Title A LOW-INTERVENTIONAL STUDY TO RECORD GAIT AND PHYSICAL ACTIVITY USING DEVICE(S) in CHILDREN AGES 3-17.

Study Intervention Number:	N/A
Study Intervention Name:	N/A
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ClinicalTrials.gov ID:	N/A
Pediatric Investigational Plan Number	N/A
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Phase:	N/A

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LIST OF ABBREVIATIONS

Abbreviation	Definition
AE	adverse event
APDM	Ambulatory Parkinson's Disease Monitoring
ASIS	Anterior Superior Iliac Spine
BLE	Bluetooth Long Energy
CRF	case report form
CSR	Clinical Study Report
CTIS	Clinical Trial Information System
DCT	data collection tool
EC	Ethics Committee
EHI	Edinburgh Handedness Inventory
FDA	Food & Drug Administration
FSFV	first subject first visit
GCP	Good Clinical Practice
GPP	Good Pharmacoepidemiology Practices
ICC	Intraclass Correlation Coefficient
ICCnull	Intraclass Correlation Coefficient null
ICH	International Council for Harmonisation of Technical Requirements for Pharmaceuticals for Human Use
IEC	Independent Ethics Committee
IRB	Institutional Review Board
LAR	legally acceptable representative
LSLV	last subject last visit
MM	Medial Malleoli
MMRM	mixed effect model repeat measurement
MVPA	Moderate-to-Vigorous Physical Activity
PACL	Protocol Administrative Change Letter
PASS	Post-authorization safety study
PfIRe Lab	Pfizer Innovation Research Laboratory

Abbreviation	Definition
PRO	Patient reported outcomes
SAP	Statistical Analysis Plan
SoA	schedule of activities
TMF	trial master file
TSO	Total Sleep Opportunity

RESPONSIBLE PARTIES

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AMENDMENTS AND UPDATES

This global amendment incorporates all revisions to date, including amendments made at the request of country health authorities and IRBs/ECs and any protocol administrative change letter (PACL).

Document	Version Date
Amendment 1	03-March-2023
Original protocol	30-October-2020

Protocol Amendment Summary of Changes Table

Amendment 1 (03-March-2023)

Overall Rationale for the Amendment: The rationale for the amendment is to add a new Cohort (Cohort B) to study a new device (Panoramic Bracelet device) in the same pediatric population, add changes in objectives and endpoints required for Panoramic Bracelet device and update the schedule of activities for Cohort B, as well as to distinguish the original cohort which had ActiGraph Centrepoint Insights Watch [it will be referenced as ActiGraph Device throughout the protocol] as the device under investigation to be renamed Cohort A. In addition we will evaluate the Panoramic Bracelet device and associated algorithms in the quantification of physical activity (eg sleep), scratch, and wear time, as compared to another accelerometry device (GENEActiv) during the at-home period

Section # and Name	Description of Change	Brief Rationale	Substantial or non-substantial
Study Design	Added new study design definition to denote the new device under study. **Arm Title**: Cohort A / Cohort B **Arm Type (Device under study)**: ActiGraph Device / Panoramic Bracelet Device	Describe Arms for devices for Cohort A and B.	Substantial
Section 4	Added milestones table	Describe milestones differences for Cohort A and B	Substantial

Section # and Name	Description of Change	Brief Rationale	Substantial or non-substantial
Research Questions and Objectives	Added Cohort B objectives: Primary Objectives: • Evaluate the Panoramic Bracelet device and associated algorithms in the quantification of physical activity (eg sleep), scratch, and wear time, as compared to another accelerometry device (GENEActiv) during the at-home period. • To evaluate the participant's or caregiver's perception of wearability and comfort of Panoramic Bracelet device during the at home monitoring period Secondary Objectives • To assess the compliance in wearing the Panoramic Bracelet device at home. • To compare gait quality metrics collected using Panoramic Bracelet devices, APDM devices and GAITRite® walkway, during in-lab sessions.	To denote the difference in objectives between the two cohorts.	Substantial

Section # and Name	Description of Change	Brief Rationale	Substantial or non-substantial
	Tertiary/Exploratory Objectives • To evaluate the participant's or caregiver's perception of wearability and comfort of Panoramic Bracelet devices in-lab sessions. • To evaluate the effect of floor surface (carpet vs tile) on gait metrics collected using Panoramic Bracelet and APDM devices.		
Section 6	Added new SoA for Cohort B.	Denote changes in SoA	Substantial
Section 8	Added Objectives and endpoints for Cohort B Primary Endpoints: • Sleep and scratch endpoints, and wear time compliance (~ days 8-15) • At-home Panoramic Bracelet device wearability/comfort questionnaire responses from at-home monitoring period (this is Day 7+2, only 1 wrist). Secondary Endpoints: • Number of hours per day wearing the device (only Panoramic Bracelet Days 1-7)	Describe new objectives and endpoints for Cohort B	Substantial

Section # and Name	Description of Change	Brief Rationale	Substantial or non-substantial
	• Gait metrics defined in the Annex 2 (eg, gait speed, stride length) measured by APDM devices, GAITRite® walkway and Panaromic device (extracted with GaitPy algorithm). Tertiary/Exploratory Endpoints: • In-lab Panoramic Bracelet wearability/comfort questionnaire responses from Visit 1 (Day 1).(wrist and lumbar) • Gait metrics defined in the Annex 2 (eg, gait speed, stride length) measured by Panoramic Bracelet and APDM devices across different floor surfaces.		
Section 9.1.3.1 Data Sources	Added GENEActiv and Panoramic Bracelet as data source ***Panoramic Bracelet:*** The Panoramic Digital Health Bracelet is a wearable inertial measurement unit "intended for use by researchers and healthcare professionals for high frequency or continuous collection of physical data in home and professional healthcare settings during	Describe new data sources from devices added for Cohort B	Substantial

Section # and Name	Description of Change	Brief Rationale	Substantial or non-substantial
	research studies." It includes a 3 axis accelerometer and gyroscope, as well as magnetometer, pressure, and temperature sensors, all of which can be configured to collect data or not. Sampling rates can be set from 12-52 Hz depending on the sensor. The Bracelet has no interface or screen for participants to interact with. Additionally, "beacons" or "tags" can be optionally placed in strategic locations to monitor when participants are near these beacons. The beacons interact with the Panoramic Bracelet via a Bluetooth Low Energy (BLE) antenna and can provide information as to when the Bracelet is in proximity with the beacon. ***GENEActiv:*** The Activinsights GENEActiv device is a wearable inertial measurement unit "designed for public health research and clinical trials" The device is a circular unit with attachable wristbands and has no interface or screen for participants to interact with. The GENEActiv device is FDA 510(k) exempt. The device can record acceleration data between 10-100 Hz and depending on configuration		

Section # and Name	Description of Change	Brief Rationale	Substantial or non-substantial
	can collect data remotely for up to 1 month.		
Section 10.6 At-home Monitoring	Added Figure 2	To describe wearable sensor device locations on participant at-home for Cohort A and B.	Substantial
Section 11.11. Devices Assessment and Exposure	Added Cohort B language relevant to Panoramic Bracelet Device: **Cohort B:** APDM opal devices will be worn during visit 1 only on both wrists, both feet, chest, and waist. Device under study (Panoramic Bracelet) will be worn during visit 1 and also during the at-home monitoring portion between Day 1 and Day 15+3 days on the non-dominant wrist. GENEActiv device will be worn on the same non-dominant wrist from Day 7 until the end of study (approximately 7 days consecutively).		
Section 12.1. Study Size	Added Cohort B language: The proposed sample size is appropriate for assessing the association of other metrics, such as sleep, across devices in Cohort B. Using data from previous study (NCT03898427, healthy participants 18 years and	To provide evidence that the current sample size has enough power to satisfy the objectives of Cohort B	Substantial

Section # and Name	Description of Change	Brief Rationale	Substantial or non-substantial
	older), data from 21 participants wearing ActiGraph and GENEActiv on their wrists simultaneously. The ICC value of total sleep time obtained from ActiGraph and GENEActiv devices averaged across both arms at visit 1 was 0.88. The ICC value for null hypothesis was computed by randomly breaking the participant pairings 1000 times and computing the 95th percentile of the ICC values of these randomly assigned pairs (ICC_{null} was 0.36). In order to reach ICC value of 0.88 with ICC_{null} value of 0.36 using a one-tailed test with alpha = 0.05 and power = 0.8 it is estimated that at least 8 participants will be needed. Therefore, we will have appropriate power (more than 95%) to be able to assess metrics such as total sleep time between devices in Cohort B. It is anticipated that the proposed sample size will achieve the following goals: (1) assess the agreement of gait metrics from ActiGraph and Panoramic Bracelet against reference comparators; (2) provide data on usability, wearability and comfort of ActiGraph and Panoramic Bracelet for future clinical trials, and (3) assess the		

Section # and Name	Description of Change	Brief Rationale	Substantial or non-substantial
	agreement of other metrics such as related to sleep and scratch from Panoramic Bracelet against comparators. The data obtained in this study will enable power calculations for future pediatric studies.		
Section 12.5.1. Statistical Analysis	Added Cohort B language. **Primary Objectives** 1. Evaluate the Panoramic Bracelet and associated algorithms in the quantification of physical activity (eg sleep), scratch, and wear time, as compared to another accelerometry device (GENEActiv) during the at-home period. Raw accelerometry data collected by Panoramic Bracelet and GENEActiv will be processed by the SleepPy[25] followed by ScratchPy[26] algorithms to generate endpoints related to sleep and nocturnal scratching (eg total sleep time, total scratch duration, etc) SleepPy is a combination of three previously published heuristic algorithms[27,28,29], augmented for their integrated use, for	To differentiate the analyses that will be performed to address the study objectives for Cohort A and Cohort B	Substantial

Section # and Name	Description of Change	Brief Rationale	Substantial or non-substantial
	detecting a subject's total sleep opportunity (TSO) window and computing sleep metrics within that window. ScratchPy is a machine learning based algorithm that relies on SleepPy for context detection, extracts periods of movement from the TSO window, and then classifies those periods as either restless behaviors during sleep or scratch. The resulting predictions are then aggregated into endpoints summarizing the subject's scratch behaviors. During the at home period (~ days 8-15), common endpoints related to wear time, sleep, and scratching will be compared between Panoramic Bracelet and GENEActiv (reference). Accuracy of the sensor-derived metrics will be determined by computing the mean absolute percent error between the comparator and reference metrics and assess the bias using Bland-Altman plots and 95% limits of agreement. The agreement between metrics will be assessed using ICC and its 95% lower and upper confidence limits. 2. To evaluate the participant's or caregiver's perception of wearability and		

Section # and Name	Description of Change	Brief Rationale	Substantial or non-substantial
	comfort of Panoramic Bracelet during the at home monitoring period The wearability/comfort questionnaire during the at home period (Day 7+2) will be summarized by frequency and percentages. **Secondary Objectives** 1. To assess the compliance in wearing the Panoramic device at home. Wear time of the Panoramic Bracelet during the at home period (~ days 1-7) will be summarized. 2. To compare gait quality metrics collected using Panoramic devices, APDM devices and GAITRite® walkway, during in-lab sessions.		

Section # and Name	Description of Change	Brief Rationale	Substantial or non-substantial
	Raw accelerometry data collected by Panoramic Bracelets will be processed by the GaitPy[24] algorithm to generate gait quality metrics (eg, gait speed, stride length etc). GaitPy is an open-source Python package that implements several published algorithms in a modular framework for extracting features of gait from a single accelerometer device mounted on the lumbar. The package has been developed to make it easy for researchers to derive measures of gait from raw accelerometer data. GaitPy includes 2 key algorithms for processing raw accelerometer data to derive gait features. The first algorithm is used for detecting bouts of gait from continuous accelerometer data collected under free-living conditions and the second algorithm derives temporal and spatial features of gait from pre-identified bouts of gait. This second GaitPy algorithm will be used to process data and extract gait features collected during in-lab sessions. During the in-lab walking tasks, gait metrics extracted from GaitPy will be compared to those that are extracted from GAITRite® walkway and APDM. During the natural walk between activities		

Section # and Name	Description of Change	Brief Rationale	Substantial or non-substantial
	stations, gait metrics from GaitPy will be compared to APDM. Accuracy of the sensor-derived metrics will be determined by computing the mean absolute percent error between the sensor-derived and reference standard metrics and assess the bias using Bland-Altman plots and 95% limits of agreement. The agreement between sensor-derived and reference standard metrics will be assessed using ICC and its 95% lower and upper confidence limits. **Tertiary/Exploratory Objectives:** 1. To evaluate the participant's or caregiver's perception of wearability and comfort of Panoramic Bracelet device in-lab sessions. The wearability/comfort questionnaire for the in-lab session will be summarized by frequency and percentages. 2. To evaluate the effect of floor surface (carpet vs tile) on gait metrics collected using Panoramic Bracelet and APDM devices.		

Section # and Name	Description of Change	Brief Rationale	Substantial or non-substantial
	We will quantify differences between sensor-derived gait quality metrics (from Panoramic Bracelet and APDM) collected on different floor surfaces using paired tests (t-test or Wilcoxon signed ranks test depending on normality of the data).		
Appendix1 Cohort Listing	Added Cohort A and Cohort B on the table in Appendix 1	To describe in detail device location, configuration in body and home monitoring period for both Cohort A and Cohort B during home monitoring.	Substantial
Throughout the protocol	Added Cohort A and Cohort B language throughout the protocol	To clarify the differences between Cohort A and B study procedures.	Substantial
Throughout the protocol	Corrections of typographical errors and administrative edits were made.	Corrections of typographical errors and administrative edits were made.	Non-substantial

MILESTONES

Cohort A: Device under study = ActiGraph

Milestones	Planned Date
Start of data collection: FSFV	01 April 2021
End of data collection: LSLV	01 April 2022
Interim study report	01 March 2023

Cohort B: Device under study = Panoramic Bracelet Device

Milestones	Planned Date
Start of data collection: FSFV	01 May 2023
End of data collection: LSLV	01 November 2023
Final study report	01 October 2024

SUMMARY

Title: A Low-Interventional Study to Record Gait and Physical Activity Using Devices in Children Ages 3-17.

Rationale and background:

The quantitative assessment of physical activity is challenging in both healthy and patient populations. The benefit of physical activity in children is well defined: obesity prevention, reduction in cardiovascular risk factors, normal growth and development, depression prevention, health-related quality of life. Some conditions, such as Duchenne Muscular Dystrophy, Atopic Dermatitis, Dermatomyositis, Polymyositis, Friedreich's Ataxia and Achondroplasia, affect the mobility of children and make it difficult for them to perform physical activities. Clinical studies have demonstrated the ability of wearable devices to detect and quantify physical activity in adults. However, there is a lack of digital studies in the pediatric population. This study will assess the feasibility and generate compliance and recruitment data to help design future clinical trials in children.

Research question and objectives: In a pediatric qualified population, ages 3 to 17 years old, the following are the objectives of this study:

COHORT A:

- To compare gait quality metrics collected using the ActiGraph devices, APDM devices and GAITRite® walkway, during in-lab sessions.
- To assess the feasibility of recruiting pediatric participants to conduct a wearable device study.
- To assess the ability of pediatric participants to perform a battery of lab-based tasks.
- To assess the compliance in wearing the ActiGraph devices at home.
- To evaluate the participant's or caregiver's perception of wearability and comfort of ActiGraph and APDM devices during in-lab sessions.
- To evaluate the participant's or caregiver's perception of wearability and comfort of ActiGraph devices during the at-home monitoring period.
- To evaluate the effect of floor surface (carpet vs tile) on gait metrics collected using ActiGraph and APDM devices.
- To investigate the feasibility of using a daily activity diary to provide context in pediatric physical activity data collected by the ActiGraph devices at home in pediatric participants.

- To compare gait speed collected using the SIMI system and GAITRite® walkway, during in-lab sessions.

COHORT B:

- Evaluate the Panoramic Bracelet device and associated algorithms in the quantification of physical activity (eg, sleep), scratch, and wear time, as compared to another accelerometry device (GENEActiv) during the at-home period.
- To evaluate the participant's or caregiver's perception of wearability and comfort of Panoramic Bracelet device during the at home monitoring period
- To assess the compliance in wearing the Panoramic Bracelet device at home.
- To compare gait quality metrics collected using Panoramic Bracelet devices, APDM devices and GAITRite® walkway, during in-lab sessions.
- To evaluate the participant's or caregiver's perception of wearability and comfort of Panoramic Bracelet device in-lab sessions.
- To evaluate the effect of floor surface (carpet vs tile) on gait metrics collected using Panoramic Bracelet and APDM devices.

Study design: This is a non-randomized, single site, low-interventional study. The in-lab sessions will be conducted in the Pfizer Innovation Research Laboratory (PfIRe Lab). There will be approximately 13 participants per age group and a total of approximately 39 participants for Cohort A (device under study ActiGraph) and Cohort B (device under study is Panoramic Bracelet Device).

Arm Title	Cohort A	Cohort B
Arm Type (Device under study)	ActiGraph Device	Panoramic Bracelet Device

Eligible participants will be assigned to the following age groups:

- Group 1: 3 years to 5 years old inclusive
- Group 2: 6 years to 11 years old inclusive
- Group 3: 12 years to 17 years old inclusive

All participants will come for a single in-lab visit during which they will perform gait and activity monitoring procedures. Additionally, the study will include approximately 2 weeks

at-home monitoring while wearing the devices under study and filling out an activity diary (Only for Cohort A).

Population: Qualified male or female participants aged 3 to 17 years old inclusive, as determined by a medically qualified individual. Eligible pediatric participants will be assigned to 1 of 3 age groups.

Variables: No interventional drug. Outcomes will be compliance and recruitment data, gait and activity metrics, wearability/comfort data.

Data sources: Data sources will include case report forms (CRFs), patient reported outcomes (PRO) from an activity diary (Cohort A only), and activity and sleep diary for Cohort B, wearability/comfort questionnaires, non-CRF data generated by devices during in-lab visit and at-home monitoring period.

Study size: There will be approximately 13 participants per age group and a total of approximately 39 participants for Cohort A and 39 participants in Cohort B of this study.

Data analysis: The primary analysis will compare several metrics collected using the devices under study for Cohort A and B, APDM devices, GAITRite® walkway, and Panoramic Bracelet during in-lab sessions. Secondary analysis will include the feasibility of recruiting pediatric participants to conduct a wearable device study, the ability of pediatric participants to perform a battery of lab-based tasks and the compliance in wearing devices. The participant's or caregiver's perception of wearability/comfort of the devices, and the effects of floor surface on gait metrics will be evaluated. Data collected from devices worn during the at home portion will be analyzed as part of the study objectives.

SCHEDULE OF ACTIVITIES

Refer to STUDY PROCEDURES and ASSESSMENTS sections of the protocol for detailed information on each procedure and assessment required for compliance with the protocol.

The investigator may schedule visits (unplanned visits) in addition to those listed in the schedule of activities table, in order to conduct evaluations or assessments required to protect the well-being of the participant.

COHORT A: ACTIGRAPH DEVICE SoA

Procedure/ Assessment	**In-Lab**		**At-home monitoring**															**Final study evaluation**	**Return of Study Materials**
	Screening	**Visit 1**	**Day 1**	**Day 2**	**Day 3**	**Day 4**	**Day 5**	**Day 6**	**Day 7**	**Day 8**	**Day 9**	**Day 10**	**Day 11**	**Day 12**	**Day 13**	**Day 14**	**Day 15**	**Day 15 (+3 days)**	**> Day 15**
	Day 1	**Day 1**																	
Informed Consent and Assent	X																		
Demography	X																		
Medical/Surgical History[a]	X																		
Prior/Concomitant treatment[a]	X																		
Inclusion/Exclusion criteria	X																		
Height, leg length,[Error! Reference source not found.] and weight		X																	
Edinburgh Handedness Inventory (EHI)-short form		X																	
Device exposure (APDM provisioning)[c]		X																	

Procedure/ Assessment	**In-Lab**		**At-home monitoring**															**Final study evaluation**	**Return of Study Materials**
	Screening	**Visit 1**	**Day 1**	**Day 2**	**Day 3**	**Day 4**	**Day 5**	**Day 6**	**Day 7**	**Day 8**	**Day 9**	**Day 10**	**Day 11**	**Day 12**	**Day 13**	**Day 14**	**Day 15**	**Day 15 (+3 days)**	**> Day 15**
	Day 1	**Day 1**																	
Device exposure (In-Lab ActiGraph provisioning)[d]		X																	
Walking on GAITRite® walkway (~20 feet x 3) at participant's natural speed[e]		X																	
Walking on GAITRite® walkway (~20 feet x 3) at varied speeds[f]		X																	
Walking on tile and carpet at participant's natural speed[e]		X																	
Capture time-activity blocks; moving naturally between activities' stations[g]		X																	
Device exposure – (APDM collection)		X																	
Device exposure – (In-Lab ActiGraph collection)		X																	
Wearability/Comfort questionnaire		X																X	

Procedure/ Assessment	In-Lab		At-home monitoring															Final study evaluation	Return of Study Materials
	Screening	Visit 1	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9	Day 10	Day 11	Day 12	Day 13	Day 14	Day 15	Day 15 (+3 days)	> Day 15
	Day 1	Day 1																	
Cognitive debrief of wearability/comfort questionnaire		X																	
Participant chooses paper or electronic activity diary		X																	
Instruct participant and parent/LAR on use of ActiGraph		X																	
Device exposure-(At-Home ActiGraph provisioning)[d]			X																
At-home monitoring with ActiGraph devices[d]			X	→	→	→	→	→	→	→	→	→	→	→	→	→	→	X	
Electronic Activity diary[h]				X	X	X	X	X	X	X	X	X	X	X	X	X	X		
Paper Activity diary[h]				X	X	X	X	X	X	X	X	X	X	X	X	X	X		
Phone interview[i]																		X	
Collect Paper Activity diary																			X
Device exposure – (At-Home ActiGraph collection)[j]																			X
Device assessment[j]		X	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	X	
Adverse event monitoring[k]	X	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	X	

Procedure/ Assessment	In-Lab		At-home monitoring															Final study evaluation	Return of Study Materials
	Screening	Visit 1	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9	Day 10	Day 11	Day 12	Day 13	Day 14	Day 15	Day 15 (+3 days)	> Day 15
	Day 1	Day 1																	

a. Medical/Surgical history, prior/concomitant treatment will be recorded by a medically qualified individual.
b. Leg length is measured by the clinician utilizing a flexible tape measure with the participant in supine position. The leg length will be measured from the Anterior Superior Iliac Spine to the Medial Malleoli on the right side. The measurements will be recorded in the CRF.[1]
c. APDM Opal sensors placed on left wrist, right wrist, chest, lumbar, left foot, right foot.
d. ActiGraph placed on non-dominant wrist and lumbar, serial numbers of both devices to be collected on CRF for every participant.
e. Natural speed is participant's self-chosen pace.
f. Varied speeds include participant's self-chosen slow pace ("Walk slow") and fast pace ("Walk fast").
g. Participant will alternate between activities' stations. Participants will do ~7 minutes of activities, ~5 minutes of break and ~7 minutes of activities. The task stations include 2 sitting activities, 2 standing activities, and 2 walking activities. Order of stations will be determined at random using dice roll.
h. Participants will complete activity diary (choice between either electronic or paper) at home daily between Day 2 and Day 15.
i. The study staff will instruct the participants to mail back both ActiGraph devices at the final study evaluation over the phone at the exit interview.
j. Any event with a device (issues with devices, loss of the devices, etc.), the impact of this event and the action taken with device will be recorded in a device assessment CRF.
k. Adverse events (AEs) will be queried at the clinic visit and during the exit phone interview using open-ended and nonleading verbal questioning of the participant. Any spontaneously reported AEs noted during the home visits will be captured during the exit phone interview.

Abbreviations: → = ongoing/continuous event; APDM = Ambulatory Parkinson's Disease Monitoring.

COHORT B: PANORAMIC BRACELET SoA

Procedure/ Assessment	**In-Lab**		**At-home monitoring**															**Final study evaluation**	**Return of Study Materials**
	Screening	**Visit 1**	**Day 1**	**Day 2**	**Day 3**	**Day 4**	**Day 5**	**Day 6**	**Visit 2**	**Day 8**	**Day 9**	**Day 10**	**Day 11**	**Day 12**	**Day 13**	**Day 14**	**Day 15**	**Day 15 (+3 days)**	**> Day 15**
	Day 1	**Day 1**							**Day 7 +2**										
Informed Consent and Assent	X																		
Demography	X																		
Medical/Surgical History[a]	X																		
Prior/Concomitant treatment[a]	X																		
Inclusion/Exclusion criteria	X																		
Height, leg length[b] and weight		X																	
Edinburgh Handedness Inventory (EHI)-short form		X																	
Device exposure (APDM provisioning)[c]		X																	
Device exposure (In-Lab Panoramic Bracelet Device provisioning)[d]		X																	
Walking on GAITRite® walkway (~20 feet x 3) at participant's natural speed[e]		X																	

Procedure/ Assessment	In-Lab		At-home monitoring															Final study evaluation	Return of Study Materials
	Screening	Visit 1	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Visit 2	Day 8	Day 9	Day 10	Day 11	Day 12	Day 13	Day 14	Day 15	Day 15 (+3 days)	> Day 15
	Day 1	Day 1							Day 7 +2										
Walking on GAITRite® walkway (~20 feet x 3) at varied speeds[f]		X																	
Walking on tile and carpet at participant's natural speed[e]		X																	
Capture time-activity blocks; moving naturally between activities' stations[g]		X																	
Wearability/Comfort questionnaire for Panoramic Bracelet Device[h]		X							X										
Outside lab free walk condition (10 min)[i]		X																	
Cognitive debrief of wearability/comfort questionnaire		X																	
Instruct participant and parent/LAR on use of Panoramic Bracelet Device and GENEActiv		X																	

Procedure/ Assessment	**In-Lab**		**At-home monitoring**															**Final study evaluation**	**Return of Study Materials**
	Screening	**Visit 1**	**Day 1**	**Day 2**	**Day 3**	**Day 4**	**Day 5**	**Day 6**	**Visit 2**	**Day 8**	**Day 9**	**Day 10**	**Day 11**	**Day 12**	**Day 13**	**Day 14**	**Day 15**	**Day 15 (+3 days)**	**> Day 15**
	Day 1	**Day 1**							**Day 7 +2**										
At-home monitoring with Panoramic (non-dominant wrist only) Bracelet devices			X	→	→	→	→	→	→	→	→	→	→	→	→	→	→	X	
Device exposure-(At-Home GENEActiv provisioning, non-dominant wrist only)									X										
At-home monitoring with GENEActiv devices										→	→	→	→	→	→	→	→	X	
Activity and Sleep diary				X	→	→	→	→	→	→	→	→	→	→	→	→	→	X	
Exit phone interview[j]																		X	
Device exposure – (At-Home devices collection)[k]																			X
Device assessment[k]		X	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	X	
Adverse event monitoring[l]	X	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	X	

Procedure/ Assessment	In-Lab		At-home monitoring															Final study evaluation	Return of Study Materials
	Screening	Visit 1	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Visit 2	Day 8	Day 9	Day 10	Day 11	Day 12	Day 13	Day 14	Day 15	Day 15 (+3 days)	> Day 15
	Day 1	Day 1							Day 7 +2										

a. Medical/Surgical history, prior/concomitant treatment will be recorded by a medically qualified individual.

b. Leg length is measured by the clinician utilizing a flexible tape measure with the participant in supine position. The leg length will be measured from the Anterior Superior Iliac Spine (ASIS) to the Medial Malleoli (MM) on the right side. The measurements will be recorded in the CRF. [1]

c. APDM Opal sensors placed on left wrist, right wrist, chest, lumbar, above left foot, right foot.

d. Panoramic Bracelet device placed on non-dominant wrist and lumbar region, serial numbers of device to be collected on CRF for every participant.

e. Natural speed is participant's self-chosen pace.

f. Varied speeds include participant's self-chosen slow pace ("Walk slow") and fast pace ("Walk fast").

g. Participant will alternate between activities' stations. Participants will do ~7 minutes of activities, ~5 minutes of break and ~7 minutes of activities. The task stations include 2 sitting activities, 2 standing activities, and 2 walking activities. Order of stations will be determined at random using dice roll.

h. Phone call visit to complete Comfort and Wearability Questionnaire for Panoramic Bracelet and advise participant to don the GENEActiv

i. The participant will be asked to perform an approximately 10 minute walk outside of the lab.

j. The study staff will instruct the participants to mail back both devices at the final study evaluation over the phone at the exit interview.

k. Any event with a device (issues with devices, loss of the devices, etc.), the impact of this event and the action taken with device will be recorded in a device assessment CRF.

l. Adverse events (AEs) will be queried at the clinic visit and during the exit phone interview using open-ended and nonleading verbal questioning of the participant. Any spontaneously reported AEs noted during the home visits will be captured during the exit phone interview.

RATIONALE AND BACKGROUND

This is not a post-authorization safety study (PASS) and is not a commitment or requirement to any regulatory authority.

Assessing the appropriate levels of physical activity is a challenge in healthcare currently. Physical inactivity is linked to 10% of premature mortality and is the fourth leading cause of death globally.[2] The benefit of physical activity in children is well defined: obesity prevention,[3,4] reduction of cardiovascular risk factors,[5,6] normal growth and development,[7,8] depression prevention,[9] reduction in risk of chronic diseases, health-related quality of life.[10] The American guideline recommends 60 minutes per day of moderate-to-vigorous physical activity.[11] However, there is a lack of standardized measures of gait and physical activity, and more accurate measures are needed.

There is a significant growth and interest in wearable accelerometry devices that can measure various gait and activity metrics. The ActiGraph device has been investigated in several studies involving children age from 2 to 18.[12-18] Despite this growing interest, only a few studies have focused their objective on assessing the feasibility of implementing these types of devices.[19,20] Also, little is known about how children and parents accept the devices and perceive their usability and comfort.[21]

The rationale for this study is to compare gait quality metrics collected using the ActiGraph devices, APDM devices and GAITRite® walkway, during in-lab sessions (in the PfIRe Lab). APDM and GAITRite® walkway are used as reference comparators. GAITRite® is a pressure-sensitive walkway, which records gait metrics. APDM is a set of 6 devices that collect gait metrics. Both devices are used during in-lab assessments, but the deployment of these devices at home is impractical and not feasible. Hence the needed validation study of the ActiGraph device to measure for gait metrics continuously in a home environment.

In addition to the ActiGraph device studied in Cohort A, Cohort B of the study aims to evaluate the feasabilty of the Panoramic Bracelet and associated algorithms such as SleepPy and GaitPy compared to the GENEActiv device and to evaluate the comfort and wearability of the Panoramic Bracelet. The results of this study will enable the use of novel devices in future clinical trials measuring scratch and sleep.

This study will generate compliance data and recruitment data to derisk future clinical protocols, and potentially enable the use of wearable devices in pediatric research studies. Device data from this study can be used for sample size estimates in future digital studies involving pediatric populations.

The study will include an in-person session at the PfIRe Lab, located on the Pfizer Kendall Square campus at 610 Main Street, Cambridge, MA 02139, as well as an approximately 2 week at-home monitoring period. The PfIRe Lab is a clinical research facility designed to evaluate and validate novel technologies for potential use in clinical trials. In the PfIRe Lab, a multidisciplinary team of clinicians and researchers utilize state-of-the-art motion capture technologies, coupled with environmental and wearable sensors to develop new

patient-centric clinical trial endpoints, enabling measures of physical function and activity outside of the traditional hospital and clinical settings. To help mitigate risk in vulnerable populations, conducting studies to develop the set-up of anticipated laboratory procedures in qualified pediatric participants is necessary.

The risks to study participants are minimal and further outlined in sections below. There is no direct benefit to study participants.

RESEARCH QUESTION AND OBJECTIVES

Cohort A: This study aims to compare gait quality metrics collected using the ActiGraph devices, APDM devices and GAITRite® walkway, during in-lab sessions.

The primary, secondary and tertiary/exploratory objectives for this study and their respective endpoints are listed below.

COHORT A: ActiGraph Device

Primary Objective(s):	**Primary Endpoint(s):**
• To compare gait quality metrics collected using ActiGraph devices, APDM devices and GAITRite® walkway, during in-lab sessions.	• Gait metrics defined in the Annex 2 (eg, gait speed, stride length) measured by APDM devices, GAITRite® walkway and ActiGraph devices (extracted with GaitPy algorithm).
Secondary Objective(s):	**Secondary Endpoint(s):**
• To assess the feasibility of recruiting pediatric participants to conduct a wearable device study.	• Total number of participants contacted for the study. Recruitment data listed by age group: number of participants screened and enrolled over time, time to enroll approximately 13 participants per group.
• To assess the ability of pediatric participants to perform a battery of lab-based tasks.	• Number of participants (overall and per age group) able to perform each of the 7 tasks and task-completion percentage (among total of 7 tasks) per participant.
• To assess the compliance in wearing the ActiGraph devices at home.	• Number of hours per day wearing the device and number of days with more than 10 hours of wearing time for each participant.
• To evaluate the participant's or caregiver's perception of wearability and comfort of ActiGraph and APDM devices during in-lab sessions.	• In-lab ActiGraph/APDM wearability/comfort questionnaire responses from Visit 1 (Day 1).

• To evaluate the participant's or caregiver's perception of wearability and comfort of ActiGraph devices during the at-home monitoring period.	• At-home ActiGraph wearability/comfort questionnaire responses from at-home monitoring period in the Final Study Evaluation (Day 15 + 3 days).
• To evaluate the effect of floor surface (carpet vs tile) on gait metrics collected using ActiGraph and APDM devices.	• Gait metrics defined in the Annex 2 (eg, gait speed, stride length) measured by ActiGraph and APDM devices across different floor surfaces.
Tertiary/Exploratory Objective(s):	**Tertiary/Exploratory Endpoint(s):**
• To investigate the feasibility of using a daily activity diary to provide context in pediatric physical activity data collected by ActiGraph devices at home in pediatric participants.	• Daily activity diary responses and metrics related to physical activity endpoints from ActiGraph (eg, sedentary time as defined in Annex 3).
• To compare gait speed collected using the SIMI system and GAITRite® walkway, during in-lab sessions.	• Gait speed defined in the Annex 2 measured by SIMI system and GAITRite® walkway.

COHORT B: Panoramic Bracelet Device

Cohort B of the study aims to evaluate the feasabilty of the Panoramic Bracelet device and associated algorithms compared to the GENEActiv device and to evaluate the comfort and wearabilty of the Panoramic Bracelet device.

The primary, secondary and tertiary/exploratory objectives for Cohort B of study and their respective endpoints are listed below.

Primary Objective(s):	**Primary Endpoint(s):**
• Evaluate the Panoramic Bracelet device and associated algorithms in the quantification of physical activity (eg sleep), scratch, and wear time, as compared to another accelerometry device (GENEActiv) during the at-home period.	• Sleep and scratch endpoints, and wear time compliance (~ days 8-15)
• To evaluate the participant's or caregiver's perception of wearability and comfort of	• At-home Panoramic Bracelet device wearability/comfort questionnaire responses

Panoramic Bracelet device during the at home monitoring period	from at-home monitoring period (this is Day 7+2, only 1 wrist).
Secondary Objective(s):	**Secondary Endpoint(s):**
• To assess the compliance in wearing the Panoramic Bracelet device at home.	• Number of hours per day wearing the device (only Panoramic Bracelet Days 1-7)
• To compare gait quality metrics collected using Panoramic Bracelet devices, APDM devices and GAITRite® walkway, during in-lab sessions.	• Gait metrics defined in the Annex 2 (eg, gait speed, stride length) measured by APDM devices, GAITRite® walkway and Panaromic Bracelet devices (extracted with GaitPy algorithm).
Tertiary/Exploratory Objective(s):	**Tertiary/Exploratory Endpoint(s):**
• To evaluate the participant's or caregiver's perception of wearability and comfort of Panoramic Bracelet device in-lab sessions.	• In-lab Panoramic Bracelet wearability/comfort questionnaire responses from Visit 1 (Day 1) (wrist and lumbar)
• To evaluate the effect of floor surface (carpet vs tile) on gait metrics collected using Panoramic Bracelet and APDM devices.	• Gait metrics defined in the Annex 2 (eg, gait speed, stride length) measured by Panoramic Bracelet and APDM devices across different floor surfaces.

RESEARCH METHODS

Study Design

This is a non-randomized, single site, low-interventional study to compare gait and activity quality metrics collected using wearable devices, APDM devices and GAITRite® walkway, during in-lab sessions (in the PfIRe Lab). There will be approximately 39 participants in Cohort A and 39 participants in Cohort B divided equally into 3 independent age groups based on the schematic detailed below:

- Group 1: 3 years to 5 years old inclusive
- Group 2: 6 years to 11 years old inclusive
- Group 3: 12 years to 17 years old inclusive

Participant's assignment to a group will be determined by the age at the time the informed consent is signed. Participants will be recruited into age groups in parallel. Recruitment will stop in a group when there are at least 13 completers in that group. Participants who drop out for reasons other than safety before completion of the study may be replaced.

The study is composed of:

1. A visit at the PfIRe Lab (Visit 1, Day 1), during which participant eligibility will be confirmed, consent and assent will be obtained. Participants will perform in-lab gait and activities monitoring procedures (see Table 1 below). During all these activities, participants will wear or interact with the following devices:

   a. Wearable devices (ActiGraph for Cohort A), (Panoramic Bracelet device and GENEActiv for Cohort B)

   b. GAITRite® Electronic Walkway

   c. Ambulatory Parkinson's Disease Monitoring System (APDM);

   d. Camera based SIMI system

GAITRite® walkway, APDM will be used as reference comparators for the in-lab portion of the protocol. For Cohort B of the protocol the aim is to use GENEActiv as a comparator device to Panoramic Bracelet during the at-home collection period. The in-lab gait and activity monitoring will be video recorded from multiple angles with multiple cameras (camera-basedSIMI system) , this will be used to provide contextual information of each portion of the tasks and procedures that may be used by the reviewer when analyzing and interpreting the sensor data. As a tertiary/exploratory objective, gait speed recorded by the SIMI system against the gait speed collected by GAITRite® walkway may be validated.

Table 1. In-lab Assessments

Assessments	Objectives	Location
Walking on GAITRite® walkway (20 feet x 3) at participant's natural speed and at various speed	• Compare gait metrics collected between devices and APDM devices. • Compare gait metrics collected between devices and GAITRite® walkway. • Compare gait speed collected between SIMI system and GAITRite® walkway.	GAITRite® walkway
Walking on tile and carpet at participant's natural speed	• Compare gait metrics collected between devices and APDM devices.	Tile and Carpet
Moving naturally between activities' stations	• Compare gait metrics between devices and APDM devices, collected during the walk between the activities' stations and during the sit/stand position at the stations.	Walking pathway between activities' stations

Table 1. In-lab Assessments

Assessments	Objectives	Location
Free 10 minute walk (Cohort B)	• Compare gait metrics between devices and APDM devices, collected during the walk	10 minute walk outside the lab

1. At-home monitoring for approximately 2 weeks (from Day 1 to Day 15 + 3 days) during which participants will wear the devices under study. Complete a daily activity diary on Day 2 to Day 15 (Only Cohort A). Complete activity and sleep diary for Cohort B on Day 2 to day 15.

2. Cohort B Only: At-home monitoring day 7+2 Wearability/comfort questionnaire (Annex 5) for Panoramic Bracelet device and instruct participant to start wearing the GENEActiv device from Day 7 to end of study. Daily activity and sleep diary. (Annex 8)

3. For Cohort A Only: A telephone follow-up interview at the end of the 2 weeks at-home monitoring period (Day 15 + 3 days) with administration of the Wearability/comfort questionnaire (Annex 5). For Cohort B follow up call to remind participants to take off devices and mail back. In addition to an end of study phone call for Cohort B.

For a detailed description of the study activities, see Section 6 Schedule of Activities.

Inclusion Criteria

Participants must meet all of the following inclusion criteria to be eligible for inclusion in the study:

1. Evidence of a personally signed and dated informed consent document indicating that the participant and/or a parent/legally acceptable representative (LAR) has been informed of all pertinent aspects of the study. When there are 2 LAR, consent should be obtained from both of the child's LAR if present when the informed consent document is signed. When the participant is an emancipated minor with proven documentation present for review, consent should be obtained from the participant only.

2. Evidence of a personally signed and dated assent, indicating that the participant understands the nature of all pertinent aspects of the study, and is willing to participate in the study activities, if applicable, as consistent with the participant's age and ability to provide assent (verbal assent for children 3 to 5 years old, written assent for children 6 to 17 years old).

3. The participant (to degree appropriate for age) and parent/legally acceptable representative are able to understand, are willing and able to comply with protocol

requirements, scheduled visits, and other study procedures, and are likely to complete the study as planned.

4. Qualified male or female participants aged 3 to 17 years old inclusive. Qualified is defined as no significant health problems that would impair the completion of the physical activity tasks, does not carry any diagnosis of developmental delay and/or significant co-morbid medical conditions as determined by a medically qualified individual during medical history review with LAR and participant.

5. Children who are ambulatory.

Exclusion Criteria

Participants meeting any of the following criteria will not be included in the study:

1. Participation in other studies involving digital devices within 1 week and/or treatment with an investigational drug (Phases 1-4) within 30 days or 5 half-lives before the current study begins and/or during study participation. If the participant was enrolled in a trial with both digital devices and investigational drug, whichever time period is longest for exclusion (5 half-lives or 1 week) will be used.

2. Participants with implanted medical devices.

3. Minor participants who reach the age of majority during the study, as recognized under local law.

4. Participants whose parents/LAR are investigational site staff members directly involved in the conduct of the study and their immediate family members, site staff members otherwise supervised by the investigator.

5. Participants who self-report any medical condition (including pregnancy) and/or medication use, or in the investigator's opinion, any medical or psychiatric condition, and/or use of medications such as but not limited to antipsychotics, hallucinogens, amphetamines, barbiturates, etc, that may affect the safety of the participant and may interfere with the conduct of the study.

6. Other medical or psychiatric condition that may increase the risk of study participation or, in the investigator's judgment, make the participant inappropriate for the study.

7. Participants with known allergies to components as specified by device manufacturer if applicable (eg, plastic, stainless steel and silicone).

Variables

The study will enroll pediatric qualified participants at a single center in Cambridge, MA. Potential confounding variables including age, gender and race will be assessed at the start of

study procedures and be adjusted for as necessary in the statistical analysis, as noted in the Statistical Analysis Plan (SAP) and DATA ANALYSIS Section.

The following variables will be measured for each age group:

- Gait metrics defined in Annex 2 (eg, gait speed, stride length) measured by APDM devices and GAITRite® walkway, device under study, SIMI system and GENEActiv (for Cohort B only)
- Measures of the recruitment: number of participants contacted, screened and enrolled over time, time to enroll approximately 13 participants per group, mean number of participants recruited per month (overall and per group).
- Measures of the ability to perform a battery of lab-based tasks: number of participants (overall and per age group) able to perform each of the 8 tasks and task-completion percentage (among total of 8 tasks) per participant.
- Measures of the compliance in wearing device under study at-home: number of hours per day wearing the device and number of days (>10 hours per day) wearing the device for each participant.
- Measures of the perception of wearability/comfort of the device under study and APDM (Cohort A only) devices: wearability/comfort questionnaires answers.
- Daily activity diary answers. (Only Cohort A)
- Daily activity and sleep diary answers Only Cohort B)
- Physical activity endpoints from devices under study (eg, sedentary time, sleep as defined in Annex 3)
- Measures of the effect of floor surface: gait metrics defined in the Annex 2 (eg, gait speed, stride length) measured by device under study and APDM devices across different floor surfaces.

Data Sources

Data sources will include:

- Case report forms.
- Patient reported outcomes (PRO) from the activity diary (Only Cohort A) and the wearability/comfort questionnaires. Activity and sleep diary for Cohort B.
- Non-CRF data generated by devices under study for in-lab visit and at-home monitoring, APDM devices, GAITRite® walkway, video from camera-based SIMI system).

For every device that is used in the study, all information pertaining to the hardware (eg, device name, manufacturer, device version) and software (eg, operating system) being worn or monitoring the participants will be recorded and reported.

ActiGraphCentrepoint Insight Watch:

The Bluetooth LE 5 smart CentrePoint Insight Watch features ActiGraph's 3 axis accelerometer and data filtering technology and features a Liquid Crystal Display window that displays the date and time, device wireless mode, and battery status. It is a Food and Drug Administration cleared Class II device 510(k) Number: K181077. The Intended Use Statement for the CentrePoint Insight Watch does not identify a particular medical condition. Rather it states: "The ActiGraph CentrePoint Insight Watch is a small worn activity monitor designed for documenting physical movement associated with applications in physiological monitoring. The device is intended to monitor the activity associated with movement during sleep. The Insight Watch can be used to analyze circadian rhythms and assess activity in any instance where quantifiable analysis of physical motion is desirable."

Panoramic Bracelet:

The Panoramic Digital Health Bracelet is a wearable inertial measurement unit "intended for use by researchers and healthcare professionals for high frequency or continuous collection of physical data in home and professional healthcare settings during research studies." It includes a 3 axis accelerometer and gyroscope, as well as magnetometer, pressure, and temperature sensors, all of which can be configured to collect data or not. Sampling rates can be set from 12-52 Hz depending on the sensor. The Bracelet has no interface or screen for participants to interact with. Additionally, "beacons" or "tags" can be optionally placed in strategic locations to monitor when participants are near these beacons. The beacons interact with the Panoramic Bracelet via a Bluetooth Low Energy (BLE) antenna and can provide information as to when the Bracelet is in proximity with the beacon.

GENEActiv:

The Activinsights GENEActiv device is a wearable inertial measurement unit "designed for public health research and clinical trials." The device is a circular unit with attachable wrist-bands and has no interface or screen for participants to interact with. The GENEActiv device is FDA 510(k) exempt. The device can record acceleration data between 10-100 Hz and depending on configuration can collect data remotely for up to 1 month.

GAITRite® Electronic Walkway:

The GAITRite® Electronic Walkway has at its core a grid of pressure sensors (48 sensors by 480 sensors placed on 0.5 inch /1.27 cm, in the 20 ft version used in this study) and has accompanying interface and software to automate measuring temporal (timing) and spatial (distance) gait parameters (temporal/spatial). In essence, when the participant walks over the walkway, their sequential footprints (and any associated contacts to the walkway, ie, ground) activates the sensors and the spatiotemporal patterns of these contacts are recorded and

analyzed to generate a multitude of gait parameters. The GAITRite® walkway system is widely used as a reference comparator gait measurement device by research and clinical community. Also, it has been used previously in pediatric studies.[22,23]

APDM Mobility Lab Sensor Monitoring:

The APDM, Inc. "Mobility Lab" system is comprised of 6 body-worn sensors, each recording accelerometry, angular velocity, and magnetic field orientation (magnetometry). Data will be sampled at 128 Hz throughout the performance of each activity described in the schedule of activities (SoA). Data from each modality are synchronized between sensors with ± 1 millisecond of error. Sensors will be applied to the sternum, the small of the back (lumbar region), both wrists and both feet in accordance with APDM's operating instructions.

Video from Camera-based SIMI system:

Video will be recorded from multiple synchronized cameras at multiple angles (eg, 8 angles).

STUDY PROCEDURES

Recruitment

Recruitment may be done via paper and electronic flyers, internet postings (eg, ClinicalTrials.gov), advertising on public transportation and community centers, advertisement in general pediatric clinics, and via mailed post cards. Internal recruitment at Pfizer sites in Cambridge, MA, may use electronic communications and announcements. No children whose parents/LAR are an immediate family member of the study team (or any supervised member of the study team) will be a participant of the study.

All advertising methods will be approved by an Institutional Review Board (IRB). The communication will include sufficient information including a brief description of the study detailing the methodologies used.

Initial Contact

Potential participants' parent(s)/LAR interested in their child participating in the study will be put in contact with a member of the study team who will provide the eligibility criteria and pre-screening questionnaire by phone or in person. After receiving the information, the participant/respondent can determine if they would like to join the study. If interested, they will be scheduled for a visit.

Prescreening

Participants will be prescreened between Day -14 and Day 0.

Screening and Enrollment

Participants will be screened at Day 1. The investigator or a medically qualified individual designated by the investigator will explain the study to the participant and the participant's

parent(s)/LAR. The investigator must ensure that each participant and participant's parent(s)/LAR is fully informed about the nature and objectives of the trial and possible risks associated with participation. If the participant's parent(s)/LAR desires the participant to participate in the study and the participant wishes to participate in the study, an IRB-approved informed consent form will be signed and dated by the participant's parent(s)/LAR and a verbal or written assent from the participant will be collected (if applicable, as consistent with the participant's age and ability to provide assent), as required by the IRB. The informed consent and assent forms must be agreed by Pfizer and the IRB and must be in compliance with the International Council for Harmonisation (ICH) Good Clinical Practice (GCP), local regulatory requirements, and legal requirements.

The signed documents will be retained at the site, and the investigator or person designated by the investigator must document in the source documents that informed consent and assent were obtained.

The participant will be assigned a participant identifier after informed consent and assent are obtained.

Visit 1 (Day 1)

After informed consent and assent have been obtained, the following assessments will be performed during the study visit:

1. Collect participant demography and parent(s)/LAR's contact information.
2. Obtain medical and surgical history.
3. Review prior and concomitant treatments.
4. Confirm eligibility for the study based on inclusion/exclusion criteria.
5. Record height, leg length, and weight.
6. Handedness questionnaire: Edinburgh Handedness Inventory (EHI)-short form (Annex 4).
7. Place device under study and APDM devices on participant.
8. Walk on a GAITRite® walkway at participant's natural speed (3 rounds = ~20 feet x 3) and at varied speeds while wearing device under study and APDM system. Natural speed is participant's self-chosen pace and varied speeds includes participant's self-chosen slow pace ("Walk slow") for 3 rounds and fast pace ("Walk fast") for 3 rounds.
9. Walk on tile and carpet (3 rounds on each surface) at participant's natural speed while wearing device under study and APDM system.

10. Move naturally (sit/stand/walk) through a random path created by dice roll in the PfIRe Lab (between activities' stations) while wearing device under study and APDM system as well as recorded with video/motion capture cameras. Participants will perform age-related activities using 6 activity stations for ~20 minutes (defined as follows: ~7 minutes of activities, ~5 minutes of break and ~7 minutes of activities). The task stations include 2 sitting activities (such as look through a book, draw/write), 2 standing activities (such as turn a switch or hang a coat), 2 walking activities (such as move blocks/objects, toss a beanbag and pick it up).

11. Free 10 minute walk outside the lab (Cohort B Only)

12. Wearability/Comfort questionnaire (Annex 5) followed by a Cognitive Debrief of the questionnaire.

13. Instruct participant and parent(s)/LAR on use of device under study and activity diary (Cohort A only) and activity and sleep diary (Cohort B only) at home.

14. Monitor for AEs.

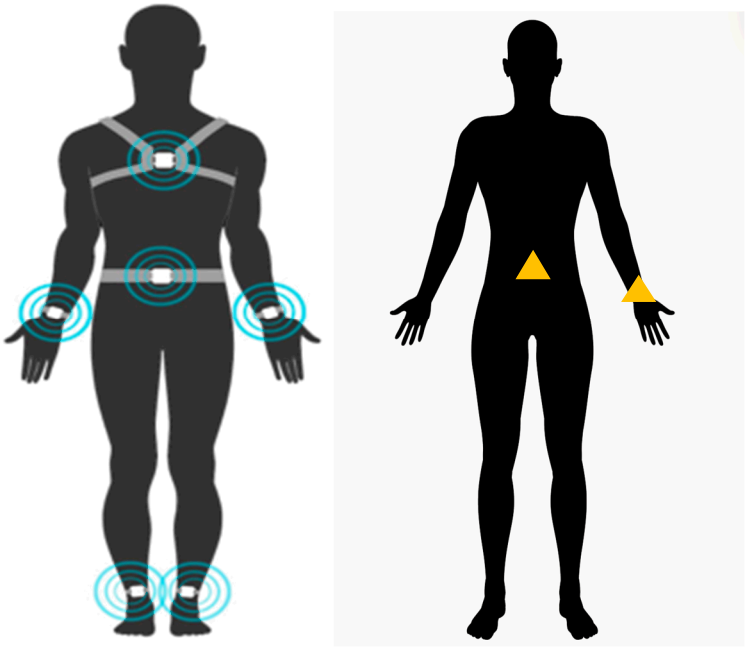
A medically qualified individual is responsible for reviewing the inclusion/exclusion criteria, medical/surgical history, prior/concomitant treatments and for the review of the systems.

For the assessments 8, 9 and 10, every participant will have up to 3 attempts.

The in-lab gait and activity monitoring will be video recorded from multiple angles with multiple cameras (camera-based SIMI system). This will be used to provide gait speed and contextual information of each portion of the tasks and procedures that may be used by the reviewer when analyzing and interpreting the sensor data. Time segments of sensor data from each modality will be identified based on these annotations.

The locations of the device under study and the APDM system on the participant's body are defined on Figure 1.

Figure 1. Wearable Sensor Device Locations on Participant In-lab Cohort A and B



Legend:

-  Blue circle – APDM Opal sensors to be worn on each wrist, chest, lumbar, and above each shoe.
-  Orange triangle – Device under study to be worn on nondominant wrist and lumbar.

All in-lab assessments will be performed at the PfIRe lab with site personnel and will take approximately 2 hours.

Any event with a device, the impact of this event and the action taken with device will be recorded in a device assessment CRF during Visit 1.

At-home Monitoring (Day 1 to Day 15+3 days)

The participant will wear device under study (on the non-dominant wrist) for at least 2 weeks with some flexibility on the end date for scheduling the follow-up phone interview. They will be asked to wear the wrist device continuously. For the lumbar device (Cohort A only), they will be instructed to put on the device when they get up in the morning and remove when they go to sleep at night or nap during the daytime.

For Cohort B the participant will wear the Panoramic Bracelet device for approximately one week on the non-dominant wrist and at approximately Day 7 they will start wearing the

GENEActiv device on the same wrist until end of study. Both devices (Panoramic Bracelet and GENEActiv) will be worn at the same time. The position of the GENEActiv device and the Panoramic Bracelet device closeness to the wrist will be balanced per age group. Approximately half the participants in each age group will wear the Panoramic Bracelet device proximal to the wrist and the GENEactiv device more distal to the wrist and vice versa See Figure 2. A phone interview for the Wearability/Comfort questionnaire will be conducted at approximately Day 7.

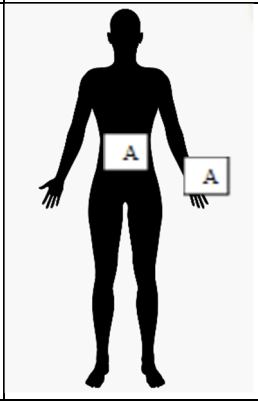
The at-home monitoring will be performed outside the PfIRe lab without video monitoring or direct observation by site personnel.

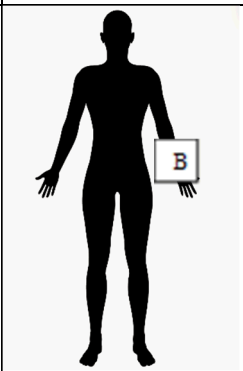
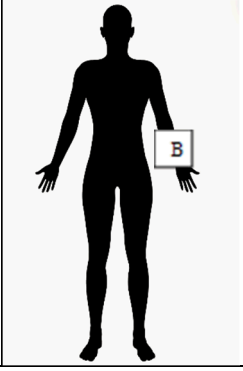
The participant will complete an activity diary at home daily between Day 2 and Day 15 (Cohort A only).

For Cohort B the participant will complete an activity and sleep diary between Day 2 and Day 15

Any event with a device (issues with devices, loss of the devices, etc), the impact of this event and the action taken with device will be recorded anytime between Day 1 and Day 15+3 days in a device assessment CRF.

Figure 2. Wearable Sensor Device Locations on Participant At-home

COHORT NAME	DEVICE(S) [LOCATION OF DEVICE on body]	DESCRIPTION OF DEVICE(S)	DEVICE(S) XSENSORS CONFIGURATION ON BODY	HOME MONITORING
A	Lumbar and non-dominant wrist	ActiGraph CentrePoint Insight Watch		Yes ~15days

COHORT NAME	DEVICE(S) [LOCATION OF DEVICE on body]	DESCRIPTION OF DEVICE(S)	DEVICE(S) XSENSORS CONFIGURATION ON BODY	HOME MONITORING
B	Non-dominant wrist	Panoramic Wearable Bracelet		Yes ~15 days
B	Non-dominant wrist	GENEActiv Watch		Yes ~ Day 7 to 15

Cohort B: The position of the GENEactiv device and the Panoramic Bracelet device [closeness to the wrist] will be balanced per age group. Approximately half the participants in each age group will wear the Panoramic Bracelet device proximal to the wrist and the GENEActiv device more distal to the wrist and vice versa.

Follow-up Phone Interview (Day 15+3 days)

The follow-up visit will be conducted as a phone interview at the end of the 2 week at-home monitoring period (Day 15+3 days to allow for flexibility in scheduling) to record any AEs, any issues with devices and to remind participants to send back the devices. The participant will also answer a Wearability/comfort questionnaire (Annex 5) (Cohort A only) during the follow-up phone interview. This phone interview will be scheduled during Visit 1. The study site staff should make at least 2 attempts to contact the participant's legal representative by phone. All attempts should be documented. The devices will be sent back to Pfizer in a prepaid envelope (envelope given to the participant during Visit 1).

Any event with the devices (both reference and under study), the impact of this event, and the action taken with device will be recorded in the device assessment CRF.

Lost-to-follow-up

Lost-to-follow-up is defined by the inability to reach the participant's parent(s)/LAR after a minimum of 2 documented attempts (eg phone calls, e-mails). All attempts should be documented.

If a participant is lost-to-follow-up, the investigators will attempt to contact the participant's parent(s)/LAR to ask that the participant return the devices. If the participant's parent(s)/LAR cannot be contacted or refuses to return the devices, a report will be filed in the trial master file (TMF)/Clinical Study Report (CSR) to account for the loss of the device.

ASSESSMENTS

Additional Research

Not applicable.

Assessment of Suicidal Ideation and Behavior

Not applicable.

Biological Samples

Not applicable.

Imaging Assessments

Not applicable.

Rater Qualifications

Not applicable.

Medical/Surgical History, Prior/Concomitant Treatments

The medical/surgical history, prior/concomitant treatments will be collected by a medically qualified individual and recorded in several CRFs.

Body Weight and Height

Body weight (kg), height (cm) and leg length (cm) will be measured at the screening visit (Day 1) and recorded. All measurements should be taken with the participant wearing only light indoor clothing and without shoes.

Handedness Questionnaire

The Edinburgh Handedness Inventory (EHI)-short form (Annex 4) will be asked by a study staff member and answered by the participant or participant's parent(s)/LAR. This questionnaire which assesses the handedness propensity of an individual (writing score, throwing score, toothbrush score, spoon score, total laterality quotient score) helps inform the best location for wrist device placement, and interpret sensor data. For participants

scoring -1 to -100, the non-dominant wrist will be considered the right wrist. For participants scoring 0 to 100, the non-dominant wrist will be considered the left wrist.

Patient Reported Outcome

All patient reported outcomes (PRO) are completed by the study participant or the study participant's parent(s)/LAR at home, or in the lab, following a schedule of assessments as per the SoA and the Table 2.

Table 2. Patient Reported Outcome

PRO	Frequency	Location	Number of Questions
Wearability/comfort questionnaire (Annex 5)	Conducted at Visit 1 (Day 1).	At the PfIRe Lab	10
	Cohort A: Conducted at the Final Study Evaluation (Day 15+3 days). Cohort B: Conducted at Day 7+2	At home	
Cognitive debrief of wearability/comfort questionnaire (Annex 7)	Conducted at Visit 1 (Day 1).	At the PfIRe Lab	6
Activity diary (Annex 6) Cohort A ONLY	Conducted once daily during the at-home monitoring period (Day 2 to Day 15).	At home	2
Activity and Sleep diary Cohort B (Annex 8)	Conducted once daily during the at-home monitoring period (Day 2 to Day 15).	At home	2

All the PROs should be completed by the participant's parent(s)/LAR if the participant is 3 years old to 11 years old. If the participant is 12 years old or older, the participant can fill the PROs.

The wearability/comfort questionnaire and the cognitive debrief of the wearability/comfort questionnaire are electronic questionnaires.

For the activity diary and the wearability/comfort questionnaire, participant or participant's parent(s)/LAR will have the choice between a paper version or an electronic version.

If the electronic version is chosen, the activity diary will be sent by email starting Day 2 and ending Day 15 and there will be a window of several hours to fill it each day.

Performance of In-lab Tasks

The performance of the following assessments in lab will be recorded in a CRF at Visit 1 (Day 1):

- To walk on a GAITRite® walkway at participant's natural speed.
- To walk on a GAITRite® walkway at varied speed (slow pace).
- To walk on a GAITRite® walkway at varied speed (fast pace).
- To walk on tile.
- To walk on carpet.
- To walk naturally between activities' stations first time.
- To walk naturally between activities' stations second time.
- Free walking condition outside lab for cohort B only.
- Each participant will have up to 3 attempts for each task. If the participant attempts the task, the performance should be recorded under column titled "Successfully perform task?" with options of "Yes", "No", or "Not Done".

Devices Assessment and Exposure

Cohort A: APDM opal devices will be worn during Visit 1 only on both wrists, both feet, lumbar, and waist. Device under study (ActiGraph) will be worn during visit 1 and also during the at-home monitoring portion between Day 1 and Day 15+3 days on the non-dominant wrist and waist.

Cohort B: APDM opal devices will be worn during Visit 1 only on both wrists, both feet, chest, and waist. Device under study (Panoramic Bracelet) will be worn during visit 1[wrist and lumbar] and also during the at-home monitoring portion between Day 1 and Day 15+3 days on the non-dominant wrist. GENEActiv device will be worn on the same non-dominant wrist from Day 7+2 until the end of study [Day 15+2] approximately for 7 days consecutively.

Any event with a device (issues with devices, loss of the devices, etc), the impact of this event and the action taken with device will be recorded anytime between Day 1 and Day 15+3 days in a device assessment CRF.

DATA ANALYSIS/STATISTICAL METHODS

Study Size

The proposed sample size for this study is approximately 39 participants in each cohort (approximately 13 in each age group). To the best of our knowledge, no relevant data has been published before to validate accelerometry-measured gait metrics against GAITRite® walkway or APDM in pediatric population. Using data from X9001198 study (healthy adult participants, ages 18-40 and 65-85 years), the Intraclass Correlation Coefficient (ICC) between gait speed obtained from the sensor data vs gait speed obtained from the reference comparator gait mat was 0.72 (when corrected for a systematic bias of 0.17 m/s). The ICC value for the null hypothesis is derived by using the median value of the lower bound of ICC for all gait metrics (8 spatial and temporal metrics). ICC_{null} was 0.27, range = [0, 0.66]. In order to reach ICC value of 0.72 with ICC_{null} value of 0.27 using a one-tailed test with alpha = 0.05 and power = 0.8 it is estimated that at least 17 participants will be needed. Therefore, approximately 20 adult participants (anticipating 15% attrition) are required for the validation analyses. Here, we double the amount to roughly 40 participants to account for potential higher variance in the healthy pediatric participants (ages 3 – 17). Since we have 3 age groups, each group will equally have 13 participants, which results in a total of 39 participants.

The proposed sample size is appropriate for assessing the association of other metrics, such as sleep, across devices in Cohort B. Using data from previous study (NCT03898427, healthy participants 18 years and older), data from 21 participants wearing ActiGraph and GENEActiv on their wrists simultaneously. The ICC value of total sleep time obtained from ActiGraph and GENEActiv devices averaged across both arms at Visit 1 was 0.88. The ICC value for null hypothesis was computed by randomly breaking the participant pairings 1000 times and computing the 95th percentile of the ICC values of these randomly assigned pairs (ICC_{null} was 0.36). In order to reach ICC value of 0.88 with ICC_{null} value of 0.36 using a one-tailed test with alpha = 0.05 and power = 0.8 it is estimated that at least 8 participants (10 participants to be recruited, anticipating 15% attrition, per age group, total 30 participants) will be needed. Therefore, we will have appropriate power (more than 95%) to be able to assess metrics per age group such as total sleep time between devices in Cohort B. In Cohort B, considering higher variability in pediatric population and to be able to provide consistent gait comparison analysis across cohorts, we will recruit the same number of participants as in Cohort A.

It is anticipated that the proposed sample size will achieve the following goals: (1) assess the agreement of gait metrics from ActiGraph and Panoramic Bracelet against reference comparators; (2) provide data on usability, wearability and comfort of ActiGraph and Panoramic Bracelet for future clinical trials, and (3) assess the agreement of other metrics such as related to sleep and scratch from Panoramic Bracelet against comparators. The data obtained in this study will enable power calculations for future pediatric studies.

Data Management

Gait metrics (eg, gait speed, stride length, etc.) will be extracted from GAITRite® walkway, APDM, and the devices under study (using GaitPy algorithm). Physical activity metrics will be extracted from the device under study (using devices provided software), for Cohort B GENEActiv data will be included.

In addition, participant's medical history, medication history and demographics, height, and weight will be collected as potential confounding variables.

Study data are collected, processed and available for timely clinical and scientific review, periodic regulatory reporting, and other ad hoc analysis. The study data are protected from unauthorized access and change.

Sensitive Personal Information is preserved in the investigator site file for scientific, safety, and/or regulatory reasons, to re-identify certain health data.

Case Report Forms/Data Collection Tools (DCT)/Electronic Data Record

As used in this protocol, the term CRF/DCT should be understood to refer to either a paper form or an electronic data record or both, depending on the data collection method used in this study.

In collaboration with the relevant study staff members, available/applicable standard data modules are selected for the CRF/DCTs. If the appropriate data module is not available, at the discretion of study data manager and principal investigator, a local standard can be created instead.

A CRF/DCT is required and should be completed for each included participant. The completed original CRFs/DCTs are the sole property of Pfizer and should not be made available in any form to third parties, except for authorized representatives of Pfizer or appropriate regulatory authorities, without written permission from Pfizer. The investigator shall ensure that the CRFs/DCTs are securely stored at the study site in encrypted electronic and/or paper form and will be password protected or secured in a locked room to prevent access by unauthorized third parties.

The Investigator has ultimate responsibility for the collection and reporting of all clinical, safety, and laboratory data entered on the CRFs/DCTs and any other data collection forms (source documents) and ensuring that they are accurate, authentic/original, attributable, complete, consistent, legible, timely (contemporaneous), enduring, and available when required. The CRFs/DCTs must be signed by the investigator or by an authorized staff member to attest that the data contained on the CRFs/DCTs are true. Any corrections to entries made in the CRFs/DCTs or source documents must be dated, initialed, and explained (if necessary) and should not obscure the original entry.

In some cases, the source documents are the hospital or the physician's chart. In these cases, data collected on the CRFs/DCTs must match those charts.

In most cases, the CRF/DCT may also serve as the source document. In these cases, a document should be available at the investigator site and at Pfizer that clearly identifies those data that will be recorded on the CRF/DCT, and for which the CRF/DCT will stand as the source document.

Record Retention

To enable evaluations and/or inspections/audits from regulatory authorities or Pfizer, the investigator agrees to keep records, including the identity of all participants (sufficient information to link records, eg, CRFs/DCTs and hospital records), all original signed informed consent/assent documents, copies of all CRFs/DCTs, safety reporting forms, source documents, detailed records of treatment disposition, and adequate documentation of relevant correspondence (eg, letters, meeting minutes, and telephone call reports). The records should be retained by the investigator according to the International Council for Harmonisation (ICH) guidelines or according to local regulations, whichever is longer. The investigator must ensure that the records continue to be stored securely for so long as they are retained.

If the investigator becomes unable for any reason to continue to retain study records for the required period (eg, retirement, relocation), the study records must be transferred to another investigator.

Investigator records must be kept for a minimum of 2 years after completion or discontinuation of the study or for longer if required by applicable local regulations.

The investigator must obtain Pfizers written permission before disposing of any records, even if retention requirements have been met.

Data Analysis

Detailed methodology for summary and statistical analyses of data collected in this study will be documented in a Statistical Analysis Plan (SAP), which will be dated, filed and maintained by the sponsor. The SAP may modify the plans outlined in the protocol; any major modifications of primary endpoint definitions or their analyses would be reflected in a protocol amendment.

Statistical Analysis

Below are examples of analyses that will be performed to address the study objectives:

COHORT A:

Primary Objectives

1. To compare gait quality metrics collected using ActiGraph devices, APDM devices and GAITRite® walkway, during in-lab sessions.

Raw accelerometry data collected by ActiGraph devices will be processed by the GaitPy[24] algorithm to generate gait quality metrics (eg, gait speed, stride length etc.). GaitPy is an open-source Python package that implements several published algorithms in a modular framework for extracting features of gait from a single accelerometer device mounted on the lumbar. The package has been developed to make it easy for researchers to derive measures of gait from raw accelerometer data. GaitPy includes 2 key algorithms for processing raw accelerometer data to derive gait features. The first algorithm is used for detecting bouts of gait from continuous accelerometer data collected under free-living conditions and the second algorithm derives temporal and spatial features of gait from pre-identified bouts of gait. This second GaitPy algorithm will be used to process data and extract gait features collected during in-lab sessions.

During the in-lab walking tasks, gait metrics extracted from GaitPy will be compared to those that are extracted from GAITRite® walkway and APDM. During the natural walk between activities stations, gait metrics from GaitPy will be compared to APDM. Accuracy of the sensor-derived metrics will be determined by computing the mean absolute percent error between the sensor-derived and reference standard metrics and assess the bias using Bland-Altman plots and 95% limits of agreement. The agreement between sensor-derived and reference standard metrics will be assessed using ICC and its 95% lower and upper confidence limits.

Secondary Objectives

1. To assess the feasibility of recruiting pediatric participants to conduct a wearable device study.

   Total number of participants contacted will be collected. Recruitment data for number of participants screened and enrolled will be summarized (frequency and percentage) overall and by age group. Time to enroll approximately 13 participants per group will be recorded. Number of participants recruited per month will be summarized overall and by age group.

2. To assess the ability of pediatric participants to perform a battery of lab-based tasks.

   Number of participants able to perform each of the 7 tasks will be recorded and summarized overall and by age group. Task-completion percentage (among total of 7 tasks) per participant will be calculated and summarized overall and by age groups.

3. To assess the compliance in wearing the ActiGraph devices at home.

   Number of hours per day wearing the device and number of days with more than 10 hours of wearing for each participant will be recorded. Summary statistics will be provided for both endpoints for all participants and by age groups.

4. To evaluate the participant's or caregiver's perception of wearability and comfort of ActiGraph and APDM devices during in-lab sessions.

   The wearability/comfort questionnaire for the in-lab session will be summarized by frequency and percentages. The study will further compare participant reported wearability and comfort from the exit questionnaire amongst locations (wrist and lumbar) using Wilcoxon signed rank test.

5. To evaluate the participant's or caregiver's perception of wearability and comfort of ActiGraph devices during the at-home monitoring period.

   The wearability/comfort questionnaire during the at home period (Day 15+3 days) will be summarized by frequency and percentages. This study will compare responses from each of questionnaire amongst locations (wrist and lumbar) using Wilcoxon signed rank test.

6. To evaluate the effect of floor surface (carpet vs tile) on gait metrics collected using ActiGraph and APDM devices.

   This study will quantify differences between sensor-derived gait quality metrics (from ActiGraph and APDM) collected on different floor surfaces using paired tests (t-test or Wilcoxon signed ranks test depending on normality of the data).

Tertiary/Exploratory objectives

1. To investigate the feasibility of using a daily activity diary to provide context in pediatric physical activity data collected by ActiGraph devices at home in pediatric participants.Mixed effects model with repeated measurement, ie, MMRM will be utilized to examine the association between ActiGraph measured activity metrics and participants' responses from the daily activity diaries across the whole at-home monitoring period.

2. To compare gait speed collected using the SIMI system and GAITRite® walkway, during in-lab sessions.

Accuracy of the measurements of gait speed will be determined by computing the mean absolute percent error between SIMI system and GAITRite® walkway and assess the bias using Bland-Altman plots and 95% limits of agreement. The agreement between SIMI system and GAITRite® walkway will be assed using ICC and its lower and upper limits.

COHORT B:

Primary Objectives

1. Evaluate the Panoramic Bracelet device and associated algorithms in the quantification of physical activity (eg sleep), scratch, and wear time, as compared to another accelerometry device (GENEActiv) during the at-home period.

- Raw accelerometry data collected by Panoramic Bracelet and GENEActiv will be processed by the SleepPy[25] followed by ScratchPy[26] algorithms to generate endpoints related to sleep and nocturnal scratching (eg, total sleep time, total scratch duration, etc) SleepPy is a combination of three previously published heuristic algorithms[27,28,29], augmented for their integrated use, for detecting a subject's total sleep opportunity (TSO) window and computing sleep metrics within that window. ScratchPy is a machine learning based algorithm that relies on SleepPy for context detection, extracts periods of movement from the TSO window, and then classifies those periods as either restless behaviors during sleep or scratch. The resulting predictions are then aggregated into endpoints summarizing the subject's scratch behaviors.

During the at home period (~ days 8-15), common endpoints related to wear time, sleep, and scratching will be compared between Panoramic Bracelet and GENEActiv (reference). Accuracy of the sensor-derived metrics will be determined by computing the mean absolute percent error between the comparator and reference metrics and assess the bias using Bland-Altman plots and 95% limits of agreement. The agreement between metrics will be assessed using ICC and its 95% lower and upper confidence limits.

2. To evaluate the participant's or caregiver's perception of wearability and comfort of Panoramic Bracelet device during the at home monitoring period

The wearability/comfort questionnaire during the at home period (Day 7+2) will be summarized by frequency and percentages.

Secondary Objectives

To assess the compliance in wearing the Panoramic Bracelet device at home.

Wear time of the Panoramic Bracelet device during the at home period (~ Days 1-7) will be summarized.

To compare gait quality metrics collected using Panoramic Bracelet devices, APDM devices and GAITRite® walkway, during in-lab sessions.

Raw accelerometry data collected by Panoramic Bracelet devices will be processed by the GaitPy algorithm to generate gait quality metrics (eg, gait speed, stride length etc). GaitPy[24] is an open-source Python package that implements several published algorithms in a modular framework for extracting features of gait from a single accelerometer device mounted on the lumbar. The package has been developed to make it easy for researchers to derive measures of gait from raw accelerometer data. GaitPy includes 2 key algorithms for processing raw accelerometer data to derive gait features. The first algorithm is used for detecting bouts of gait from continuous accelerometer data collected under free-living conditions and the second algorithm derives temporal and spatial features of gait from pre-identified bouts of gait. This second GaitPy algorithm will be used to process data and extract gait features collected during in-lab sessions.

During the in-lab walking tasks, gait metrics extracted from GaitPy will be compared to those that are extracted from GAITRite® walkway and APDM. During the natural walk between activities stations, gait metrics from GaitPy will be compared to APDM. Accuracy of the sensor-derived metrics will be determined by computing the mean absolute percent error between the sensor-derived and reference standard metrics and assess the bias using Bland-Altman plots and 95% limits of agreement. The agreement between sensor-derived and reference standard metrics will be assed using ICC and its 95% lower and upper confidence limits.

Tertiary/Exploratory Objectives:

1. To evaluate the participant's or caregiver's perception of wearability and comfort of Panoramic Bracelet device in-lab sessions.

The wearability/comfort questionnaire for the in-lab session will be summarized by frequency and percentages.

2. To evaluate the effect of floor surface (carpet vs tile) on gait metrics collected using Panoramic Bracelet and APDM devices.

We will quantify differences between sensor-derived gait quality metrics (from Panoramic Bracelet and APDM) collected on different floor surfaces using paired tests (t-test or Wilcoxon signed ranks test depending on normality of the data).

QUALITY CONTROL AND QUALITY ASSURANCE

Pfizer or its agent will conduct periodic monitoring visits during study conduct to ensure that the protocol, Good Clinical Practices (GCPs), and/or Good Pharmacoepidemiology Practices (GPPs), as relevant, are being followed. The monitors may review source documents to confirm that the data recorded on CRFs/DCTs are accurate. The investigator and institution will allow Pfizer monitors/auditors or its agents and appropriate regulatory authorities direct access to source documents to perform this verification. This verification may also occur after study completion.

During study conduct and/or after study completion, the investigator site may be subject to review by the Institutional Review Board/Ethics Committee (IRB/EC), and/or to quality assurance audits performed by Pfizer, or companies working with or on behalf of Pfizer, and/or to inspection by appropriate regulatory authorities.

The investigator(s) will notify Pfizer or its agents immediately of any regulatory inspection notification in relation to the study. Furthermore, the investigator will cooperate with Pfizer or its agents to prepare the investigator site for the inspection and will allow Pfizer or its agent, whenever feasible, to be present during the inspection. The investigator site and investigator will promptly resolve any discrepancies that are identified between the study data and the participant's medical records. The investigator will promptly provide copies of the inspection findings to Pfizer or its agent. Before response submission to the regulatory authorities, the investigator will provide Pfizer or its agents with an opportunity to review and comment on responses to any such findings.

It is important that the investigator(s) and their relevant personnel are available during the monitoring visits and possible audits, or inspections and that sufficient time is devoted to the process.

LIMITATIONS OF THE RESEARCH METHODS

There are several limitations to this protocol. The first one is a selection bias given the study will take place at a single site in Cambridge, MA. The compensation for the participants can also be a recruitment bias. The period of the study (holidays or school year) can impact the recruitment as well. During the at-home monitoring period, we need to consider the poor compliance of wearing the devices and the improper use of the sensors. Participants will not receive feedback from the sensors regarding gait and physical activity. The absence of feedback can influence the activity of the participants. The lack of blinding of participants and investigators may lead to observer bias.

PROTECTION OF HUMAN SUBJECTS

Patient Information and Consent

All parties will comply with all applicable laws, including laws regarding the implementation of organizational and technical measures to ensure protection of patient personal data. Such measures will include omitting patient names or other directly identifiable data on any sponsor forms, reports, publications, or in any other disclosures, except where required by applicable laws.

The personal data will be stored at the study site in encrypted electronic and/or paper form and will be password protected or secured in a locked room to ensure that only authorized study staff have access. The study site will implement appropriate technical and organizational measures to ensure that the personal data can be recovered in the event of disaster. In the event of a potential personal data breach, the study site shall be responsible for determining whether a personal data breach has in fact occurred and, if so, providing breach notifications as required by law.

To protect the rights and freedoms of natural persons with regard to the processing of personal data, when study data are compiled for transfer to Pfizer and other authorized parties, participant names will be removed and will be replaced by a single, specific numerical code, based on a numbering system defined by Pfizer. All other identifiable data transferred to Pfizer or other authorized parties will be identified by this single, participant-specific code. The investigator site will maintain a confidential list of participants who participated in the study, linking each participant's numerical code to his or her actual identity. In case of data transfer, Pfizer will maintain high standards of confidentiality and protection of participant's personal data consistent with applicable privacy laws.

The informed consent/assent documents and any participant recruitment materials must be in compliance with ICH GCP, local regulatory requirements, and legal requirements, including applicable privacy laws.

The informed consent/assent documents used during the informed consent process and any participant recruitment materials must be reviewed and approved by Pfizer, approved by the IRB/EC before use, and available for inspection.

The investigator must ensure that each study participant, or his or her legally acceptable representative, or parent(s) or legal guardian if a minor, is fully informed about the nature and objectives of the study, the sharing of data relating to the study and possible risks associated with participation, including the risks associated with the processing of the participant's personal data. The investigator further must ensure that each study participant, or his or her legally acceptable representative, or parent(s) or legal guardian if a minor, is fully informed about his or her right to access and correct his or her personal data and to withdraw consent for the processing of his or her personal data.

Whenever consent is obtained from a participant's legally acceptable representative/parent(s) or legal guardian the participant's assent (affirmative agreement) must subsequently be

obtained when the participant has the capacity to provide assent, as determined by the IRB/EC. If the investigator determines that a participant's decisional capacity is so limited that he or she cannot reasonably be consulted, then, as permitted by the IRB/EC and consistent with local regulatory and legal requirements, the participant's assent may be waived with source documentation of the reason assent was not obtained. If the study participant does not provide his or her own consent, the source documents must record why the participant did not provide consent (eg, minor), how the investigator determined that the person signing the consent was the participant's legally acceptable representative, the consent signer's relationship to the study participant (eg, parent, spouse), and that the participant's assent was obtained or waived. If assent is obtained verbally, it must be documented in the source documents.

The identity of the participant's legally acceptable representative (LAR) and the participant-LAR relationship should be documented in some manner, for example, a parent's identification card and insurance card listing the child. Birth records or legal documents are not necessarily required unless it is the investigator's normal practice, or an investigator feels a parent-child relationship is questionable. Older siblings and other relatives cannot provide consent, even though they may be a child's primary caregiver, unless they have been appointed the child's LAR.

If the enrollment of emancipated minors is permitted by the study age criteria, the IRB/EC, and local law, they must provide documentation of legal status to give consent without the permission of a parent or legal guardian.

The investigator, or a person designated by the investigator, will obtain written informed consent from each participant (or the participant's legally acceptable representative, parent(s), or legal guardian and the participant's assent, when applicable,) before any study-specific activity is performed (unless a waiver of informed consent has been granted by an IRB/EC). The investigator will retain the original of each participant's signed consent/assent document.

The investigator, or a person designated by the investigator, will obtain oral or written assent from each participant (oral assent for participant 3 to 5 years old, written assent for participants 6 to 17 years old) indicating that the participant understands the nature of all pertinent aspects of the study, and is willing to participate in the study activities.

Age- and maturity- appropriate study information must be given to all the participants.

Participant Withdrawal

Participants may withdraw from the study at any time at their own request, or they may be withdrawn at any time at the discretion of the investigator or sponsor for safety, behavioral, or administrative reasons. In any circumstance, every effort should be made to document participant outcome, if applicable. The investigator should inquire about the reason for withdrawal and follow-up with the participant regarding any unresolved adverse events.

If the participant withdraws from the study, and also withdraws consent for disclosure of future information, no further evaluations should be performed, and no additional data should be collected. The sponsor may retain and continue to use any data collected before such withdrawal of consent.

Institutional Review Board (IRB)/Independent Ethics Committee (IEC)

It is the responsibility of the investigator to have prospective approval of the study protocol, protocol amendments, informed consent(/assent) documents, and other relevant documents, eg, recruitment advertisements, if applicable, from the IRB/IEC. All correspondence with the IRB/IEC should be retained in the investigator file. Copies of IRB/IEC approvals should be forwarded to Pfizer.

The only circumstance in which an amendment may be initiated prior to IRB/IEC approval is where the change is necessary to eliminate apparent immediate hazards to the participants. In that event, the investigator must notify the IRB/IEC and Pfizer in writing immediately after the implementation.

Ethical Conduct of the Study

The study will be conducted in accordance with the protocol, legal and regulatory requirements, and the general principles set forth in the International Ethical Guidelines for Biomedical Research Involving Human Subjects (Council for International Organizations of Medical Sciences 2002), ICH Guideline for Good Clinical Practice, and the Declaration of Helsinki.

MANAGEMENT AND REPORTING OF ADVERSE EVENTS/ADVERSE REACTIONS

Single Reference Safety Document

There is no Pfizer product in this study and thus no single reference safety document.

For ActiGraph devices, the CentrePoint Insight Watch manual v1.0.1 will serve as a safety document during the course of the study.

For APDM devices and GAITRite® walkway, the Mobility Lab by APDM user guide version 2 and the GAITRite® manual v487 will serve as a safety document during the course of the study.

For Panoramic Bracelet device, the study start quick user guide v1.1 will serve as a safety document during the course of the study.

For GENEActiv device, the Activinsights GENEActiv instructions for use, will serve as a safety document during the course of the study.

Requirements

This study includes qualifying monitoring procedures required per protocol to collect clinical data needed to meet the study objectives, which are not standard-of-care but that do not pose more than a minimal risk or burden to the study participant. The qualifying procedures in this study are: Gait and activity measures from devices under study, APDM devices and GAITRite® walkway and, gait speed and video from camera-based SIMI system.

Qualifying Diagnostic or Monitoring Procedure(s)	**Recording Time Period**
Gait measures from GAITRite® walkway	*Until 12 hours after the end of the in-lab study visit*
Gait and activity measures from APDM devices	*Until 12 hours after the end of the in-lab study visit*
Video recording and gait speed from SIMI system	*Until 12 hours after the end of the in-lab study visit*
ActiGraph, Panoramic Bracelet and GENEActiv devices	*Until the end of the study [End of study call on day 15+3]*

Adverse Events (AE)

An AE is defined as any untoward medical occurrence and can therefore be any unfavorable and unintended sign (including an abnormal laboratory finding), symptom, or disease, whether or not related to the participant's participation in the study.

Any AE that occurs from the time the participant consents to the clinical research through and including 12 hours after completion of the qualifying procedure must be recorded. The investigator is required to assess whether the AE may be related to the participant's participation in the study. All AEs (ie, serious and non-serious, including those attributed to qualifying procedure identified as research-related injury) are collected in the clinical study database.

The investigator must pursue and obtain information adequate to determine the outcome of the AE and to assess whether it meets the criteria for classification as a research-related injury requiring immediate notification to Pfizer as described below.

Research-Related Injury

Should a participant, in the investigator's opinion, suffer a medically important research-related injury caused by their participation in the study, the designated Pfizer clinician or medical monitor must be notified immediately.

A medically important research-related injury is any untoward medical occurrence that:

- Results in death;

- Is life threatening (immediate risk of death);
- Requires inpatient hospitalization or prolongation of existing hospitalization;
- Results in persistent or significant disability/incapacity (substantial disruption of the ability to conduct normal life functions)*;*
- Results in congenital anomaly/birth defect.

Medical and scientific judgment is exercised in determining whether an injury is an important medical event. An important medical event may not be immediately life threatening and/or result in death or hospitalization. However, if it is determined that the event may jeopardize the participant or may require intervention to prevent one of the other outcomes listed in the definition above, the important medical event should be reported as a research-related injury.

An investigator may be requested by the designated Pfizer clinician or medical monitor to obtain specific additional follow up information in an expedited fashion. In general, this will include a description of the injury in sufficient detail to allow for a complete medical assessment of the case and independent determination of possible causality. Information on other possible causes of the event, such as concomitant treatments, vaccines, and/or illnesses must be provided. In the case of a participant death, a summary of available autopsy findings must be submitted as soon as possible to Pfizer or its designated representative.

PLANS FOR DISSEMINATING AND COMMUNICATING STUDY RESULTS

Reporting of Safety Issues and Serious Breaches of the Protocol or ICH GCP

In the event of any prohibition or restriction imposed (ie, clinical hold) by an applicable regulatory authority in any area of the world, or if the investigator is aware of any new information that might influence the evaluation of the benefits and risks of the investigational product, Pfizer should be informed immediately.

In addition, the investigator will inform Pfizer immediately of any urgent safety measures taken by the investigator to protect the study participants against any immediate hazard, and of any serious breaches of this protocol or of ICH GCP that the investigator becomes aware of.

Publications by Investigators

The investigator will provide any publication to Pfizer at least 30 days before it is submitted for publication or otherwise disclosed. If any patent action is required to protect intellectual property rights, the investigator agrees to delay the disclosure for a period not to exceed an additional 60 days.

The investigator will, on request, remove any previously undisclosed confidential information before disclosure, except for any study- or Pfizer product-related information necessary to the appropriate scientific presentation or understanding of the study results.

For all publications relating to the study, the institution will comply with recognized ethical standards concerning publications and authorship, including Section II "Ethical Considerations in the Conduct and Reporting of Research" of the Uniform Requirements for Manuscripts Submitted to Biomedical Journals, http://www.icmje.org/index.html#authorship, established by the International Committee of Medical Journal Editors.

REFERENCES

1. Moseley CF. Leg length discrepancy. In: Morrissy RT, Weinstein SL, eds. *Lovell and Winter's Pediatric Orthopedics*. Philadelphia, PA: Lippincott Williams & Wilkins; 2006;1213–1256.

2. Kohl HW, Craig CL, Lambert EV, et al: Lancet Physical Activity Series Working Group The pandemic of physical inactivity: global action for public health. Lancet. 380:294-305, 2012.

3. Reilly JJ, Kelly L, Montgomery C, et al: Physical activity to prevent obesity in young children: cluster randomised controlled trial. BMJ. 333:1041, 2006.

4. Nyberg G, Sundblom E, Norman Å et al: Effectiveness of a universal parental support programme to promote healthy dietary habits and physical activity and to prevent overweight and obesity in 6-year-old children: the Healthy School Start Study, a cluster-randomised controlled trial. PLoS One. 10(2), 2015.

5. Janssen I, Leblanc AG: Systematic review of the health benefits of physical activity and fitness in school-aged children and youth. Int J Behav Nutr Phys Act. 7:40, 2010.

6. Voss C, Harris KC: Physical activity evaluation in children with congenital heart disease. Heart. 103(18):1408-1412, 2017.

7. Bidzan-Bluma I, Lipowska M: Physical Activity and Cognitive Functioning of Children: A Systematic Review. Int J Environ Res Public Health. 15(4), 2018.

8. Álvarez-Bueno C, Pesce C, Cavero-Redondo I, et al: The Effect of Physical Activity Interventions on Children's Cognition and Metacognition: A Systematic Review and Meta-Analysis. J Am Acad Child Adolesc Psychiatry. 56(9):729-738, 2017.

9. Korczak DJ, Madigan S, Colasanto M: Children's Physical Activity and Depression: A Meta-analysis. Pediatrics. 139(4), 2017.

10. Marker AM., Steele RG., Noser AE: Physical activity and health-related quality of life in children and adolescents: A systematic review and meta-analysis. Health Psychol. 37(10):893-903, 2018.

11. Piercy KL, Troiano RP, Ballard RM et al: The Physical Activity Guidelines for Americans. JAMA. 320(19):2020-2028, 2018.

12. Costa S, Barber SE, Cameron N, et al: Calibration and validation of the ActiGraph GT3X+ in 2-3 year olds. J Sci Med Sport. 17(6):617-22, 2014.

13. Child Heart and Health Study in England (CHASE). Access date: April 01, 2020 http://www.chasestudy.ac.uk/.

14. Owen CG, Nightingale CM, Rudnicka AR, et al: Travel to school and physical activity levels in 9-10 year-old UK children of different ethnic origin; Child Heart and Health Study in England (CHASE). PLoS One. 7:e30932, 2012.

15. Corder K, van Sluijs EM, Wright A, et al: Is it possible to assess free-living physical activity and energy expenditure in young people by self-report? Am.J.Clin.Nutr. 89:862-70, 2009.

16. Charlotte A. Pratt, Josephine Boyington, Layla Esposito et al: Childhood Obesity Prevention and Treatment Research (COPTR): Interventions Addressing Multiple Influences in Childhood and Adolescent Obesity. Contemp Clin Trials. 36(2): 406–413, 2013.

17. Identification and Prevention of Dietary- and Lifestyle-induced Health Effects in Infants and Children Study (IDEFICS) Access date: April 01, 2020 http://www.ideficsstudy.eu/home.html.

18. Buck C, Eiben G, Lauria F et al: Urban Moveability and physical activity in children: longitudinal results from the IDEFICS and I.Family cohort. Int J Behav Nutr Phys Act. 16(1):128, 2019.

19. Vaughn J, Gollarahalli S, Shaw RJ, et al: Mobile Health Technology for Pediatric Symptom Monitoring: A Feasibility Study. Nurs Res. 2020.

20. Vaughn J, Summers-Goeckerman E, Shaw RJ et al: A Protocol to Assess Feasibility, Acceptability, and Usability of Mobile Technology for Symptom Management in Pediatric Transplant Patients. Nurs Res. 68(4):317-323, 2019.

21. Mackintosh KA, Chappel SE, Salmon J et al: Parental Perspectives of a Wearable Activity Tracker for Children Younger Than 13 Years: Acceptability and Usability Study. JMIR Mhealth Uhealth. 7(11), 2019.

22. Hedge N, Zhang T, Uswatte G et al: The Pediatric SmartShoe: Wearable Sensor System for Ambulatory Monitoring of Physical Activity and Gait. IEEE Trans Neural Syst Rehabil Eng. 26(2):477-486, 2018.

23. Möhring W, Klupp S, Grob A: Effects of dual tasking and methylphenidate on gait in children with attention deficit hyperactivity disorder. Hum Mov Sci. 62:48-57, 2018.

24. Czech M, Patel S: GaitPy: An Open-Source Python Package for Gait Analysis Using an Accelerometer on the Lower Back. Journal of Open Source Software. 4(43)1778, 2019.

25. Christakis et al., (2019). SleepPy: A python package for sleep analysis from accelerometer data. Journal of Open Source Software, 4(44), 1663.

26. Mahadevan, N., Christakis, Y., Di, J., Bruno, J., Zhang, Y., Dorsey, E.R., Pigeon, W.R., Beck, L.A., Thomas, K., Liu, Y. and Wicker, M., 2021. Development of digital measures for nighttime scratch and sleep using wrist-worn wearable devices. NPJ Digital Medicine, 4(1), p.42.

27. van Hees, V.T., Sabia, S., Jones, S.E., Wood, A.R., Anderson, K.N., Kivimäki, M., Frayling, T.M., Pack, A.I., Bucan, M., Trenell, M.I. and Mazzotti, D.R., 2018. Estimating sleep parameters using an accelerometer without sleep diary. Scientific reports, 8(1), p.12975.

28. Cole, Roger J., Daniel F. Kripke, William Gruen, Daniel J. Mullaney, and J. Christian Gillin. "Automatic sleep/wake identification from wrist activity." Sleep 15, no. 5 (1992): 461-469.

29. Bai, Jiawei, Chongzhi Di, Luo Xiao, Kelly R. Evenson, Andrea Z. LaCroix, Ciprian M. Crainiceanu, and David M. Buchner. "An activity index for raw accelerometry data and its comparison with other activity metrics." PloS one 11, no. 8 (2016): e0160644.

LIST OF TABLES

LIST OF FIGURES

ANNEX 1. LIST OF STAND ALONE DOCUMENTS

None.

ANNEX 2. LIST OF GAIT METRICS ENDPOINTS

APDM

- Cadence (steps/min)
- Double support (sec)
- Gait cycle duration (sec)
- Gait speed (meters/sec)
- Initial double support (sec)
- Single limb support (sec)
- Stance time (sec)
- Step duration (sec)
- Stride length (meters)
- Swing time (sec)
- Terminal double support (sec)
- Steps

GAITRite®

- Single support time (sec)
- Double support time (sec)
- Stance time (sec)
- Step length (meters)
- Step time (sec)
- Step velocity (gait speed) (meters/sec)
- Stride length (meters)
- Stride time (sec)
- Swing time (sec)
- Steps (steps)
- Cadence (steps/min)

GaitPy

- Steps (steps)
- Stride duration (sec)
- Step duration (sec)
- Cadence (meters/min)
- Initial double support (sec)
- Terminal double support (sec)
- Double support (sec)
- Single limb support (sec)
- Stance time (sec)
- Swing time (sec)
- Step length (meters)

- Stride length (meters)
- Gait speed (meters/sec)

SIMI system

- Gait speed (meters/sec)

ANNEX 3. LIST OF PHYSICAL ACTIVITY METRICS ENDPOINTS

ActiGraph

- Sedentary time (min)
- Sedentary percentage (%)
- Light time (min)
- Light percentage (%)
- Life-style time (min)
- Life-style percentage (%)
- Moderate-to-Vigorous Physical Activity (MVPA) time (min)
- MVPA percentage (%)
- Total daily activity counts (on each axis, and vector magnitude of 3 axes)
- Total daily calories (calories)

Pfizer Wear Algorithm (GENEActiv, Panoramic Bracelet)

- Number of available hours (h)
- Number of hours of wear (h)
- Number of wear hours while awake (h)

Pfizer Sleep Algorithm (SleepPy - GENEActiv, Panoramic Bracelet)

- Time in Bed (min)
- Percent time asleep (%)
- Number of wake bouts (no.)

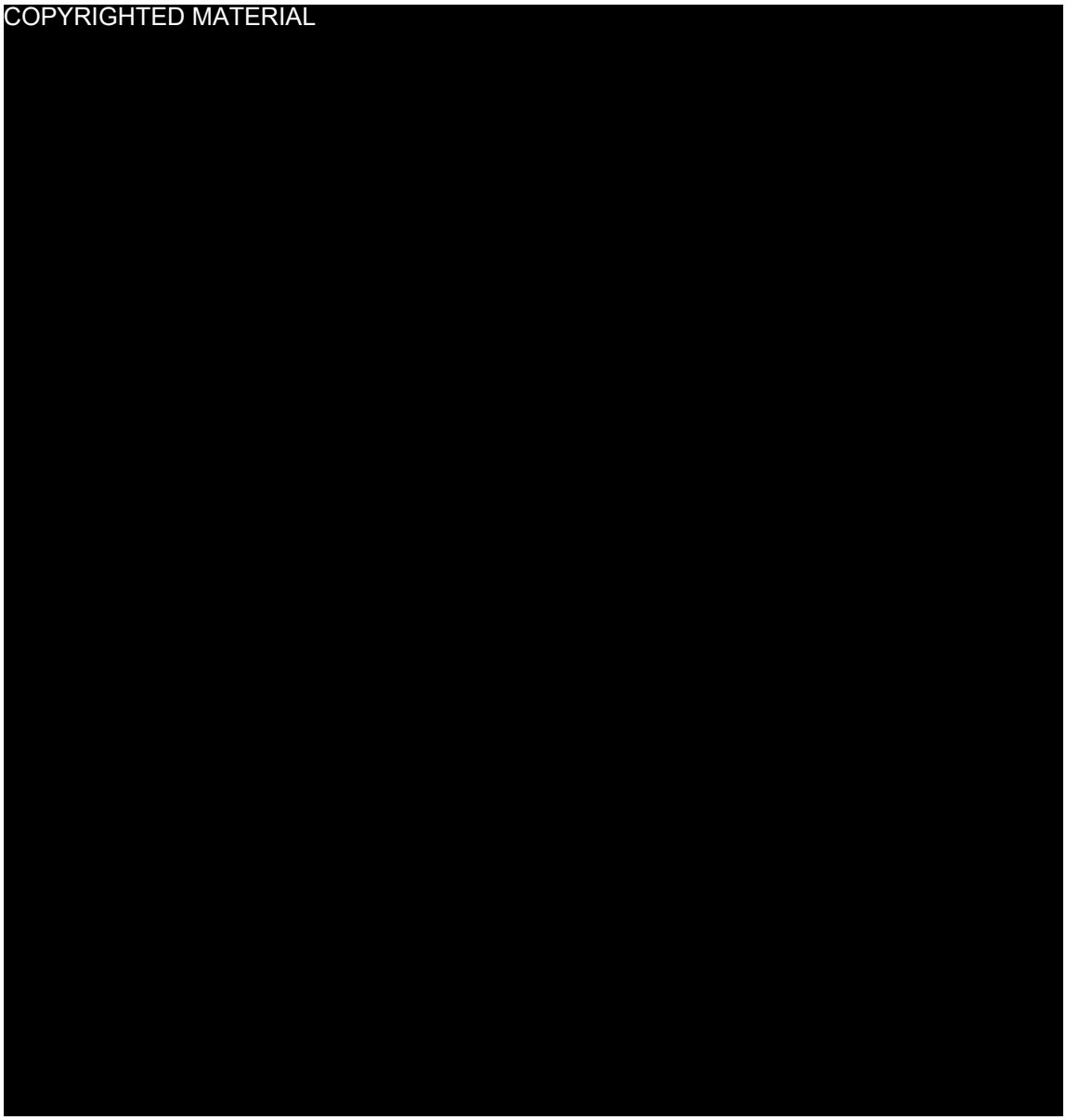
- Sleep onset latency (min)
- Wake after sleep onset (min)

Pfizer Scratch Algorithm (ScratchPy - GENEActiv, Panoramic Bracelet)

- Total scratch duration (min.)
- Total scratch episodes (no.)

ANNEX 4. EDINBURGH HANDEDNESS INVENTORY – SHORT FORM

Edinburgh Handedness Inventory - Short Form



ANNEX 5. WEARABILITY/COMFORT QUESTIONNAIRE

Instructions: *If the child is 3 years old to 11 years old, the parent or caregiver (legal representative) should answer the questions. If the child is 12 years old or older, the child can answer the questions.*

Below the word device refers to [insert name of device].

Please select the option below to show how much you agree or disagree with each of the sentences. Each list of questions is specific to one device and its location, eg, a device on your left wrist. The device you are being asked about is listed above.

Select only ONE response.

	Strongly Disagree	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**
The device is comfortable to wear					
The device is easy to put on					
The device is easy to take off					
The device is easy to wear					
The device changes the way I move					
The device changes the way I behave					
I am willing to wear the device for 4 to 7 days					
I am willing to wear the device for more than 7 days					
If the device could follow my progress during a treatment, I would wear it					
If the device could follow my progress during a treatment, I would want my doctor to have access to my results					

ANNEX 6. ACTIVITY DIARY

Instructions: *Please answer these questions every day. If the child is 3 years old to 11 years old, the parent or legally acceptable representative should answer the questions. If the child is 12 years old or older, the child can answer the questions.*

1) Were you sick today, or did anything prevent you from doing your normal physical activities (weather, other)?

☐ Yes ☐ No

2) Today, did you do sports or physical activities in which you were very active (playing hard, running, jumping, throwing)?

☐ Yes ☐ No
If Yes, what was the total time spent? ☐ <30 min ☐ 30 min - 1h ☐ > 1h

ANNEX 7. COGNITIVE DEBRIEF OF WEARABILITY/COMFORT QUESTIONNAIRE

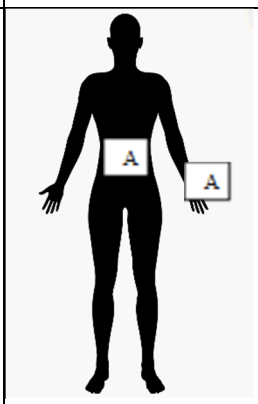
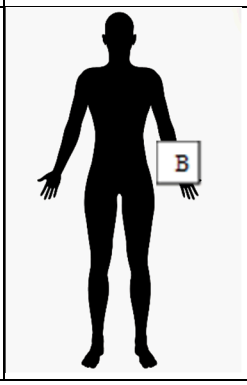
Instructions: *If the child is 3 years old to 11 years old, the parent or caregiver (legal representative) should answer the questions. If the child is 12 years old or older, the child can answer the questions.*

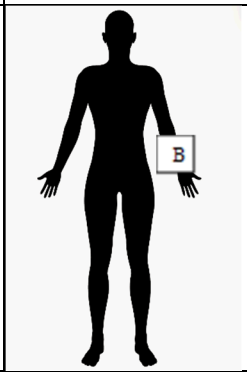
1. Approximately how long did it take you to complete the wearability questionnaire? (___minutes).
2. Did you find any of the questions confusing? Yes or No, if Yes, please explain:
3. Did you find any words confusing? Yes or No, if Yes, please list:
4. Do you have suggestions for rewording any questions to make it more clear to you what is being asked? Yes or No, if Yes, please explain:
5. Do you have any other feedback on the questionnaire for us? Yes or No, if Yes, please explain further:
6. Is there anything else that you think would be important to ask?

ANNEX 8. ACTIVITY AND SLEEP DIARY

How would you rate the quality of your sleep, last night?*	◯ Very Poor ◯ Poor ◯ Acceptable ◯ Good ◯ Very Good Reset
How was your level of physical activity yesterday?*	◯ Less active than usual ◯ Usual ◯ More active than usual Reset

APPENDIX 1: COHORT LISTING AT HOME MONITORING

COHORT NAME	DEVICE(S) [LOCATION OF DEVICE ON BODY]	DESCRIPTION OF DEVICE(S)	DEVICE(S) SENSORS CONFIGURATION ON BODY	HOME MONITORING	ENDPOINTS
A	Lumbar and non-dominant wrist	ActiGraph CentrePoint Insight Watch[0]		Yes ~14 days	At-home physical activity related endpoints (wrist) At-home gait and sit-to-stand related endpoints (lumbar)
B	Non-dominant wrist	Panoramic Wearable Bracelet		Yes ~14 days	At-home activity related endpoints

COHORT NAME	DEVICE(S) [LOCATION OF DEVICE ON BODY]	DESCRIPTION OF DEVICE(S)	DEVICE(S) SENSORS CONFIGURATION ON BODY	HOME MONITORING	ENDPOINTS
B	Non-dominant wrist	GENEActiv Watch		Yes ~ Day 7 to 14	At-home activity related endpoints

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