013 | Family |  | Not meeting guideline | 30 families | 50.84 | 36.83±6.30 |  | TPB | 6 weeks |  | affective attitude | Likert scale |  | leisure-time PA | GLTEQ |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 22 | Focht, 2013 | Lab |  | Not meeting guideline | 23 | 100 | 26.62±5.16 |  | SCT, TPB | 30mins/ 10mins |  | Affective valence, exercise-induced feeling | FS, EFI |  | PA | LTEQ |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 23 | Fitzsimons et al., 2012 | Community |  | Not meeting guideline | 79 | 88.73 | 49±9 |  | TTM | 48 weeks |  | Affect | PANAS |  | PA | Pedometer  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 24 | Schneider et al., 2011 | School |  | Not meeting guideline | 122 | 100 | 15.04±0.78 |  | SDT | 9 months |  | Enjoyment | PACES |  | PA | 3DPAR |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 25 | Louise et al., 2010 | School |  | Unreported | 221 | 59.28 | 13.29±0.99 |  | SMT | 16 weeks |  | Enjoyment | PACES |  | LTPA | 7DPAR |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 26 | Rhodes, Warburton, & Bredin, 2009 | University |  | Meeting guideline | 29 | 0 | 22.7±4.0 |  | TPB | 6 weeks |  | Affective attitude | Semantic differential |  | Adherence to exercise | Attendance list |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 27 | Focht, 2009 | Lab & Outdoor |  | Meeting guideline | 35 | 100 | 22.14±1.73 |  | TPB | 10 minutes |  | Affective valence, enjoyment, exercise-induced feelings | FS, EFI, SES |  | PA, HR | LTEQ, HRM |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 28 | Edmunds et al., 2008 | University |  | Mixed | 56 | 100 | 21.32±5.56 |  | SDT | 10 weeks |  | Affect | PANAS |  | Exercise Behavior | Attendance list |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 29 | Annesi et al., 2008 | Community |  | Unreported | 269 | 59 | 10.6±1.1 |  | SET, SCT | 1 year |  | Vigor | POMS |  | Voluntary Physical Activity | SSMVPA |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 30 | Baker et al., 2008 | Community |  | Not meeting guideline | 79 | 79.75 | 49.2±8.9 |  | TTM | 12 weeks |  | Affect | PANAS |  | PA | Pedometer |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 31 | Focht et al., 2007 | Lab |  | Not meeting guideline | 18 | 55.56 | 24.10±3.40 |  | SCT | 8 weeks |  | Affective valence, exercise-induced feelings | FS, EFI |  | - | - |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 32 | Rose et al., 2007 | Lab |  | Not meeting guideline | 19 | 100 | 39.37±10.29 |  | DMM, SCT, SET | 20 minutes |  | Affective valence | FS |  | HR | HRM |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 33 | Robbins et al., 2006 | School |  | Not meeting guideline | 77 | 100 | 12.13±0.91 |  | HPM, TTM, SCT | 12 weeks |  | Enjoyment | PACES |  | PA | CAAL |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 34 | Jamner et al., 2004 | School |  | Not meeting guideline | 58 | 100 | 14.94±0.79 |  | Null | 4 months |  | Enjoyment | PACES |  | PA | 2DPAR, SUPAS |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 35 | McAuley et al., 2003 | Gymnasium |  | Not meeting guideline | 174 | 71.84 | 65.5 |  | SCT | 6 months |  | Exercise affect | FS |  | Exercise frequency | Exercise log |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 36 | Digelidis et al., 2003 | School |  | Unreported | 782 | 52.17 | 12.05±0.73 |  | TPB, GPT, TARGETM | 1 year |  | Enjoyment | IMI |  | Exercise behavior | EFS |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 37 | Nichols et al., 2000 | Worksite |  | Not meeting guideline | 160 | 78.13 | 42.0±9.7 |  | SCT, TTM | 33 months |  | Enjoyment | PACES |  | PA | 7DPAR |

*Note.* PATCQ = Physical activity time consuming questionnaire; PAQ-C = The physical activity questionnaire for children; CLASS = The children’s leisure activities study survey; 7DPAR = 7-day physical activity recall; 3DPAR = 3-day physical Activity Recall; 2DPAR = 2-day physical activity recall; HRM = Heart rate monitor; HBSC = The health behavior in School-aged children research protocol; PASE = The physical activity scale for the elderly; IPAQ = The short-form of the international physical activity questionnaire; GLTEQ = A modified Godin leisure-time exercise questionnaire; LTEQ = Leisure-time exercise questionnaire; SSMVPA = A single-item scale to assess the moderate to vigorous physical activity over the previous week; CAAL = the child and adolescent activity log; SUPAS = the Stanford usual physical activity scale; EFS = 6-point exercise frequency scale; PACES = The physical activity enjoyment scale; S-PACES = Shorted physical activity enjoyment scale for children; FS = The feeling scale; PEES = The PE enjoyment scale; DMP = Dualistic Model of Passion; VAS = Visual analog scale; MSS = A mood survey scale; IMI = The intrinsic motivation inventory; EFI = The Exercise-induced Feeling Inventory; PANAS = The positive and negative affect schedule; PANAS-X = The positive and negative affect schedule-expanded form; TCMM = The trans-contextual model of motivation;SES = Single-item enjoyment scale; POMS = The tension and vigor scales of the profile of mood states-short Form; CPT = Challenge point theory; DMM = The dual-mode model; HPM = the health promotion model; SMT = Self-management theory; PMT = Protection motivation theory; SDT = Self-determination Theory; TGM = Tactical games model; ART = Affective reflective theory; AGT = Achievement goal theory; SEM = Social ecological model; SCT = Social cognitive theory; TTM = The transtheoretical model; TPB = Theory of planned behavior; CM = The circumplex model; SNST = Social network site theory; SMT = Social marketing theory; SET = Self-efficacy theory; GPT = Goal perspectives theory; TARGETM = The TARGET model

**Appendix 3**

*Constructs, dimensions, and measurements of positive affective variables in the included studies*

|  |  |  |  |
| --- | --- | --- | --- |
| Constructs | Measurement | Dimensions | Studies |
| Affect |
|  | FS | Affective valence  | 7, 8, 10, 14, 17, 22, 27, 31, 32, 35 |
| PANAS | Positive affect  | 1, 23, 28, 30 |
|  |
| Emotional state |
| Enjoyment | PACES | PAE | 2, 3, 4, 8, 9, 10, 6, 13, 16, 17, 20, 24, 25, 33, 34, 37 |
|  |  |  |  |
|  | PEES | PEE | 11 |
|  |  |  |  |
|  | VAS | Enjoyment | 19 |
|  |  |  |  |
|  | IMI | Enjoyment | 18, 36 |
|  |  |  |  |
|  | SES | Enjoyment | 12, 27 |
|  |  |  |  |
|  |  |  |  |
| Pleasure | VAS | Remembered pleasure | 14 |
|  |
| Exercise-induced feelings | EFI | Revitalization  | 22, 27, 31 |
| Positive engagement | 22, 27, 31 |
|  |  |  |  |
| Affective attitude | SD | Affective attitude | 5, 26 |
|  |  |  |  |
|  | Likert scale | Affective attitude | 21 |
|  |  |  |  |
| Mood states | POMS | Vigor | 29 |
|  |
|  | MSS | Activation | 16 |
| Excitement | 16 |

*Note.* Study content in Appendix 6; FS= Feeling scale; PANAS = Positive and negative affect schedule; PEES = The PE enjoyment scale; SES = Single-item enjoyment scale; VAS = Visual analog scale; IMI = Intrinsic motivation inventory; PACES = The physical activity enjoyment scale; PAE = Physical activity enjoyment; PEE = The PE enjoyment; EFI = Exercise-induced feeling inventory; SD= Semantic differential items on seven-point scales; POMS = Profile of mood states; MSS = Mood survey scale

**Appendix 4**

*Physical activity assessment methods and measurements in each study*

|  |  |  |  |
| --- | --- | --- | --- |
| Assessment methods | Variables | Measurements | Studies |
| Objective methods |
|  |
| Pedometer | Steps | The Omron HJ-109E Step-O-Meter  | 23, 30 |
| Pedometer Fitbit One | 13 |
|  |  | Yamax Digiwalker SW-650 (Yamax Corporation, Toyko, Japan) | 7 |
|  |  |  |  |
| Accelerometer | MVPA | ActiGraph(did not state the type, manufacturer, and place of origin) | 17 |
| ActiGraph GT3X+ (ActiGraph, Ft. Walton Beach, FL, USA) | 4, 6 |
|  |  |  |
| MVPA, PA | Actigraph Model 7164 (Fort Walton Beach, FL, USA) | 12 |
|  |  |  |
| MET | ActiGraph GT3X+ (Pensacola, FL) | 19 |
|  |  | The SenseWear Armband Monitor (BodyMedia, Pittsburgh PA) | 8 |
|  |  |  |  |
| Log or list | Equipment usage | Log | 5, 35 |
|  |  |  |
| Exercise Adherence | Attendance lists | 20, 26, 28 |
|  |
|  |  |  |  |
| HR monitoring | HR or %Max HR or HR at VT | HR monitor | 10, 14, 16, 19, 27, 32 |
|  |
|  |
| Subjective methods |
|  |
| Questionnaires | MVPA | 7DPAR | 12 |
| IPAQ | 2, 18 |
| HBSC | 11 |
| 3DPAR | 24 |
|  | PAQ-C | 4 |
| LTPA  | 7DPAR | 25 |
| LTEQ | 22 |
|  |  |  |
| VPA | SSMVPA | 29 |
|  |  |  |
| PA | 7DPAR | 37 |
| 2DPAR | 34 |
| PASE | 15 |
|  | CAAL  | 33 |
|  | PAQ-CCLASS | 39 |
|  | PATCQ | 1 |
|  |  |  |
| LTPA | GLTEQ | 21 |
|  |  |  |
| Lifestyle activity | SUPAS | 34 |
|  |  |  |
| Exercise behavior | EFS | 36 |

*Note.* Study content in Appendix 10; MVPA = Moderate to vigorous physical activity; PA = Physical activity; LTPA = Leisure-time physical activity; LTEQ = Leisure-time exercise questionnaire; GLTEQ = A modified Godin leisure-time exercise questionnaire; SSMVPA = A single-item scale to assess the moderate to vigorous physical activity over the previous week; VPA = Voluntary physical activity; HR = Heart rate; MET = The metabolic equivalent of task; 7DPAR = 7-day physical activity recall; 3DPAR = 3-day physical activity recall; 2DPAR = 2-day physical activity recall; IPAQ = The short-form of the international physical activity questionnaire; PATCQ = Physical activity time consuming questionnaire; HBSC = The health behavior in school-aged children; PASE = The physical activity scale for the elderly; CAAL = the child and adolescent activity log; PAQ-C = The physical activity questionnaire for older children; CLASS = The children’s leisure activities study survey; SUPAS = The Stanford usual physical activity scale; EFS = 6-point exercise frequency scale

**Appendix 5**

*Intervention techniques included in each intervention group in current review*

|  |  |
| --- | --- |
| Studies | Intervention techniques |
| 1 | Berg et al., 2020  | 16, 34, 37 |
| 2 | Taylor, 2020 | 5, 8, 10, 16, 19, 20, 23, 29, 34, 36, 38 |
| 3 | Invernizzi et al., 2019 | 1, 5, 7, 8, 9, 16, 19, 20, 21, 22, 28, 29, 36 |
| 4 | Pearce et al., 2019 | 1, 5, 7, 8, 9, 20, 21, 22, 36 |
| 5 | Rhodes et al., 2019 | 5, 7, 8, 10, 16, 20, 21, 24,29, 34 |
| 6 | Rodríguez et al., 2019 | 10, 20, 21, 22, 26 |
| 7 | Vazou et al., 2019 | 3, 7, 13, 16, 19, 20, 21, 22 |
| 8 | Vitali, et al., 2019 | 1, 5, 10, 20, 21, 22, 23, 29 |
| 9 | Faro et al., 2019 | 16, 20, 21, 22 |
| 10 | Robbins et al., 2019 | 2, 8, 16, 19, 29, 36, 37 |
| 11 | Gråstén et al., 2019 |  |
|  | Group 1 | 7, 8, 16, 19, 20, 21, 22, 24, 26, 29, 36, 39 |
|  | Group 2 | 7, 8, 16, 19, 20, 21, 22, 24, 26, 29, 36, 39 |
| 12 | Andruschko et al., 2018 | 5, 7, 8, 16, 19, 20, 21, 22, 29, 36, 37, 38 |
| 13 | Miragall et al., 2018 |  |
|  | Group 1 | 1, 5, 6, 16, 19, 36 |
|  | Group 2 | 1, 5, 6, 36 |
| 14 | Hutchinson et al., 2018 | 10, 16, 20, 21, 24, 36 |
| 15 | Noradechanuntet al., 2017 |  |
|  | Group 1 | 7, 20, 21, 22, 27 |
|  | Group 2 | 7, 20, 21, 22, 27 |
| 16 | Niedermeier et al., 2017 |  |
|  | Group 1 | 5, 9, 20, 21, 24, 29 |
|  | Group 2 | 5, 9, 20, 21, 24, 29 |
| 17 | Billing, 2017 | 5, 6, 7, 10, 12, 16, 23, 27, 29, 34, 36 |
| 18 | Wang et al., 2015 |  |
|  | Group 1 | 7, 20, 21, 22 |
|  | Group 2 | 1, 3, 4, 7, 20, 21, 22, 23, 25, 28, 29, 36 |
|  | Group 3 | 1, 3, 4, 8, 16, 21, 22, 23, 24, 25, 28, 29, 36 |
| 19 | Kraft et al., 2015 |  |
|  | Group 1 | 20, 21, 24, 34 |
|  | Group 2 | 20, 21, 24, 26, 34 |
| 20 | Jekauc, 2015 | 7,10,11,18,19,20,21, 22, 28,36 |
| 21 | Mark et al., 2013 | 3, 16, 20, 21, 24, 34 |
| 22 | Focht, 2013 | 9, 20 |
| 23 | Fitzsimons et al., 2012 |  |
|  | Group 1 | 7, 8, 9, 10, 16, 17, 19, 21, 22, 29, 35, 36, 37 |
|  | Group 2 | 7, 8, 9, 10, 16, 17, 19, 21, 22, 29, 35, 36, 37 |
| 24 | Schneider et al., 2011 |  |
|  | Group 1 | 1, 3, 5, 7, 8, 16, 19, 20, 21, 22, 29, 36 |
|  | Group 2 | 1, 3, 5, 7, 8, 16, 19, 20, 21, 22, 29, 36 |
| 25 | Louise et al., 2010 | 1, 8, 10, 19, 20, 21, 22, 24, 29, 36, 39 |
| 26 | Rhodes, Warburton, & Bredin, 2009 | 7, 16, 20, 21, 24, 34 |
| 27 | Focht, 2009 | 20, 24 |
| 28 | Edmunds et al., 2008 | 4, 6, 7, 10, 11, 19, 20, 21, 22, 26, 29, 33 |
| 29 | Annesi et al., 2008 | 1, 4, 5, 6, 7, 10, 11, 19, 20, 21, 22, 26, 29, 33 |
| 30 | Baker et al., 2008 | 7, 8, 9, 10, 16, 17, 19, 21, 22, 29, 35, 36, 37 |
| 31 | Focht et al., 2007 |  |
|  | Group 1 | 7, 20, 21 |
|  | Group 2 | 7, 20, 21 |
| 32 | Rose et al., 2007 |  |
|  | Group 1 | 5, 20, 21, 36 |
|  | Group 2 | 5, 20, 21 |
|  | Group 3 | 5, 20, 21 |
| 33 | Robbins et al., 2006 | 1, 2, 3, 4, 7, 8, 19, 20, 21, 22, 24, 29, 36 |
| 34 | Jamner et al., 2004 | 1, 3, 5, 7, 8, 16, 19, 20, 21, 22, 29, 36 |
| 35 | McAuley et al., 2003 | 7, 9, 20, 21, 22 |
| 36 | Digelidis et al., 2003 | 1, 5, 6, 7, 9, 17, 19, 20, 21, 22, 29, 33, 34, 36, 38, 39 |
| 37 | Nichols et al., 2000 | 1, 3, 5, 7, 8, 16, 18, 20, 21, 22, 23, 24, 26, 29, 33, 38, 39 |

*Note*. Intervention technique content in **Table 1**.

**Appendix 6**

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**Appendix 7**

******Appendix 8**

*References for Articles included in meta-analytic analyses*

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