

Package ‘tidyrhrv’

July 9, 2025

Title Read, Iteratively Filter, and Analyze Multiple ECG Datasets

Version 1.1.0

Description Allows users to quickly load multiple patients' 'electrocardiographic' (ECG) data at once and conduct relevant time analysis of heart rate variability ('HRV') without manual edits from a physician or data cleaning specialist. The package provides the unique ability to iteratively filter, plot, and store time analysis results in a data frame while writing plots to a predefined folder. This streamlines the workflow for 'HRV' analysis across multiple datasets.

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Suggests testthat (>= 3.0.0), ggplot2, vroom, readr

Config/testthat/edition 3

Encoding UTF-8

Roxygen list(markdown = TRUE)

RoxygenNote 7.3.2

Imports dplyr, tidyr, RHRV, purrr, magrittr, pracma, tibble, utils,
stats, grDevices

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NeedsCompilation no

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filter_tilt	<i>Filter Data from prep_data Function Iteratively</i>
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Description

Uses window functions native to the RHRV package and hampel window filter to iteratively clean heart rate variability data.

Usage

```
filter_tilt(.data, g, l)
```

Arguments

.data	A tilt data frame produced by prep_data function
g	Numeric value representing the upper bound multiplier for filtering (greater than median of spline)
l	Numeric value representing the lower bound multiplier for filtering (less than median of spline)

Value

A data frame with filtered contents

Examples

```
## Not run:
# Assuming you have data from read_tilt and prep_data
filtered_data <- filter_tilt(prepped_data, g = 1.1, l = 0.9)

## End(Not run)
```

plot_tilt	<i>Store Plots of RR Series in Folders and Produce RMSSD and pNN50 Output</i>
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Description

Creates plots of heart rate variability data and saves them to specified folders while calculating time domain metrics (RMSSD and pNN50).

Usage

```
plot_tilt(.data, folder, type)
```

Arguments

.data	A data frame containing HRV data from previous tidyhrv functions
folder	A character string specifying the folder name for saved plots
type	A character string indicating whether data are "filtered" or "original"

Value

A list of data frames containing RMSSD and pNN50 values for each dataset

Examples

```
## Not run:
# Create output directory
dir.create("./hrv_plots")
# Generate plots and metrics
results <- plot_tilt(filtered_data, folder = "hrv_plots", type = "filtered")

## End(Not run)
```

prep_data	<i>Prepare Data for tidyhrv Functions</i>
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Description

This function helps to manipulate the data into a dataset readable by other tidyhrv functions by standardizing column names.

Usage

```
prep_data(.data, time, HR, RR)
```

Arguments

.data	A nested data frame from read_tilt function
time	A character string specifying the name of the time column
HR	A character string specifying the name of the heart rate column
RR	A character string specifying the name of the RR interval column

Value

A nested data frame with standardized column names (Time, niHR, RR)

Examples

```
## Not run:
# Assuming you have data from read_tilt
prepped_data <- prep_data(raw_data, "Time_col", "HR_col", "RR_col")

## End(Not run)
```

read_tilt	<i>Read Multiple Tilt Data Files</i>
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Description

Read in all tilt data files in a folder at once to create a nested data frame that can be processed by other tidyhrv functions.

Usage

```
read_tilt(path, file_type)
```

Arguments

path	A character string specifying the path to the folder containing data files
file_type	A function to read the files (e.g., readr::read_csv, read.table, etc.)

Value

A nested data frame with 'names' and 'contents' columns

Examples

```
## Not run:
# Read CSV files from a directory
data <- read_tilt("path/to/folder/", readr::read_csv)
# Read other file types
data <- read_tilt("path/to/folder/", read.table)

## End(Not run)
```

%>%	<i>Pipe operator</i>
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Description

See magrittr::[%>%](#) for details.

Usage

```
lhs %>% rhs
```

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* **internal**

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