



Table S1. Methods used for examining the accelerometer data collection protocols and processing criteria.

Reference	Outcome	Accelerometer	Cut-off point/definition of bouts and breaks	Epoch	Valid days/week	Valid h/day or min/day	Non-wear time
Aadland et al. [28]	Volume	ActiGraph (uniaxial)	SED: 0–99 CPM/LPA: 100–2295 CPM MPA: 2296–4011 CPM/VPA: ≥ 4012 CPM - PA	60s	≥ 4	600–1080 min	≥ 60 min
Aadland et al. [29]	Volume PA_Bouts	ActiGraph (unknown)	SED: 0–99 CPM/LPA: 100–2295 CPM MPA: 2296–4011 CPM/VPA: ≥ 4012 CPM - PA_Bouts • with $\geq 80\%$ of bout duration • 1 s, 2–4 s, 5–9 s, 10–19 s, 20–29 s, 30–39 s, 40–59 s, 1.0–1.4 min, 1.5–1.9 min, 2.0–2.9 min, 3–4 min, 5–9 min, 10–29 min, 30–59 min, ≥ 60 min	1s 10s 60s	≥ 4	≥ 480 min	≥ 60 min
Bell et al. [30]	Volume	ActiGraph (uniaxial)	SED: <199 CPM MVPA: ≥ 3600 CPM - PA	30 Hz	≥ 3	≥ 600 min	≥ 10 min
Carson et al. [31]	Volume SED_Bouts SED_Breaks	ActiGraph (unknown)	SED: ≤ 100 CPM Brisk walking: 101 CPM to 4.0 METs MVPA: ≥ 4.0 METs - SED_Bouts: 1–4 min, 5–9 min, 10–19 min, 20–29 min, ≥ 30 min - SED_Breaks: 5-s epoch change from SED to LPA or MVPA - PA	5s	≥ 4	≥ 600 min	≥ 60 min
Carson & Janssen [32]	Volume SED_Bouts SED_Breaks	ActiGraph (uniaxial)	SED: 0–99 CPM/LPA: 100 CPM to 4.0 METs MVPA: ≥ 4.0 METs - SED_Bouts ≥ 30 min (with $\geq 80\%$ of minutes below 100 CPM) - SED_Breaks • $<80\%$ of minutes below 100 CPM • ≥ 5 consecutive min ≥ 100 CPM - PA	60s	≥ 4	≥ 600 min	≥ 20 min
Chinapaw et al. [33]	Volume SED_Bouts	ActiGraph (unknown)	SED: 0–99 CPM/MVPA: ≥ 3000 CPM - SED_Bouts ≥ 10 min (with 2 min tolerance) - PA	15s	≥ 3 week-days + ≥ 8 h/day weekend day	≥ 600 min	≥ 20 min
Colley et al. [34]	Volume SED_Bouts SED_Breaks	Actical (unknown)	SED: ≤ 100 CPM/MVPA: ≥ 1500 CPM - SED_Bouts • Lasting a minimum of 1 min (a transition from <100 to ≥ 100 CPM) • $\geq 20, 40, 60, 80, 100, 120$ min - SED_Breaks • $<80\%$ of minutes below 100 CPM • ≥ 3 consecutive min ≥ 100 CPM • ≥ 1500 CPM - PA	60s	≥ 4	≥ 600 min	≥ 60 min
Colley et al. [35]	Volume	Actical (unknown)	SED: 0–99 CPM MVPA: ≥ 1500 CPM	60s	≥ 4	≥ 600 min	≥ 60 min

Dalene et al. [36]	Volume ISM_Bouts	ActiGraph (unknown)	- PA SED: 0–99 CPM/LPA: 100–1999 CPM MPA: 2000–5999 CPM/VPA: ≥6000 CPM	10s	≥2	≥600 min	≥20 min
			- ISM_Bouts 10 min				
del Pozo-Cruz et al. [37]	Volume ISM_Bouts	ActiGraph (unknown)	- PA SED: <1.5 METs (0–149 CPM) LPA: 1.5≤ METs <3 (150–499 CPM) MPA: 3≤ METs <6 (500–5999 CPM) VPA: ≥6000 CPM	10s	≥3	≥600 min	≥20 min
			- ISM_Bouts • 5–19 years age group: 60 min • 20–24 years age group: 30 min				
Ekelund et al. [38]	Volume	ActiGraph (uniaxial)	SED: <500 CPM/LPA: 501–2000 CPM MPA: 2001–3999 CPM/VPA: ≥4000 CPM	60s	≥3	≥600 min	≥10 min
Hansen et al. [39]	Volume ISM_Bouts	ActiGraph (uniaxial)	- PA SED: 0–25 counts/15s LPA: 26–573 counts/15s MPA: 574–1002 counts/15s VPA: ≥1003 counts/15s	60s	≥1	≥600 min <1080 min	≥60 min
			- ISM_Bouts: 10 min				
Katzmarzyk et al. [40]	Volume	ActiGraph (unknown)	SED: <25 counts/15s MVPA: ≥574 counts/15s VPA: ≥1003 counts/15s	15s	≥4	≥600 min (at least 1 weekend day)	≥20 min
Kuzik et al. [41]	Volume	ActiGraph (unknown)	SED: 0–99 CPM/MPA: 3–5.9 METs VPA: ≥6 METs/MVPA: ≥3 METs	60s	≥1	≥600 min	≥60 min
Loprinzi et al. [42]	Volume ISM_Bouts	ActiGraph	- PA SED: 0–99 CPM/LIPA: ≥100 CPM MPA: ≥2220 CPM/VPA: ≥4136 CPM	unknown	≥4	≥600 min	≥60 min
			- ISM_Bouts: 60 min				
Mitchell et al. [43]	Volume	ActiGraph (unknown)	SED: 0–99 CPM/LPA: 100–2295 CPM MVPA: ≥2296 CPM	60s	≥3	≥600 min	≥60 min
Moore et al. [44]	Volume ISM_Bouts	ActiGraph (unknown)	- PA • Pate's study: SED: 0–152 CPM MPA: 1677–3364 CPM/VPA: ≥3365 CPM	60s	≥3	≥600 min	≥60 min
			• Evenson's study: SED: 0–100 CPM MPA: 2296–4011 CPM/VPA: ≥4012 CPM				
			• ICAD's study: SED: 0–100 CPM MPA: 3000–6000 CPM/VPA: ≥6001 CPM				
Moura et al. [45]	Volume PA/SED_Bouts ISM_Bouts	ActiGraph (triaxial)	- ISM_Bouts: 5, 10, 20, 50 min	15s	≥3	≥480 min	≥60 min
			- PA SED: ≤720 CPM/LIPA: 721–3027 CPM MVPA: ≥3028 CPM				
Moura et al. [46]	Volume (CPM, min/day) Time blocks	ActiGraph (triaxial)	- PA/SED_Bouts ≥10 min (drop time of 2 min)	15s	≥3	≥480 min	≥60 min
			- ISM_Bouts: 5, 10, 30, 60 min - PA MVPA: ≥3028 CPM - Sitting time Sitting-High: ≥391.8 min/day				

			Sitting-Low: <391.8 min/day - Standing time Standing-High: ≥409.2 min/day Standing-Low: <409.2 min/day - Bouts: 15, 30, 60, 120 min				
Nguyen et al. [47]	Volume	ActiGraph (uniaxial)	Lowest activity: <43 min/day MVPA: >103 min/day (≥3.0 MET)	60s	≥4	≥480 min	unknown
Rendo-Urteaga et al. [48]	Volume	- PA ActiGraph (unknown) + Questionnaire (IPAQ-A) - SED Questionnaire (HELENA questionnaire)	- PA Inactive: 0–99 CPM MPA: 2000–3999 CPM VPA: ≥4000 CPM	15s	≥3	≥480 min	unknown
Saunders et al. [5]	Volume SED_Bouts SED_Breaks	ActiGraph (unknown)	- PA SED: <100 CPM/LPA: 100–2296 CPM MVPA: ≥2296 CPM - SED_Bouts • ≥1 min with 0–99 CPM • Daily bouts of SED : 1–4, 5–9, 10–14, 15–29, ≥30 min - SED_Breaks • Time lasting ≥1 min • CPM rose to 100 or above	60s	≥4	≥600 min	≥60 min
Stockwell et al. [49]	Volume	activPAL	- Sitting_Bouts ≥30 min - Sitting_Breaks a non-sitting period in between two sitting bouts	15s	≥4 (include at least 1 weekend day)	≥600 min	unknown
Strizich et al. [50]	Volume	Actical	SED: <18 counts/15s MVP: ≥441 counts/15s	unknown	≥3	≥480 min <1140 min	≥90 min
Treuth et al. [51]	Volume	Actiwatch (omnidirectional)	SED: <100 CPM/LPA: 100 to <900 CPM MPA: 900 to <2200 CPM/VPA: ≥2200 CPM	60s	≥4 (with 2 weekend days)	≥1000 min	unknown
Verswijveren et al. [52]	Volume ISM_Bouts	ActiGraph (uniaxial)	- PA SED: ≤100 CPM LPA: 1.5–3.99 METs MPA: 4–5.99 METs VPA: ≥6 METs - ISM_Bouts LPA, MPA, VPA bouts ≥1 min	15s	≥4	≥480 min (≥420 on weekday + weekend days)	≥20 min
White et al. [53]	Volume PA_Bouts	ActiGraph (unknown)	- PA 1) Triano: SED: 0–99 CPM, LPA: 101–2019 CPM, MPA: 2020–5998 CPM, VPA: ≥5999 CPM 2) Freedson: SED: ≤149 CPM, LPA: 150–499 CPM, MPA: 500–3999 CPM, VPA: 4000–7599 CPM, VVPA: ≥7600 CPM	60s	≥1	≥600 min	≥60 min

3) Evenson: SED: ≤ 25 counts/15s,
LPA: 26–573 counts/15s, MPA: 574–
1002 counts/15s, VPA: ≥ 1003
counts/15s
- PA_Bout
Sporadic: 1–4.9 min of continuous
MVPA
Short: 5–9.9 min of continuous MVPA
Medium-long: ≥ 10 min of continuous
MVPA

Abbreviations: CPM, counts per minute—an indicator of the total volume of physical activity (e.g., average intensity of PA); HEL-ENA, healthy lifestyle in Europe by nutrition in adolescents; IPAQ-A, international physical activity questionnaire for adolescents; ISM, isotemporal substitution model; LPA, light-intensity physical activity; METs, metabolic equivalents; MPA, moderate-intensity physical activity; MVPA, moderate-to-vigorous physical activity; PA, physical activity; SED, sedentary time; SVMgs, signal magnitude vector (gravity-subtracted) expressed in 1s epochs; VPA, vigorous physical activity; VVPA, very vigorous physical activity
