Additional File 4: Summary of device technical settings.

Article	Sleep Device	Placement	Epoch*	Frequency	Visual Inspection/Manual Scoring	Software, Algorithm and/or Code	Sleep Log	Event Marker	Light Sensor	Score
Balbim 2024 (25)	Motion Watch8	wrist			First full day manually removed	Rest-interval scoring algorithm of illuminance and motion data to classify time spent sleeping each night versus time spent awake each day in Motionware		Each night when they started trying to sleep and again each morning when they finished trying to sleep	Scoring algorithm of including readings of illuminance	10
Bianchim 2022 (26)	ActiGraph GT9X Link GENEActiv	non-dominant wrist		100 Hz	Data were visually inspected to ensure that this was in accordance with the nocturnal sleep pattern for population of similar ages	Algorithm integrated within the GGIR package				8
Biddle 2018 (27)	activPAL3	thigh				Algorithm in STATA				4
Blodgett 2023 (28)	activPAL3 micro	midline upper thigh				Information on thigh inclination and acceleration was used to derive body posture, and an algorithm separated out bouts of valid waking wear data from non-wear or sleep				4
Blodgett 2024 (29)	ActivPAL3/4 ActiGraph	thigh	1 seconds			Raw accelerometer data were centrally processed with software ActiPASS with algorithms for non-wear, sleep detection, posture, and activity intensity				6
Brakenridge 2021 (30)	activPAL3	right thigh		20 Hz		Algorithmic method	If sleep and wake times were not reported in the diary they were estimated using an automated			6

							algorithmic method			
Brakenridge 2024 (31)	activPAL3	right thigh				Algorithm to determine sleep and waking time				4
Brayton 2023 (32)	ActiGraph GT9X Link	wrist				Algorithm integrated within the GGIR package				4
Cabanas-Sánchez 2021 (33)	ActiGraph GT9X	non-dominant wrist				Algorithm integrated within the GGIR package				4
Chen 2023 (34)	ActiGraph wGT3X-BT	right hipbone	60 seconds			Algorithm integrated within the GGIR package				6
Chong 2021 (35)	GENEActiv	non-dominant wrist	5 seconds	75 Hz		Algorithm integrated within the GGIR package				8
Collings 2023 (36)	ActiGraph GT3X+	non-dominant wrist	5 seconds	30 Hz		After download via the Actilife software R package GGIR				8
Collings 2023 (37)	ActiGraph GT3X+	non-dominant wrist	5 seconds	30 Hz		Data were sampled at a frequency of 30 Hz, and Data were downloaded in the Actilife software and processed in R GGIR package				8
Curtis 2020 (38)	GENEActiv	left wrist	60 seconds	50 Hz	Sleep and wake times were manually identified on the accelerometer trace	Algorithm integrated within the GGIR package	If the accelerometer was not worn overnight, sleep and wake times were taken from participant's sleep diaries			10
Curtis 2023 (39)	Fitbit Charge 3	non-dominant wrist				Fitbit's proprietary algorithm			Fitbit's proprietary algorithm used light data	4

deFaria 2022 (40)	ActiGraph GT3X	Right hip	15 seconds	30 Hz	To calculate sleep time, evaluated daily graphs, inclinometer data, and converted these data into Microsoft Excel comma-separated values file	Data analyzed in ActiLife; To calculate sleep time, we evaluated daily graphs, inclinometer data, and converted these data into a Microsoft Excel comma-separated values file	Used to estimate sleep per night.			12
Domingues 2022 (41)	ActiGraph GT3X	right side of hip	60 seconds	30 Hz		ActiLife with Sadeh algorithm				8
Dumuid 2017 (42)	ActiGraph GT3X+	right hip	60 seconds	80 Hz		Fully automated algorithm specifically designed for ISCOLE				8
Dumuid 2018 (43)	ActiGraph GT3X+	right axillary line	60 seconds		Each full day of accelerometer data was visually inspected to determine discrepancies between self-reported sleep and movement recorded by the device	Actilife	The self-reported sleep times from the sleep diary were applied in a customized software program			10
Dumuid 2018 (44)	Actigraph GT3X+	worn	1 then 60 seconds	80 Hz		Application of a algorithm				8
Dumuid 2018 (45)	Actigraph GT3X+	right hip	60 seconds			Data were downloaded in ActiLife using the low-frequency extension filter, with fully automated algorithm to estimate nocturnal sleep duration				6
Dumuid 2019 (46)	GENEActiv	non-dominant wrist	60 seconds	50 Hz	Visual interpretation of trace, combined with activity card sleep/wake and device removal times to determine nonwear		Visual interpretation of trace, combined with activity card sleep/wake and device removal times to determine nonwear			10

Dumuid 2020 (47)	GENEActiv	non-dominant wrist	60 seconds	50 Hz	Visual inspection of daily accelerometer traces used in combination with other methods to identify sleep and non-wear time	Cobra, a MATLAB-based customized software program	Sleep and non-wear time were identified with self-reported data from the paper-based logs in combination with other methods			12
Dumuid 2021 (48)	GENEActiv	non-dominant wrist	60 seconds	50 Hz	Visual inspection of accelerometer traces and the paper-based logs were used to identify sleep and non-wear time		Sleep and non-wear time were identified with self-reported data from the paper-based logs in combination with other methods			10
Dumuid 2022 (49)	GENEActiv	non-dominant wrist	60 seconds	100 Hz	Manual cross-checking of individual participant data by visually inspecting the acceleration trace averaged across 24 h in combination of recorded sleep logs	Raw acceleration data were downloaded using GENEActiv software and processed using a customized MATLAB graphic user interface (COBRA)	Manual cross-checking of individual participant data by visually inspecting the acceleration trace averaged across 24 h in combination of recorded sleep logs			12
Dumuid 2022 (50)	GENEActiv	wrist	60 seconds			Classified into energy expenditure bands using Phillips cutpoints	Paper log used for bed/wake times and reasons for removal; Sport non-wear imputed with 50% MVPA, 30% LPA and 20% sedentary time			8
Fairclough 2017 (51)	ActiGraph GT9X	non-dominant wrist		30 Hz		Sleep estimated from the ActiGraph raw accelerations and arm angle using algorithm in GGIR R package				8
Fairclough 2021 (52)	ActiGraph GT9X	non-dominant wrist	5 seconds	100 Hz		Algorithm integrated within the GGIR package				8

Fairclough 2023 (53)	ActiGraph GT9X	non-dominant wrist	5 seconds	100 Hz		Algorithm integrated within the GGIR package				8
Gupta 2020 (54)	Actigraph GT3X+	right hip			Paper-based diary noting the start and end of work periods, time in bed,, non-wear time, and time of reference measurement; Time in bed measured using information from self-reported diary that was confirmed via visual checks of accelerometry data		Paper-based diary noting the start and end of work periods, time in bed,, non-wear time, and time of reference measurement; Time in bed measured using information from self-reported diary that was confirmed via visual checks of accelerometry data			6
Healy 2021 (55)	ActiGraph GT9X Link	wrist				Sleep duration estimated using a Sadeh algorithm				4
Hofman 2022 (56)	GeneActiv	non-dominant wrist		50 Hz		Validated algorithm to estimate nocturnal sleep				6
Janda 2024 (57)	Children: ActiGraph GT3X+ Adolescents: GT9X Link	non-dominant wrist	5 seconds	100 Hz		Algorithm integrated within the GGIR package				8
Johansson 2020 (58)	ActiGraph GT3X+	thigh and hip		30 Hz	Visually inspected the activity classification over time to identify and investigate any abnormalities in the data	MATLAB-software Acti4 was used to detect and derive the time spent in movement behavior types through an algorithm that uses inclinations and accelerations	Time in bed was defined based on a combination of accelerometer and diary data			10
Kim 2021 (59)	SenseWear Armband	arm				Data were processed using the latest version of software, coupled with the				5

						proprietary algorithms				
Kuzik 2020 (60)	Actigraph wGT3X-BT	right hip	15 seconds	30 Hz	Sleep categorized through visual inspection guided by the log book and heuristics according to previous visual inspection literature		Sleep categorized through visual inspection guided by the log book and heuristics according to previous visual inspection literature			10
Le 2022 (61)	ActiGraph wGT3X-BT	wrist	60 seconds			Sleep duration and time awake in bed were scored following a protocol based on the Cole-Kripke scoring algorithm and daily sleep diaries	Sleep duration and time awake in bed were scored following a protocol based on the Cole-Kripke scoring algorithm and daily sleep diaries			8
Lee 2020 (62)	Actiwatch-2	dominant hip	60 seconds			Data files from both devices were obtained using standard algorithms for the waking and sleep periods	Sleep logs were completed, but role in scoring not described			7
Lu 2024 (63)	ActiGraph GT3X+	right hip	15 seconds	30 Hz		Estimation of sleep duration employed a polysomnography-validated accelerometer algorithm, which relied on the distribution of change in the z-angle				8
Marmol-Perez 2024 (64)	ActiGraph wGT3x-BT	non-dominant wrist		90 Hz		Raw data were processed using the GGIR R open-source package	Sleep log was used to assist the sleep-detection algorithm			8
Marshall 2022 (65)	GENEActiv	right wrist	5 seconds	20 Hz		Sleep was determined according to the Van Hees sleep algorithm as no arm angle change of >5 degrees or 5+ min				8

Matricciani 2021 (66)	GENEActiv	non-dominant wrist	60 seconds		Visual inspection of the activity trace used to correct sleep times and in cases where sleep times were not reported	van Hees sleep algorithm was used to detect sleep and wake between self-reported bedtime and wake times	Activity monitor cards were then used to identify children's bed times, wake times, and device removals			10
Mellow 2022 (67)	Axivity AX3	non-dominant wrist		100 Hz	Time spent in sleep was verified by manual cross-checking of sleep logs and visual inspection of the accelerometry trace	Raw acceleration data were downloaded using the Open Movement GUI software and further processed using a custom MATLAB graphic user interface developed at the University of South Australia (COBRA)	Time spent in sleep was verified by manual cross-checking of sleep logs and visual inspection of the accelerometry trace			10
Mellow 2024 (68)	Axivity AX3	non-dominant wrist		100 Hz	Manually marking of wake and sleep times for each 24-hr recording period while cross-checking participants' sleep logs against the accelerometry trace	Raw acceleration data were downloaded using the Open Movement GUI software and further processed using a custom MATLAB graphic user interface developed at the University of South Australia (COBRA)	Sleep duration and time awake in bed were scored following a protocol based on the Cole-Kripke scoring algorithm and daily sleep diaries			8
Migueles 2020 (69)	ActiGraph GT3X+	non-dominant wrist		100 Hz		Raw accelerations were downloaded via the ActiLifesoftware and processed in the R package GGIR	Sleep time was identified using an automated algorithm guided by the time reported by the participants			9
Migueles 2023 (70)	ActiGraph GT3X+	non-dominant wrist	5 seconds	50 Hz		Sleep and awake periods were identified using an automated algorithm				8
Mitchell 2023 (71)	activPAL3 micro	thigh								2
Murphy 2024 (72)	GENEActiv	non-dominant wrist	5 seconds	50 Hz	Visual inspection of accelerometer traces in combination with other methods	Data imported into a MATLAB customised software program (Cobra) where activity cards, visual inspection of accelerometer traces and the van Hees algorithm were used	Activity cards were used in combination with other methods to detect sleep and nonwear times			12

						to identify instances of non-wear and sleep				
Ng 2021 (73)	GENEActiv	non-dominant wrist	60 seconds	50 Hz	A research assistant manually checked each participant, daily accelerometry traces and, if required, moved the sleep onset and sleep offset markers to match the trace.	Data downloaded in GENEActiv PC software and converted to 60-s epoch files and visualized in a MATLAB-based program (Cobra) with the van Hees sleep algorithm was used	Markers indicating self-reported sleep (sleep onset) and wake (sleep offset) times from the activity logs were superimposed onto the daily accelerometer traces	Markers indicating self-reported sleep (sleep onset) and wake (sleep offset) times from the activity logs were superimposed onto the daily accelerometer traces		10
Niemelä 2024 (74)	Oura Ring Generation 2	non-dominant wrist	60 seconds	250 Hz & 50 Hz		Start and end of bedtimes were recognized with Oura's own algorithms				8
Oviedo-Caro 2020 (75)	Sensewear Mini Armband	arm								0
Powell 2020 (76)	ActiviPAL3 Micro	right thigh	15 seconds	20 Hz	Sleep was calculated as [time between 0500 h and the first non-sedentary epoch]+[time between the last non-sedentary epoch and the following 0500 h time point]					8
Rasmussen 2023 (77)	ActiGraph wGT3X-BT AcitGraph GT9X Link	non-dominant wrist		100 Hz		van Hees algorithm in GGIR R package	Algorithm guided by the participant sleep logs			8

Rorem 2024 (78)	ActiGraph GT3X-BT	non-dominant wrist	5 seconds	30 Hz	Sleep defined using a combination of sleep logs and manual cross-checking of individual participants by visually inspecting the acceleration trace averaged across 24 hours	Visual inspection of sleep analysis graphs in Actilife software with the support of the log	Sleep defined using a combination of parent completed sleep logs and manual cross-checking of individual participants by visually inspecting the acceleration trace averaged across 24 hours			12
Runacres 2023 (79)	ActiGraph GT3X	right hip		100 Hz		Sleep calculated using the Sadeh algorithms	Children and adolescents also completed a seven-day log to detail periods when the monitor was removed, waking time and time going to bed, to minimise the misclassification of non-wear time as sedentary time or sleep			8
Sandborg 2022 (80)	ActiGraph wGT3x-BT	wrist	5 seconds	100 Hz		GGIR package in R	To assist the sleep-detection algorithm, women were instructed to report their everyday in bed and out of bedtime			10
Smith 2021 (81)	GENEActiv	non-dominant wrist	60 seconds	100 Hz	Time spent in sleep was defined using a combination of sleep logs and manual cross-checking of individual participants by visually inspecting the acceleration	Data were downloaded in GENEActiv PC software and processed using customized MATLAB graphic user interface	Time spent in sleep was defined using a combination of sleep logs and manual cross-checking of individual participants by visually inspecting the			12

					trace averaged across 24 hours		acceleration trace averaged across 24 hours			
Smith 2021 (82)	GENEActiv	wrist	60 seconds			An automatized algorithm and sustained inactivity periods in accord with the work of Van Hees and colleagues				6
Song 2018 (83)	ActiGraph GT3X	wrist	60 seconds		Data evaluated by a scorer with standardized protocol that assessed ambient light intensity and physical activity level from the accelerometer and self-report sleep diary information to determine the time in bed and time out of bed	The Cole-Kripke algorithm was applied to identify actual sleep minutes between time in bed and time out of bed	Data evaluated by a scorer with standardized protocol that assessed ambient light intensity and physical activity level from the accelerometer and self-report sleep diary information to determine the time in bed and time out of bed		Data evaluated by a scorer with standardized protocol that assessed ambient light intensity and physical activity level from the accelerometer and self-report sleep diary information to determine the time in bed and time out of bed	10
St Laurent 2023 (84)	Actiwatch Spectrum	non-dominant wrist	15 seconds	32 Hz	Rest intervals for overnight periods and daytime naps were defined using a combination of marked events and sleep diaries, or manually scoring (the first three consecutive minutes of sleep were used to define sleep onset and the last five consecutive minutes of sleep were defined as sleep offset)	Actiware software and default algorithm	Rest intervals for overnight periods and daytime naps (when present) were defined using a combination of marked events and sleep diaries	Rest intervals for overnight periods and daytime naps (when present) were defined using a combination of marked events and sleep diaries		14

Swindell 2020 (85)	ActiSleep+	right hip	60 seconds			A fully-automated algorithm developed for use with 24-h waist-worn accelerometer				6
Talarico 2018 (86)	Actical	right hip	15 seconds		The sleep times recorded in the logs were manually verified, and corrected as necessary, by visually inspecting the recorded times against the accelerometer data			Rest intervals for overnight periods and daytime naps were defined using a combination of marked events and sleep diaries		6
Tan 2023 (87)	ActiGraph GT3X+ BT	non-dominant wrist		80 Hz		Data were extracted ActiLife software and processed GGIR R package				6
Taylor 2018 (88)	Actical	waist	15 seconds			Data cleaned and scored with automated script in MATLAB				6
Taylor 2020 (89)	ActiGraph GT3X	right hip	15 seconds			Data cleaned and scored with automated script in MATLAB				6
Taylor 2023 (90)	Actical	waist	15 seconds			Data scored with automated algorithm that				6
Tyler 2022 (91)	ActiGraph GT9X	non-dominant wrist	5 seconds	100 Hz		Sleep estimated with accelerometer algorithm				8
Vanderlinden 2023 (92)	ActiGraph wGT3X-BT	non-dominant wrist				Data processed with algorithms in Actilife software				4
Verhoog 2020 (93)	GENEActiv	non-dominant wrist		50 Hz		Data processed in Python with PAMPRO software	The algorithm used information on overnight sleep periods from the sleep diary and subtracted from total sedentary behavior			6

Walmsley 2022 (94)	Axivity AX3	dominant wrist			Using camera images and time use diaries, trained annotators annotated accelerometer data with labels from the Compendium of Physical Activities, including sleep		Using camera images and time use diaries, trained annotators annotated accelerometer data with labels from the Compendium of Physical Activities, including sleep			4