

Package ‘cardiovagal’

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Version 0.1.5

Title Automatic Equivalence Testing for Cross-Species Cardiovagal Homeostasis

Description Automates cardiovagal state regulation mapping by translating raw, noisy mammalian heart rate variability intervals into a standardized linear index using fixed physiological anchors. The package incorporates natural log data compression and utilizes two-one-sided tests (TOST) and Bayesian Region of Practical Equivalence (ROPE) thresholds to mathematically verify cross-species homeostatic synchronization. Methodologies for equivalence testing and regional practical equivalence bounds follow Lakens (2017) <[doi:10.1177/1948550617697177](https://doi.org/10.1177/1948550617697177)> and Kruschke (2018) <[doi:10.1177/2515245918771304](https://doi.org/10.1177/2515245918771304)>.

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Imports equivalence, stats

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`calculate_vagal_index` *Compute Mammalian State Regulation Index*

Description

Cleans raw inter-beat interval data, stabilizes exponential variance via natural log transformation, and maps metrics onto a standardized 1-to-10 homeostatic index using fixed biological anchors.

Usage

```
calculate_vagal_index(heart_intervals)
```

Arguments

`heart_intervals`

A numeric vector containing raw millisecond heart intervals.

Value

A numeric vector containing the standardized 1-to-10 regulation scale.

Examples

```
calculate_vagal_index(c(800, 820, 790, 850))
```

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