



# SLEEP - ACTIVITY - LIGHT MONITORING OPERATIONAL MANUAL

JANUARY 2021  
(FOR WEBSITE UPDATED 2023)



**Please read this manual carefully and refer to it throughout the study if any clarification is needed**

This Operational Manual was prepared by members of the Nordic Daylight Research team in collaboration with the NorthPop team and reflects the general consensus reached during several meetings, Umeå in 2019/2020 regarding the selection of measurements to be included in the NorthPop Sleep-Activity-Light Monitoring Package to be implemented by all sites taking part in the NorthPop cohort.

NORTHPOP is a large research collaboration at Umeå University and Region Västerbotten involving young families across various centres in Västerbotten county. It is therefore important that all participating sites follow a standardized study protocol.

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## Credits

This manual was created by the NorthPop Chronobiology group and reflect the general consensus reached during the members meetings, Umeå in 2019/2020 regarding inclusion of age group, selection of measurements and settings of the mode and duration of recordings.

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## Sources

<https://www.northpop.se/>

<http://www.katlab.org/>

<https://www.camntech.com/motionwatch-8/>

The MotionWatch and MotionWare User Guide. Doc Ref. 30147, Version: 1.2.47 (11/06/2020).  
Manufacturer: **CamNtech** Ltd. Manor Farm, Fenstanton, Cambridgeshire, PE28 9JD, UK

Wulff K and R. Siegmund. Time pattern analysis of activity-rest rhythms in families with infants using actigraphy. Chapter 3. In: *Awakening and sleep-wake cycle across development*. Ed. P. Salzarulo and G. Ficca. John Benjamins Publ. 2002.

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## Introduction

Sleep is a behavioural state with major influence on the maturation of the brain. The consolidation of sleep is a process that does not occur in isolation but it depends also on the development of a bodily internal timekeeping structure (biological rhythms, body clocks), daylight exposure patterns, physical activity, social attachment and food-fasting (1). Rates of establishment of regular sleep-wake behaviour depend on fetal brain development, gestational age born and environmental exposures. The distribution of sleep-wake timing and the average sleep requirement of a child are individual characteristics, similar to body length, which can vary greatly within a child and between children. Globally, night sleep problems have been reported to be associated with temperament, anxiety, dreaming and unhelpful habits during daytime, which can, if unrecognised and non-communicated, establish to the disadvantage of the developing child by persisting in form of sleep and psychological difficulties into adolescents and adulthood (2).

### Rational for the measurement of sleep, activity and light

The inclusion of measurements of sleep-wake patterns, light exposure and physical activity in the Northpop cohort is that the cohort, through its relatively extreme geographic location, can make a unique contribution to age-specific reference values in sleep profiles, physical activity and eye growth as a function of strong seasonal daylight changes (photoperiod). The measurement of sleep, activity and light allows:

- I. to build a profile of sleep patterns, night awakenings, total sleep duration, daytime napping, sleep efficiency and light exposure across different seasons
- II. to model light exposure influence on eye growth patterns, visual & non-visual functions and sleep-wake patterns
- III. to assess group and individual variability of daylight exposure, physical activity and eye sight
- IV. to assess physical activity parameters from actigraphy as potential predictors for metabolic health
- V. to compare sleep patterns, activity and vision across day length and seasonal light exposure
- VI. to compare time structures of children with different fetal growth patterns and neurodevelopment
- VII. to assess sleep profiles during childhood as potential predictors for risk factors or resilience factors for psychological health

### Choice of method

The following criteria were drawn up for the selection of a combined measure of sleep, physical activity and light exposure: Suitable for use on children at 36 months of age; objective measure; yield information about timing of sleep and activity, night-sleep duration, night awakenings, sleep efficiency, day-time napping and light exposure; yield information about physical activity during the day; easy to administer, without specialist training; internationally valid; rapid to administer (< 15 minutes); easy and comfortable for the participants to use. *Actigraphy* was selected as the measure of choice for the Northpop cohort as it was found to meet the criteria mentioned above. *Polysomnography* is more difficult to use for measuring sleep in children at home and it does not provide information on physical activity and light exposure during the day. *Subjective measures* were not chosen as primary measure as they were not found to be as reliable indicators of children sleep as actigraphy, and because physical activity and light exposure cannot be determined.

# Methodology

## Apparatus - The MotionWatch

The MotionWatch is an actigraph, a wrist watch-like device that monitors activity levels and light levels for continuous periods (3). It cannot only be worn on the wrist, but it is the most convenient position for longer-term recordings. The MotionWatch 8 (CamNtech Ltd., Cambridge, UK 2019) (see photo) integrates accelerometer-, light sensing-, time-stamp technology to simultaneously record physical activity, light levels and time-stamp event marking. Specialised software (MotionWare Software) analyses data on a full range of sleep, circadian timing, physical activity and, to a lesser extent, light parameters. The watch measures 36 x 28 x 9.4 mm and weighs 9.1 grams. It is waterproof and operates with one CR2032 lithium coin battery with battery life of about 3-4 months, depending on recording settings. **Recording time** for activity and light in **uni-axial mode 1** and equidistant samples in **30 second epochs** is **45 days**, which we use **throughout the NorthPop** cohort data collection. Data can be downloaded from the watch using a simple USB cable. The watch can be reset by the click of a button on the software interface before being issued to another participant.



### TECHNICAL SPECIFICATIONS OF THE MW8

Functional Specifications	
Size mm:	MW 8 36(l) x 28.2(w) x 9.4(d) excluding strap
	MW R 42.7(l) x 32.8(w) x 11.5(d) excluding strap
Weight:	MW 8 9.1 grams (including battery, excluding strap)
	MW R 19.5 grams (including battery, excluding strap)
Accelerometer:	Tri-axial, MEMs technology. 0.01g to 8g range, 3 – 11Hz
Battery:	CR2032 Lithium Coin Cell
Battery Life:	3 Months run time*; simple user change
Memory:	4Mbits non-volatile (91 days recording @ 1min epoch – activity and light, uncompressed)
Waterproof:	IPX7 - up to 1 hour at 1m (suitable for swimming)
Marker button:	MW 8: Yes – with visual feedback. MW R: No
Epoch:	1, 2, 5, 15, 30, 60 seconds
Comms:	Direct USB, Plug & Play drivers, Micro USB cable.
Download:	All data in 50 seconds approx.
Strap:	Bespoke XL 12mm silicone (245mm overall length) or 12mm nylon. <b>MotionWatch R</b> has various mounting options
Light Sensor Specifications (not fitted to MotionWatch R)	
Type:	Digital – human eye response optimized.
Range:	Automatic ranging; 0 to 64000lux
Resolution:	0.25lux (0-1000 lux range)
	1.00lux (1000-4000 lux range)
	4.00lux (4000-16000 lux range)
	16.0lux (16000 – 64000 lux range)
Sampling:	1 sample per second – averaged over epoch

\*Applies to MotionWatch Mode, Tri-Axial Mode is 60 days. Battery performance can be significantly reduced during low temperature operation.

	Operating	Storage
Temperature	+5°C to +40°C	-25°C to +70°C
Relative Humidity	0 to 93%	0 to 93%
Atmospheric Pressure	70kPa to 106kPa	70kPa to 106kPa

### CONNECTIVITY AND BATTERY



**OPEN: Rotate anti-clockwise** by about **15 degrees**



Gently lift out the the watch's face



MotionWatch 8 USB port with battery



MotionWatch 8 with connector



**CLOSE: Align the parts** correctly (Arrow signs)



Drop top part of the casing into the lower part and **turn clockwise** by about **15 degrees**.

## Experimental Protocol

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Duration of administration in lab.....	5 minutes
Duration of home recording.....	8 days
Recording start (clock time) .....	Midnight
Epoch (value/time) .....	30 seconds
Recording Mode .....	Mode 1 and Light
Body Position .....	Unspecified
Maximum Recording Length .....	45 days
Battery Life* (Mode 1) .....	40-100%

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\*Battery replacement from below 30% onwards.

### Recruitment

Before the inclusion in the study, parents or guardians of 3-year old children enrolled in the Northpop cohort will be notified of the study through the NorthPop recruitment route and asked for their child's participation. If parents/guardians agree to participant, they will be sent the participation information plus consent form and then contacted by the courier to schedule the delivery according to the recording period.

### Assessment Kit

The assessment kit consists of:

1. The MotionWatch 8
2. Two Loan Agreements (to be handled by the bicycle courier)
3. A Participant Information Sheet (the "Instructions")
4. A semi-structured diary
5. Two padded A4 envelopes
6. A computer on which the MotionWare software has been set-up
7. A USB cable type 2.0
8. The blue, hard-bond MW8 Protocol folder
9. Access to the shared folders and files named:
  - 'MW-yyyyyy.xls'
  - 'TRACKING yyyyyy'

**Child's unique study number** and Printouts of the name and addresses of the selected participant – for access to sensitive information ask Northpop main coordinator
10. Stamp with Northpop logo to mark envelopes

## Set-up preparation for data collection

### Step 1: Fill-out Electronic Database and Non-electronic Paper Documents

The investigator must have access to the electronic database to retrieve name and address of the participant for preparing the following non-electronic documents:

1. Log into OneDrive - Umeå universitet > shared folder 'XXX' and Open 'MW yyyyy' > worksheet 'Watch status', and check which watch is free.
  2. Login to the Northpop database .
  3. Use one of an identifiable items (xxx) to find the child to whom you will hand out the watch.
  4. Click "Använd filter".
  5. If nothing appears, search again with another item.
  6. In case of several children appearing, look at the most likely to be the one by comparing "Born date" and how it matches other criteria.
  7. Report the child's study number under "Child study ID" in 'MW yyyyy' under the selected spare MotionWatch8 SN (Serial Number) under column E in order to track this particular watch. The status will automatically update. Fill in column F and G.
- Schedule the logistics for pick-up of envelopes with the Northpop coordinator and the bicycle courier (telephone, text messages)
  - Collect from Bulk (*see bulk preparations below*):
    - 2x Loan Agreements
    - 2x Consent forms
    - 1x Participant Information Sheet (Instructions)
    - 1x Diary
  - Collect 2 envelopes
  - Write/stick participant's address to one of the A4 envelopes and stamp both envelopes with the 'Northpop' logo
  - Label two consent forms with the watch SN (in "Aktivitetsmätarnummer") and the personal number of the child ("yyyy") accessible on <https://yyyy>.

### Step 2: Motionwatch Set-up

- Get the 'Actigraphy Protocol Folder' from the drawer and the MotionWatch 8 with the correct Serial Number (SN) labelled on the box and a USB cable.
- Go to the watch's record sheet (ordered chronologically by SN) in the 'Actigraphy Protocol Folder' and write date and time into a new line of the record sheet.
- Please ensure that your Computer clock is set to the correct local time, because the MW8-watch will take the time from the computer clock.
- Start the Motionware software and connect the USB cable
- Twisting open the MotionWatch case and connect the watch with the cable
- Check the 'Battery life' in % under 'Current Set-up' and write this % into the protocol
- Check the 'Battery Voltage' under 'Utilities' and write this value into the protocol.
- Apply a new set-up under New Set-up:



- Enter the unique Study Number as one file name consisting of 'WatchSN\_running yyyyy-Child study ID\_running yyyyy' into User/Patient ID and Full name
- Enter 'X' for sex. DoB leave with date of set-up
- Always chose 'Delayed Start' to begin the recording on the date of the hand-out at Midnight (time: 00:00)
- Use 'MotionWatch Mode 1' as recording Mode
- Tick the box for Recording Light
- Do NOT tick the box to compress the data
- Choose Body position 'unspecified'
- Select Epoch of 30 seconds
- Do NOT disable the marker button
- Having entered your required set-up information, click the 'Apply Setup' button to write the setup to the watch. Observe the message window for the confirmation message and then disconnect the watch immediately and close: Pay attention to the correct positioning of the case and watch. It is advisable, to not show the participant this mechanism.
- Each watch has their own labeled plastic box. The box always remains in the correct level of the drawer in the lab, except for servicing. This box case will never be sent out to a participant.

### **Step 3: Completion of paperwork and hand-over to bicycle courier**

- Complete the paper Actigraphy Protocol: File name, Investigator, set start date/time
- Complete column H (Voltage) and I (battery %) in the electronic 'MW yyyyy' > 'Watch status'.
- Physically insert the watch into the pipe insulation and zip bag
- Place all items into the labelled A4 envelope....
  - 1x MW8 watch (zip bag)
  - 1x diary
  - 2x consent form
  - 1x 'Participant Instruction Sheet'
  - 1x Return envelope
- Seal (close) the A4 envelope.
- Hand-over or place the envelope for collection by the courier to bring it to the family.

## **Procedure on Return of the MotionWatch 8**

- Step 1** Use gloves to open the envelope to take out the watch and disinfect the watch and strap properly with the disinfectant provided on top of the drawer and the disposable towel. Discard towel and gloves.



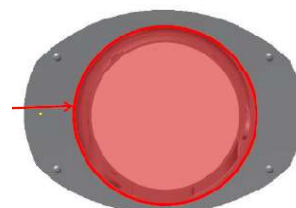
Clean only **OUTSIDE** of the **red** bounded areas!

**Lower case:**

Do NOT remove the lubrication from the O-ring seal.

**Upper case:**

Do NOT clean the vertical side walls and ensure no cleaning agent enters the electronics.



Lower case (strap not shown)

Upper case

**Figure 1: CLEANING THE MOTIONWATCH 8 (see Step 5)**

- Step 2** Take all paperwork out and check completeness:
- 1x watch, 1x diary, 1x consent form
  - Get the *Actigraphy Protocol Folder* and open the page of the watch's SN and write download date / time / file name in the correct columns.
- Step 3** Log into the shared folder and Open 'MW yyyy' > 'Watch status' and delete the child's study ID to mark the watch has been returned and is in the lab. The status will automatically update.
- Step 4** Log into the shared folder and Open 'Tracking yyyy' > Worksheet: 'Actogram MASTERSHEET' and enter info under BIO Data Collection. Leave spreadsheet open and start MotionWare software.
- Step 5** Twisting open the case, clean as in Figure 1, and connect the watch with the cable. Click on the 'Read Data' button and the download will begin. When all data are downloaded, the 'Save Recording...' dialog will open to allow the data to be saved. Enter the exact same unique ID as has been named at set-up. Specify the location and the file will be saved in the default '.mtn' format.

**IMPORTANT** – Save a back-up of the downloaded raw .mtn FILE in the folder 'yyyy mtn' in the shared folder 'Northpop accelerometer Excel yyyy'.

- Step 6** Check the 'Battery life' in % under 'Utilities' and the Battery Voltage and write both values into the watch's sheet in the *Actigraphy Protocol* folder. Write actual date, actual time, the Epoch (Example: 30s), the file name and investigator initials in the dedicated columns. Under 'Remarks' write End and add the date/time when the watch was removed from the participant (once you inspect the actogram).

**WARNING:** DO NOT USE A WATCH THAT IS BELOW 30% BATTERY OR 2.8V!! Inform KW about the need to change battery. Data will NOT BE LOST during battery change.

- Step 7** Return to the excel spread sheet 'Tracking yyyy' and complete column F and G.
- Step 8** Click '**Shut down**' under Utility following download and the watch enters into 'sleep' mode to save the battery. Data will **NOT BE LOST** but the watch will cease recording. Disconnect the watch, twist-close and put it back into its box.
- Step 9** Continue with MONITOR with the fresh file etc.

# Quality check and data monitoring

## Monitor

After downloading the raw data, printing the actograms and scanning the diaries, the investigator’s task is to check the quality of the data and to check that file names and other information is correct and correctly entered in the master spreadsheet. The monitor’s tasks are to review and remove any sensitive information (i.e. personal numbers) and mark of what quality the data are (i.e. good, moderate, poor, insufficient):

- Step 1** Check that the watch SN and the child study number are correct, that each running numbers is also correct – together they make-up the child’s unique yyyy number
- Step 2** Delete any sensitive data from the diary and electronic file names such as: Personnummer, Contact-details, DoB, Names, Initials
- Step 3** Print the actogram for annotation
- Step 4** Scan diaries at not too high resolution for electronic storage in the folder ‘Raw scanned diaries’, document if there is no diary, or incomplete entries in the MS TRACKING yyyy.
- Step 5** Compare timing and periods of activities marked in the diary with the rest-activity pattern in the actogram printout (see Appendix 1)
- Step 6** Highlight missing data (gaps) on the actogram and mark the level of quality according to quality criteria (see Appendix 1 from *Signal processing manual.*)
- Step 7** Document quality specific comments on the participant, the data quality in the Excel table ‘MS TRACKING yyyy’, see

Study Number	Watch number	Log: Diary Y/N/Empty	Log: Questionnaire Yes/No/NA	Log: Comments Yes/No	Date of download watch	Researcher code	Actograms printed	Actograms annotated	Researcher code of actogram annotator	Quality check of actogram
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The work includes propriety softwares, such as motionware [.mtn] as well as excel spreadsheets and needs to be done BEFORE any data analysis can start.

Quality check and monitoring are very IMPORTANT tasks in the project to support decision-making, the economical balance (cost effectiveness), investment of man-power, long-term relationship with families, reasons for data loss (technical, logistically, psychologically, financially) to improve data volume without deteriorating in quality.

## Preparation of bulk solutions for consumable documents

- Diaries: Print (12 pages per diary) + fold + staple 100 diaries
- 100 Bulk items to print: Consent form + Participant Information Sheets – select stapled + Loan Agreements

## References

1. The MotionWatch and MotionWare User Guide. Doc Ref. 30147, Version: 1.2.47 (11/06/2020).  
Manufacturer: CamNtech Ltd. Manor Farm, Fenstanton, Cambridgeshire, PE28 9JD, UK
2. Wulff K and R. Siegmund. Time pattern analysis of activity-rest rhythms in families with infants using actigraphy. Chapter 3. In: *Awakening and sleep-wake cycle across development*. Ed. P. Salzarulo and G. Ficca. John Benjamins Publ. 2002.
3. Palagini, L., K. Domschke, F. Benedetti, R. G. Foster, K. Wulff & D. Riemann (2019) Developmental pathways towards mood disorders in adult life: Is there a role for sleep disturbances? *J Affect Dis*, 243, 121-132.

## APPENDIX 1 – Quality Check Procedures (from Signal processing manual)

### PRINTING OF ACTOGRAMS

The investigator will:

1. Load the .mtn file in question into the Motionware software, note version. Go to View and Option and use the slider to adjust the raw height to see all elapsed days and to find the days with valuable data (they are not necessarily start from the beginning of the recording but start in the middle of the file).

If the maximum *activity* score on the left scale is above 1500 set the max score to 1500. Set the maximum *light* score on the right scale to maximum score of 5 (winter) and 30 (summer).

2. Go to View and Option and change the view to 24-hour view, starting at 00:00, horizontal scale at top and bottom, with finer grid lines ticked, annotation full graph height. Close window using the x in top right corner.
3. Go to Tools and then Report. Under Report Options, click 'Include Recording Properties' and 'Include Actogram'. All other tick boxes must be deactivated. Then open 'Change Actogram Options' and use the slider to adjust the raw height to 120. Leave all other settings untouched. Close window using the x in top right corner.
4. Back at the open Report window, click on 'Copy to Word Processor within the box 'Save Formatted Report'. A box will appear saying "The report has been copied to the clipboard". Click OK in this box and open a new Word document. Press Ctrl and V to paste the content into the Word document.
5. In the Word document, make sure all useful days fit on a 2-sided page. Delete days which do not contain data (can be before and after the valuable data).
6. In the header content, the path and the file name 'Watch number\_yyyy', should agree with the User ID .
7. Insert a row to the table at the bottom (via Table tools, layout, insert below...) and label it "ACTIVITY SCALE" and write max row height for the activity in – i.e. 1500.
8. Save this MotionWare Report as PDF with the file name 'Watch number\_yyyy' under 'File' and 'Save as' and browse to save it in the subfolder 'TIME' within the CHRONO yyyy folder. Once the PDF is saved, discard the word file.
9. Print out the actogram in colour to see light exposure
10. Write on the actogram, if there is a log/diary for later Annotation of this actogram and whether there are comments: Diary: Yes/No/Empty and Comments: Yes/No.

### DATA QUALITY CHECK

1. The investigator will look for the day and time when the watch was first put on and for the last day when the watch was removed and marks these events by pointing an arrowhead to this place in time. The recording period is eight days (day 1 and day 8 are no full days).
  2. The investigator will then look for gaps in the printed actograms. Gaps are defined as a period of absence of actigraphy markings for  $\geq 3$  hours within any 24-hour day.
  3. If a gap is detected using the method described above, use a colour pen<sup>1</sup> to mark this on the printed actogram defining the area of the gap by drawing an arrow over the area of the gap. The ends of this arrow i.e. the arrowheads, identify the beginning and end of the gap. The examiner must write the word 'GAP' above the arrow in same colour ink on the printed actogram.
  4. After identifying gaps as described above, the investigator will look through the actograms of each file and classify the data as follows:
-

- a. **Good Quality:** If the data set contains (i) no gaps or (ii) a single gap of <3 hours duration per day in <50% of days of recording.
- b. **Moderate Quality:** If the data set contains 2 or more gaps of >3 hours duration per day in >50% of days of recording but not on all days.
- c. **Poor Quality:** If the data set contains (i) 2 or more gaps of >3 hours duration per day on all days of recording or (ii) if only a continuous 48 hour period exist during the entire recording, or (iii) if data of only night-time without gaps between bed time and get-up time for at least two nights exist, which can partially be used for sleep analysis but not for circadian analysis or (iv) if daytime data exist between get-up time and bed time for at least two days that can be used for physical activity daytime analysis.
- d. **Insufficient data:** If no activity data for at least two continuous 12-hour periods exists on any days of the recording, the recording will not be used for further analysis.

### <sup>1</sup> Colour code for annotation

The actigraphy protocol for the Northpop actigraphy project utilizes a color code for data cleaning, processing and analysis: **Black pen** = identifying gaps, **Green pen** = maternally reported sleep & wake up times, **Red pen** = bedtimes and get up times from activity. Please only use the colors specified to mark the actogram. Use other colours for other markings, i.e. watch off (shorter than gaps), nap, outdoor activity, play time, screen time. Note in a glossary on the actogram for what each colour/pattern/symbol stands for in terms of log entry.

The investigator will report the quality classification of the recording on the printed actogram and update this quality in the Mastersheet.

## APPENDIX 2

### EXAMPLE      Avtal vid utlåning av aktivitetsmätare

**OBS! Detta avtal skrivs på i två exemplar vid leverans av aktivitetsmätaren. Det ena avtalet behåller deltagaren, det andra tar cykelbudet tillbaka till oss.**

Till målsman för barnet

Aktivitetsmätarnummer: \_\_\_\_\_ Återlämnas senast: \_\_\_\_\_

#### **Information om återlämning:**

För att arrangera återlämning av aktivitetsmätaren, vänligen kontakta Cykelbudet.se på telefon 090-yyyy eller mejla [info@yyyy](mailto:info@yyyy) för att bestämma en tid som passar er. De kommer till er och hämtar upp aktivitetsmätare och levererar det tillbaka till oss på NUS.

Eftersom det finns ett begränsat antal aktivitetsmätare är det viktigt att lämna tillbaka aktivitetsmätaren på utsatt datum, annars kan ett annat NorthPop-barn bli utan. Efter återlämnande kommer ni få en sammanfattning av ert barns aktivitet.

#### **I ert kuvert finns:**

- Aktivitetsmätaren
- Loggbok
- Avtal + instruktioner för aktivitetsmätare och loggbok. Läs igenom dessa!

Sätt aktivitetsmätaren på barnet samma dag som den levereras, eller så snart som möjligt. Aktivitetsmätaren ska inte tas av under registreringen som varar i 8 dygn.

Tryck på knappen på aktivitetsmätaren när den sätts på första gången och när det tas av inför återlämning.

Fel på aktivitetsmätare som hänföres till oaksamhet eller vårdslöshet, samt aktivitetsmätare som förkommit, ersätts av målsman. Aktivitetsmätaren tål normal användning d.v.s. alla barnets aktiviteter, den tål även vatten så ni behöver inte ta av den vid dusch eller bad.

Datum: \_\_\_\_\_

Målsmans underskrift: \_\_\_\_\_

Namnförtydligande: \_\_\_\_\_

Vid frågor kontakta NorthPop på e-post: [info@yyyy](mailto:info@yyyy) eller telefon: yyyy.

## APPENDIX -3 EXAMPLE OF THE DIARY

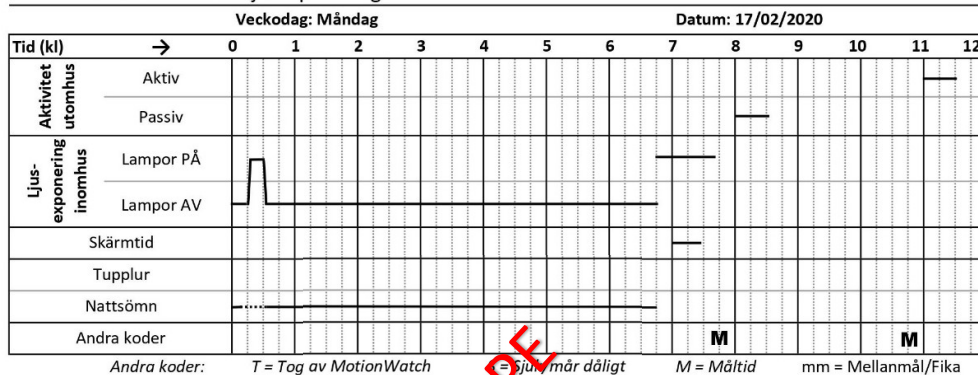
### Frågor om familjens vanor under en vanlig vecka

- Arbetar båda föräldrarna? (Flera svarsalternativ är möjliga)  Ja  Nej
  - Förälder 1:  Heltid  Deltid  Skiftarbete  Arbetar hemifrån
  - Förälder 2:  Heltid  Deltid  Skiftarbete  Arbetar hemifrån
  - Hur mycket tid tillbringar ni med barnet per dag, sömn exkluderat? (Gör ett kryss på linjen)
- Förälder 1: 0 timmar \_\_\_\_\_, 16 timmar \_\_\_\_\_

### Frågor om barnets vanor under en vanlig vecka

- Sover barnet ensam i ett rum?  Ja  Nej
- Om inte, vem delar barnet rum med? \_\_\_\_\_
- Somnar barnet med lyset på?  Ja  Nej
- Om ja, vilket sorts ljus?
- Nattpampa  Indirekt ljus från hallen  Annat: \_\_\_\_\_

### LOGG: Sömn - Aktivitet - Ljusexponering



Tid (kl)	→	12	13	14	15	16	17	18	19	20	21	22	23	24
Aktivitet utomhus	Aktiv													
	Passiv													
Ljus-exponering inomhus	Lampor PÅ													
	Lampor AV													
Skärmtid														
Tupplur														
Nattsömn														
Andra koder														

Kommentarer: \_\_\_\_\_