

# {MCTQ}: AN R PACKAGE FOR THE MUNICH CHRONOTYPE QUESTIONNAIRE



Daniel Vartanian, Ana Amélia Benedito-Silva, Mario Pedrazzoli

Interdisciplinary Sleep Research Group (GIPSO), University of Sao Paulo  
danvartan@gmail.com, aamelia@usp.br, pedrazzo@usp.br

## Overview

{mctq} is a free and open-source R package that provides a complete and consistent toolkit to process the Munich ChronoType Questionnaire (MCTQ), a quantitative and validated method to assess peoples' sleep behavior and circadian phenotype presented by Till Roenneberg, Anna Wirz-Justice, and Martha Merrow in [2003](#). The aim of {mctq} is to facilitate the work of sleep and chronobiology scientists with MCTQ data while also helping with research reproducibility.

## Wait, an R package for a questionnaire?

Although it may look like a simple questionnaire, MCTQ requires a lot of date/time manipulation. This poses a challenge for many scientists, being that most people have difficulties with date/time data, especially when dealing with a large dataset. The {mctq} package comes to address this issue.

{mctq} can handle the processing tasks for the three MCTQ versions (standard, micro, and shift) with few dependencies, relying much of its applications on the [{lubridate}](#) and [{hms}](#) packages from tidyverse. We also designed {mctq} with the user experience in mind, by creating an interface that resembles the way the questionnaire data is shown in MCTQ publications, and by providing extensive and detailed documentation about each computation proposed by the MCTQ authors. The package also includes several

utility tools to deal with different time representations (e.g., decimal hours, radians) and time arithmetic issues, along with fictional datasets for testing and learning purposes.

## Prerequisites

You only need to have some familiarity with the [R programming language](#) to use {mctq} main functions.

## Installation

The first stable version of {mctq} is available for download on GitHub ([github.com/gipso/mctq](https://github.com/gipso/mctq)). You can install the package with just one line of code:

```
# install.packages("pak")  
pak::pkg_install("gipso/mctq")
```

## Additional information

The package is currently under a [software peer-review](#) by the [rOpenSci](#) initiative. We plan to submit it to [CRAN](#) (The Comprehensive R Archive Network) soon after the review process ends.

{mctq} is a community project, everyone is welcome to contribute. It's part of an effort to bring the open science culture to chronobiology. Next is an R package for actigraphy data analysis ([actverse](#)) - already in development.

Learn more about {mctq} by visiting the package website: [gipso.github.io/mctq/](https://gipso.github.io/mctq/).