# Package: slumbR (via r-universe)

July 1, 2026

**Title** Sleep Diaries Helper Package for R

**Version** 0.1.0

**Description** A companion package for the Sleep Diaries app (https://sleepdiaries.circadia-lab.uk). Provides tools to import participant JSON exports, compute standard sleep variables (sleep onset latency, total sleep time, sleep efficiency, WASO, etc.), re-score validated sleep questionnaires (ESS, ISI, DBAS-16, MEQ, PSQI, RU-SATED, STOP-BANG, MCTQ), and assemble tidy study-level data frames ready for downstream analysis.

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**Encoding** UTF-8

**Roxygen** list(markdown = TRUE)

**RoxygenNote** 7.3.3

**VignetteBuilder** knitr

**Depends** R (>= 4.1.0)

**Imports** jsonlite (>= 1.8.0), dplyr (>= 1.1.0), tidyr (>= 1.3.0), lubridate (>= 1.9.0), purrr (>= 1.0.0), rlang (>= 1.1.0), cli (>= 3.6.0)

**Suggests** ggplot2 (>= 3.4.0), knitr, rmarkdown, testthat (>= 3.0.0)

**Config/testthat/edition** 3

**URL** https://github.com/circadia-bio/slumbR, https://slumbr.circadia-lab.uk

**BugReports** https://github.com/circadia-bio/slumbR/issues

**Config/pak/sysreqs** libicu-dev

**Repository** https://circadia-bio.r-universe.dev

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**RemoteUrl** https://github.com/circadia-bio/slumbR

**RemoteRef** main

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# Contents



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`available_instruments` *List available questionnaire instruments*

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## Description

List available questionnaire instruments

## Usage

```
available_instruments()
```

## Value

A character vector of instrument IDs supported by `score_questionnaire()`.

---

`compute_sleep_vars` *Compute derived sleep variables from raw morning diary answers*

---

## Description

Given a morning-entry data frame row (as produced internally by `read_export()`), returns additional computed columns:

## Usage

```
compute_sleep_vars(df)
```

## Arguments

| | |
|---|---|
| `df` | A data frame with morning-entry columns (output of `diary_long()`). |

### Details

| Variable | Definition |
|---|---|
| `tib_min` | Time in bed (rise_time − bed_time), minutes |
| `tst_min` | Total sleep time (TIB − SOL − WASO), minutes |
| `se_pct` | Sleep efficiency (TST / TIB × 100), % |
| `sol_flag` | `TRUE` if SOL > 30 min (clinically significant) |
| `se_flag` | `TRUE` if SE < 85% (below healthy threshold) |
| `waso_flag` | `TRUE` if WASO > 30 min (clinically significant) |
| `tst_flag` | `TRUE` if TST < 7 h (below recommended) |

Clock-time fields (bed_time, rise_time) are decimal hours. Overnight wrap is handled by adding 24 when rise_time  bed_time.

### Value

The same data frame with additional computed columns appended.

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## `diary_long` *Extract the long-format diary data frame from a study or export*

---

### Description

A convenience accessor that returns the `diary` data frame from a `slumbr_study` or `slumbr_export` object. For a plain data frame it is returned unchanged.

### Usage

```
diary_long(x)

## S3 method for class 'slumbr_study'
diary_long(x)

## S3 method for class 'slumbr_export'
diary_long(x)

## S3 method for class 'data.frame'
diary_long(x)
```

### Arguments

| | |
|---|---|
| `x` | A `slumbr_study`, `slumbr_export`, or plain data frame. |

### Details

The long-format frame has **one row per diary entry** (morning or evening). Morning rows carry sleep timing and quality variables; evening rows carry daytime behaviour variables. Most analyses will want `diary_wide()` to merge them into one row per night.

### Value

A data frame with one row per diary entry.

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`diary_wide` *Pivot diary entries to wide format — one row per participant per night*

---

### Description

Merges matching morning and evening entries for the same participant and date into a single row, prefixing morning columns with `m_` and evening columns with `e_`.

### Usage

```
diary_wide(x)
```

### Arguments

| | |
|---|---|
| `x` | A `slumbr_study`, `slumbr_export`, or plain long-format data frame. |

### Value

A data frame with one row per participant x date.

### See Also

`diary_long()`, `read_study()`

### Examples

```
## Not run:
study <- read_study("exports/")
wide  <- diary_wide(study)
head(wide)

## End(Not run)
```

`read_export` *Read a single Sleep Diaries JSON export*

## Description

Parses one participant's JSON export file as produced by the Sleep Diaries app and returns a structured list with raw entries, parsed diary data, and questionnaire results.

## Usage

```
read_export(path, participant_id = NULL, compute_vars = TRUE)
```

## Arguments

| | |
|---|---|
| `path` | Path to a `.json` file exported from the Sleep Diaries app. |
| `participant_id` | Optional character string used as the `participant_id` column value. If `NULL` (default), uses the `researchCode` field from the JSON, falling back to the `participant` name field, then to the filename. |
| `compute_vars` | Logical. If `TRUE` (default), adds derived sleep variables (TIB, TST, SE, flags) to morning entries via `compute_sleep_vars()`. |

## Value

A named list with class `"slumbr_export"`:

`participant_id` Character. The resolved participant identifier.

`participant_name` Character. Raw name from JSON.

`research_code` Character or `NA`. Research code from JSON.

`exported_at` POSIXct. Export timestamp.

`diary` Data frame. One row per diary entry (morning or evening), with all parsed answer columns.

`questionnaires` Data frame. One row per completed questionnaire, with raw answers in a list-column and computed scores.

`raw` List. The full parsed JSON, for debugging.

## See Also

`read_study()`, `diary_long()`, `diary_wide()`

### Examples

```
## Not run:
p <- read_export("exports/P001.json")
p$diary
p$questionnaires

## End(Not run)
```

---

`read_study` *Read a directory of Sleep Diaries JSON exports into a study object*

---

### Description

Reads all `.json` files in a directory (one per participant) and assembles them into a `slumbr_study` object containing combined long and wide data frames plus questionnaire scores.

### Usage

```
read_study(
  dir,
  pattern = "\\.json$",
  participant_id_from = c("code", "name", "filename"),
  compute_vars = TRUE,
  verbose = TRUE
)
```

### Arguments

| | |
|---|---|
| `dir` | Path to a directory containing `.json` export files. |
| `pattern` | Regex pattern to match filenames. Default `"\\.json$"`. |
| `participant_id_from` | One of `"code"` (use `researchCode` field, fallback to name then filename), `"name"` (use the `participant` name field), or `"filename"` (always use the filename without extension). |
| `compute_vars` | Logical. Passed to `read_export()`. |
| `verbose` | Logical. Print a progress summary. Default `TRUE`. |

### Value

A named list with class `"slumbr_study"`:

`diary` Long-format data frame. All participants, all entries.

`wide` Wide-format data frame. One row per participant-night, morning and evening columns merged side by side.

`scores` Data frame. Questionnaire scores, one row per participant × instrument.

`participants` Character vector of resolved participant IDs.

`exports` Named list of individual `slumbr_export` objects.

### See Also

`read_export()`, `diary_long()`, `diary_wide()`

### Examples

```
## Not run:
study <- read_study("exports/")
study$diary
study$wide
study$scores

## End(Not run)
```

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## score_all_questionnaires

*Re-score all questionnaires in a study or export*

---

### Description

Takes the questionnaire data frame (as returned in `$questionnaires` from `read_export()` or `read_study()`) and adds re-computed `score_r` and `label_r` columns using the R scoring functions. Useful for validation or when raw answers were imported without scores.

### Usage

```
score_all_questionnaires(x)
```

### Arguments

| | |
|---|---|
| `x` | A `slumbr_study`, `slumbr_export`, or a data frame with columns `questionnaire` and `answers` (list-column). |

### Value

The questionnaire data frame with two additional columns: `score_r` (re-computed score) and `label_r` (interpretation label).

### Examples

```
## Not run:
study <- read_study("exports/")
score_all_questionnaires(study)

## End(Not run)
```

`score_questionnaire` *Score a Sleep Diaries questionnaire from raw answers*

## Description

Re-scores any of the eight validated instruments included in the Sleep Diaries app. Scoring algorithms exactly match the app's JavaScript implementation.

## Usage

```
score_questionnaire(instrument, answers)
```

## Arguments

| | |
|---|---|
| `instrument` | Character. One of `"ess"`, `"isi"`, `"dbas16"`, `"meq"`, `"psqi"`, `"rusated"`, `"stopbang"`, `"mctq"`. |
| `answers` | Named list of answers keyed by item ID (e.g. `list(ess1 = 2, ess2 = 1, ...)`). Clock-time items (PSQI, MCTQ) expect `list(hour = H, minute = M)` sub-lists, matching the JSON export format. |

## Value

A named list with at minimum:

`score` Numeric. The computed total or mean score (for MCTQ: a list with `msf_sc` and `sjl`).

`label` Character. The clinical interpretation label.

`reference` Character. Citation for the instrument.

PSQI additionally returns `components` (a named vector of the 7 component scores). MCTQ additionally returns `msf_sc` and `sjl` as top-level fields.

## See Also

`score_all_questionnaires()`

## Examples

```
# ESS
score_questionnaire("ess", answers = list(
  ess1 = 2, ess2 = 1, ess3 = 0, ess4 = 3,
  ess5 = 1, ess6 = 0, ess7 = 2, ess8 = 1
))

# MCTQ (free-day mid-sleep and social jetlag)
score_questionnaire("mctq", answers = list(
  mctq_wd   = 5,
  mctq_bt_w = list(hour = 23, minute = 0),
  mctq_sl_w = 15,
```

```
  mctq_wt_w = list(hour = 7,  minute = 0),
  mctq_bt_f = list(hour = 0,  minute = 30),
  mctq_sl_f = 20,
  mctq_wt_f = list(hour = 9,  minute = 0)
))
```

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`study_summary` *Summarise a study's diary data at the participant level*

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## Description

Summarise a study's diary data at the participant level

## Usage

```
study_summary(x, na.rm = TRUE)
```

## Arguments

| | |
|---|---|
| `x` | A `slumbr_study`, `slumbr_export`, or long-format data frame. |
| `na.rm` | Logical. Remove NAs before computing means. Default `TRUE`. |

## Value

A data frame with one row per participant and columns: `participant_id`, `n_morning`, `n_evening`, `n_nights`, `mean_tst_h`, `mean_se_pct`, `mean_sol_min`, `mean_waso_min`, `mean_quality`, `mean_restedness`, `pct_early_waking`.

## Examples

```
## Not run:
study <- read_study("exports/")
study_summary(study)

## End(Not run)
```

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