

GENEAcore Data Dictionary (Daily Measures)
ActivInsights 2026

Name	Units / Format	Technical Description	Identifier	Function Name
Adherence				
Non-wear Duration	s	The total duration of non-wear bouts in a 24-hour period.	NonWearDurationDay	GENEAcore::calculate_daily_activity_measures
Wear Duration	s	The total duration of sleep, sedentary and active bouts in a 24-hour period.	WearDurationDay	GENEAcore::calculate_daily_activity_measures

Activity				
Active Duration	s	The total duration of active bouts in a 24-hour period.	ActiveDurationDay	GENEAcore::calculate_daily_activity_measures
Sedentary Duration	s	The total duration of sedentary bouts in a 24-hour period.	SedentaryDurationDay	GENEAcore::calculate_daily_activity_measures
Light Duration	s	The total duration of light exercise bouts in a 24-hour period.	LightDurationDay	GENEAcore::calculate_daily_activity_measures
Moderate Duration	s	The total duration of moderate exercise bouts in a 24-hour period.	ModerateDurationDay	GENEAcore::calculate_daily_activity_measures
Vigorous Duration	s	The total duration of vigorous exercise bouts in a 24-hour period.	VigorousDurationDay	GENEAcore::calculate_daily_activity_measures
MVPA (Exercise) Duration	s	The total duration of moderate and vigorous exercise bouts in a 24-hour period.	MVPADurationDay	GENEAcore::calculate_daily_activity_measures
Active Volume (Acceleration)	g. s	The total volume of active bouts (AGSA) in a 24-hour period.	ActiveVolumeDay	GENEAcore::calculate_daily_activity_measures
Active Volume (MET)	MET.mins	The total volume of active bouts (MET) in a 24-hour period.	ActiveVolumeDay	GENEAcore::calculate_daily_activity_measures
Active Intensity	mg	The mean intensity (AGSA weighted by duration) of active bouts in a 24-hour period.	ActiveIntensityDay	GENEAcore::calculate_daily_activity_measures
M6 Intensity	mg	The mean intensity (AGSA) of the most active 6 minutes in a 24-hour period.	M6MinIntensity	GENEAcore::calculate_daily_activity_measures
MET Minutes	MET.mins	The total MET-minutes for sleep, sedentary and active bouts in a 24-hour period.	METMinutesDay	GENEAcore::calculate_daily_activity_measures
Energy Expenditure	kcal	The estimated energy expenditure in a 24-hour period.	EEDay	GENEAcore::calculate_daily_activity_measures

Sleep				
Rest Start Time (Clinician)	hh:mm:ss	The 'bed time' as scored by a clinician.	RestStartTime	GENEAcore::calculate_daily_sleep_measures
Rest End Time (Clinician)	hh:mm:ss	The 'rise time' as scored by a clinician.	RestEndTime	GENEAcore::calculate_daily_sleep_measures
Rest Start Time (Auto)	hh:mm:ss	The 'bed time' as determined algorithmically.	RestStartTime	GENEAcore::calculate_daily_sleep_measures
Rest End Time (Auto)	hh:mm:ss	The 'rise time' as determined algorithmically.	RestEndTime	GENEAcore::calculate_daily_sleep_measures
Rest Start Time (Diary)	hh:mm:ss	The 'bed time' as recorded by a participant using a sleep diary.	RestStartTime	GENEAcore::calculate_daily_sleep_measures
Rest End Time (Diary)	hh:mm:ss	The 'rise time' as recorded by a participant using a sleep diary.	RestEndTime	GENEAcore::calculate_daily_sleep_measures
Rest Interval Duration	s	The elapsed duration between 'bed time' and 'rise time'.	RestIntervalDuration	GENEAcore::calculate_daily_sleep_measures
Sleep Onset Time	hh:mm:ss	The start time of the first sleep bout in the Rest Interval.	SleepOnsetTime	GENEAcore::calculate_daily_sleep_measures
Sleep End Time	hh:mm:ss	The end time of the last sleep bout in the Rest Interval.	SleepEndTime	GENEAcore::calculate_daily_sleep_measures
Sleep Interval Duration	s	The elapsed duration between the sleep onset time and the sleep end time.	SleepIntervalDuration	GENEAcore::calculate_daily_sleep_measures
Total Sleep Duration	s	The total sleep time within the sleep interval.	TotalSleepDuration	GENEAcore::calculate_daily_sleep_measures
Sleep Efficiency	%	The percentage of sleep within the rest interval.	SleepEfficiency	GENEAcore::calculate_daily_sleep_measures
Sleep Onset Latency	s	The elapsed duration between bed time and sleep onset.	SleepOnsetLatency	GENEAcore::calculate_daily_sleep_measures
Sleep Offset Duration	s	The elapsed duration between sleep end time and rise time.	SleepOffsetDuration	GENEAcore::calculate_daily_sleep_measures
Wake After Sleep Onset Duration	s	The duration of wake periods in the sleep interval.	WakeAfterSleepOnsetDuration	GENEAcore::calculate_daily_sleep_measures
Wake After Sleep Onset Count	integer count	The number of wake periods in the sleep interval.	WakeAfterSleepOnsetCount	GENEAcore::calculate_daily_sleep_measures
Naps Count	integer count	The number of sleep periods outside the rest interval.	NapsCountDay	GENEAcore::calculate_daily_sleep_measures
Total Nap Duration	s	The total sleep time outside the rest interval.	TotalNapDuration	GENEAcore::calculate_daily_sleep_measures
Mean Nap Duration	s	The average duration of consolidated sleep periods outside the rest interval.	MeanNapDuration	GENEAcore::calculate_daily_sleep_measures

Gait and Mobility				
Total Steps	integer count	The total number of steps in a 24-hour period.	TotalStepsDay	GENEAcore::calculate_daily_activity_measures
Slow Steps	integer count	The number of slow walking steps in a 24-hour period.	SlowStepsDay	GENEAcore::calculate_daily_activity_measures
Fast Steps	integer count	The number of faster walking steps in a 24-hour period.	FastStepsDay	GENEAcore::calculate_daily_activity_measures
Walking Duration	s	The total duration of walking bouts in a 24-hour period.	WalkingDurationDay	GENEAcore::calculate_daily_activity_measures
Mean Cadence	steps per minute	The mean cadence of walking bouts in a 24-hour period.	MeanCadenceDay	GENEAcore::calculate_daily_activity_measures
Cadence 95	steps per minute	The 95th percentile of walking bout cadences in a 24-hour period.	Cadence95Day	GENEAcore::calculate_daily_activity_measures
Running Steps	integer count	The number of running steps in a 24-hour period.	RunningStepsDay	GENEAcore::calculate_daily_activity_measures
Running Duration	s	The total duration of running bouts in a 24-hour period.	RunningDurationDay	GENEAcore::calculate_daily_activity_measures
Sit-to-Stand Transitions	count	The number of transitions from sedentary to active in a 24-hour period.	SitStandTransitionsDay	GENEAcore::calculate_daily_activity_measures

GENEAcore Data Dictionary (Parent Measures)
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Name	Units / Format	Technical Description	Identifier	Function Name
GENEAActiv				
TimeUTC	s	The timestamp of a measurement or page in UTC as seconds from 1 January 1970.	TimeUTC	GENEAcore::sample_binfile
x	g	The instantaneous acceleration on the x axis (transverse when wrist-worn).	x	GENEAcore::sample_binfile
y	g	The instantaneous acceleration on the y axis (longitudinal when wrist-worn).	y	GENEAcore::sample_binfile
z	g	The instantaneous acceleration on the z axis (sagittal when wrist-worn).	z	GENEAcore::sample_binfile
Light	lux	The instantaneous environmental light measurement.	Light	GENEAcore::sample_binfile
Button	boolean	The instantaneous near-body temperature measurement.	Button	GENEAcore::sample_binfile
Temp	°C	The instantaneous button status (1 = pressed, 0 = unpressed).	Temp	GENEAcore::sample_binfile
Volts	V	The battery voltage recorded at the end of every 300 measurements.	Volts	GENEAcore::sample_binfile

GENEAcore 1s Downsample				
TimeUTC	s	The timestamp of the 1 second sample in UTC as seconds from 1 January 1970.	TimeUTC	GENEAcore::sample_binfile
x	g	The x axis acceleration (transverse when wrist-worn) sampled at each second elapse.	x	GENEAcore::sample_binfile
y	g	The y axis acceleration (longitudinal when wrist-worn) sampled at each second elapse.	y	GENEAcore::sample_binfile
z	g	The z axis acceleration (sagittal when wrist-worn) sampled at each second elapse.	z	GENEAcore::sample_binfile
Light	lux	The light measurement sampled at each second elapse.	Light	GENEAcore::sample_binfile
Button	boolean	The button status (1 = pressed, 0 = unpressed) at each second elapse.	Button	GENEAcore::sample_binfile
Temp	°C	The tempature at each second.	Temp	GENEAcore::sample_binfile
Volts	V	The battery voltage at each second.	Volts	GENEAcore::sample_binfile

GENEAcore MPI				
file_history	array	Timestamped log of GENEAcCore processes completed during a run of the pre-processing pipeline.	file_history	GENEAcore
errors	array	Log of any errors produced during a run of the pre-processing pipeline.	errors	GENEAcore
GENEAcore_version	string	The version number of the GENEAcCore package used to generate the MPI file.	GENEAcore_version	GENEAcore::create_MPI
line_numbers	array	Line numbers of bin file content as a pointer for indexing of bin file sections.	line_numbers	GENEAcore::create_MPI
measurement_numbers	array	Index of measurements, offset from the first measurement of the file, of the first second, minute, hour, UTC day and local day.	measurement_numbers	GENEAcore::create_MPI
file_info	array	Summary of the bin file data size and format.	file_info	GENEAcore::create_MPI
file_data	array	Summary of meta data derived from the bin file header and pre-processing.	file_data	GENEAcore::create_MPI
factory_calibration	array	Calibration values for x, y, z, and light configured during manufacturing.	factory_calibration	GENEAcore::create_MPI
auto_calibration	array	Calibration values for x, y, z, and light configured during auto-calibration using recored data.	auto_calibration	GENEAcore::calc_autocalparams
still_bouts	s	The start time and duration of non-movement events that do not meet the non-wear criteria.	still_bouts	GENEAcore::detect_nonmovement
non_wear	s	The start time and duration of non-movement events that meet the non-wear criteria.	non_wear	GENEAcore::detect_nonmovement
transitions	s	The timestamps of transitions in acceleration mean and variance calculated from 1s downsample data using changepoint detection.	transitions	GENEAcore::detect_transitions
Participant Weight	kg	The body mass or weight of a participant.	ParticipantWeight	GENEAcore::create_MPI
Participant Height	cm	The height of a participant.	ParticipantHeight	GENEAcore::create_MPI
Participant Date of Birth	yyyy	The birth year of a participant.	ParticipantDoB	GENEAcore::create_MPI
Participant Sex	character	The sex of a participant.	ParticipantSex	GENEAcore::create_MPI

GENEAcore Data Dictionary (Parent Measures)
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Name	Units / Format	Technical Description	Identifier	Function Name
GENEAcore Events & Epochs				
TimeUTC	s	The timestamp of the beginning of an epoch or event in UTC as seconds from 1 January 1970.	TimeUTC	GENEAcore::geneacore
Duration	s	The duration of an epoch or event.	Duration	GENEAcore::geneacore
xMean	<i>g</i>	The mean of x axis acceleration of an epoch or event.	xMean	GENEAcore::geneacore
xSD	<i>g</i>	The standard deviation of x axis acceleration of an epoch or event.	xSD	GENEAcore::geneacore
yMean	<i>g</i>	The mean of y axis acceleration of an epoch or event.	yMean	GENEAcore::geneacore
ySD	<i>g</i>	The standard deviation of y axis acceleration of an epoch or event.	ySD	GENEAcore::geneacore
zMean	<i>g</i>	The mean of z axis acceleration of an epoch or event.	zMean	GENEAcore::geneacore
zSD	<i>g</i>	The standard deviation of z axis acceleration of an epoch or event.	zSD	GENEAcore::geneacore
LightMean	lx	The mean light exposure of an epoch or event.	LightMean	GENEAcore::geneacore
LightMax	lx	The maximum light exposure of an epoch or event.	LightMax	GENEAcore::geneacore
TempMean	°C	The mean near-body temperature of an epoch or event.	TempMean	GENEAcore::geneacore
TempSD	°C	The standard deviation of near-body temperature of an epoch or event.	TempSD	GENEAcore::geneacore
AGSAMean	<i>g</i>	The mean Absolute Gravity-Subtracted Acceleration of an epoch or event.	AGSAMean	GENEAcore::geneacore
ENMOMean	<i>g</i>	The mean Euclidean Norm Minus One of an epoch or event.	ENMOMean	GENEAcore::geneacore
UpDownMean	degrees	The mean lower arm elevation of an epoch or event.	UpDownMean	GENEAcore::geneacore
UpDownSD	degrees	The standard deviation of lower arm elevation of an epoch or event.	UpDownSD	GENEAcore::geneacore
DegreesMean	degrees	The mean wrist rotational angle of an epoch or event.	DegreesMean	GENEAcore::geneacore
DegreesSD	degrees	The standard deviation of the wrist rotational angle of an epoch or event.	DegreesSD	GENEAcore::geneacore
DayNumber	count	The sequential 24-hour day number (starting at 1) from based in Night of Date.	DayNumber	GENEAcore::geneacore
StepCount	count	The number of steps in an epoch or event.	StepCount	GENEAcore::step_counter
StepMean	steps per minute	The mean stepping rate (cadence) of an epoch or event.	StepMean	GENEAcore::step_counter
StepSD	steps per minute	The standard deviation of stepping rate (cadence) of an epoch or event.	StepSD	GENEAcore::step_counter
StepDiff	s	The mean of the absolute difference between successive step intervals in an epoch or event.	StepDiff	GENEAcore::step_counter
GENEAabout Bouts				
Sleep Bout	s	An event with low movement for a prolonged duration.	SleepBout	GENEAcore::bouts_decision_tree
Sedentary Bout	s	An event of low intensity movement that is not classified as sleep.	SedentaryBout	GENEAcore::bouts_decision_tree
Active Bout	s	An event of higher intensity movement.	ActiveBout	GENEAcore::bouts_decision_tree
Light Active Bout	s	An event of higher intensity movement classified as light intensity.	LightActiveBout	GENEAcore::calculate_daily_activity_measures
Moderate Active Bout	s	An event of higher intensity movement classified as moderate intensity.	ModerateActiveBout	GENEAcore::calculate_daily_activity_measures
Vigorous Active Bout	s	An event of higher intensity movement classified as vigorous intensity.	VigorousActiveBout	GENEAcore::calculate_daily_activity_measures
Metabolic Equivalent of Task	MET	The estimated metabolic equivalent of a bout.	MET	GENEAcore::calculate_daily_activity_measures
Rest Interval	s	The start time and duration of the recommended rest period.	rest_interval	GENEAcore::find_rest_intervals
Posture Change	count	The number of body position changes during sleep.	PostureChange	
Ambulatory Bout	s	An active event with upright locomotion for a prolonged duration.	AmbulatoryBout	GENEAcore::bouts_decision_tree
Running Bout	s	An active event with higher intensity upright locomotion.	RunningBout	GENEAcore::bouts_decision_tree

GENEAcore Data Dictionary (Parameters)
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Name	Units	Value	Technical Description	Identifier	Function Name
GENEAcore					
Sphere Criteria	<i>g</i>	0.3	The minimum required acceleration value for each axis in both directions to ensure sufficient range of non-movement positions for auto-calibration to be reliable.	spherecrit	GENEAcore::calc_autocalparams
Maximum Iteration	count	500	The maximum number of sphere fit iterations attempted during auto-calibration to converge.	maxiter	GENEAcore::calc_autocalparams
Sphere Fit Limit	<i>g</i>	1×10^{-13}	The limit of incremental sphere fit improvements before auto-calibration is considered complete.	tol	GENEAcore::calc_autocalparams
Still Seconds	s	120	The number of seconds included in the rolling standard deviation calculation of non-movement from 1Hz downsampled data.	still_seconds	GENEAcore::detect_nonmovement
Still SD Threshold	<i>g</i>	0.013	The threshold applied to the rolling standard deviation of mean acceleration standard deviation of 1Hz downsampled data to determine non-movement.	sd_threshold	GENEAcore::detect_nonmovement
Temperature Seconds	s	240	The number of seconds included in the rolling temperature difference calculation for non-wear, which also determines the shortest detection duration.	temp_seconds	GENEAcore::detect_nonmovement
Delta Temperature Threshold	°C	-0.7	The threshold applied to the rolling temperature difference to determine non-wear.	delta_temp_threshold	GENEAcore::detect_nonmovement
Minimum Bout Border Duration	s	300	The maximum number of seconds between non-movement events for them to be combined into the same period.	border_seconds	GENEAcore::detect_nonmovement
Minimum Non-wear Duration	s	120 * 60	The number of seconds for any single non-movement event beyond which the whole period is classed as non-wear.	long_still_seconds	GENEAcore::detect_nonmovement
Maximum Posture Changes	count	2	The maximum number of adjoining non-movement events that make up a single period of non-wear less than the maximum non-move duration.	posture_changes_max	GENEAcore::detect_nonmovement
Maximum Non-move Duration	s	12 * 60 * 60	The number of seconds beyond which non-movement periods are automatically classed as non-wear.	non_move_duration_max	GENEAcore::detect_nonmovement
x Changepoint Penalty	-	18	The manual penalty value applied in the PELT changepoint algorithm for the x axis.	x_cpt_penalty	GENEAcore::detect_transitions
y Changepoint Penalty	-	25	The manual penalty value applied in the PELT changepoint algorithm for the y axis.	y_cpt_penalty	GENEAcore::detect_transitions
z Changepoint Penalty	-	16	The manual penalty value applied in the PELT changepoint algorithm for the z axis.	z_cpt_penalty	GENEAcore::detect_transitions
Minimum Event Duration	s	5	The minimum interval between changepoint transitions.	minimum_event_duration	GENEAcore::detect_transitions
Step Hysteresis	<i>g</i>	0.1	The hysteresis applied after zero crossing of the bandpass filtered y-axis signal.	step_hysteresis	GENEAcore::step_counter

GENEAbout					
Start Expansion Percentage	%	26	The percentage expansion, based on duration, of a still period's start time to identify overlaps with near-adjacent still periods.	start_expansion_percent	GENEAcore::find_rest_intervals
End Expansion Percentage	%	13	The percentage expansion, based on duration, of a still period's end time to identify overlaps with near-adjacent still periods.	end_expansion_percent	GENEAcore::find_rest_intervals
SD Over Duration Threshold	<i>g/s</i>	5.70E-05	The sleep classification threshold.	SDduration_threshold	GENEAcore::bouts_decision_tree
Sedentary Threshold	<i>g</i>	0.0625	The threshold below which an event is considered to be sedentary.	sedentary_threshold	GENEAcore::bouts_decision_tree
Moderate Threshold	<i>g</i>	(644 + 439) / 9600	The threshold above which an event is considered to be moderate or vigorous.	moderate_threshold	GENEAcore::bouts_decision_tree
Vigorous Threshold	<i>g</i>	(2098 + 1810) / 9600	The threshold above which an event is considered to be vigorous.	vigorous_threshold	GENEAcore::bouts_decision_tree
Running Threshold	<i>g</i>	0.407	The threshold above which we consider an active event to be a running event.	running_threshold	GENEAcore::bouts_decision_tree