

Package: strength (via r-universe)

May 20, 2026

Title Operations Designed for Tidy Strength Data

Version 0.1.0.9000

Description Mappings for estimated one rep max from commonly used formulas. Convenience functions for turning mass/rep/set data into useful derived quantities.

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Encoding UTF-8

Roxygen list(markdown = TRUE)

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Depends R (>= 4.1)

LazyData true

Imports cli, dplyr, tibble, tidyr

Suggests knitr, rmarkdown, testthat (>= 3.0.0)

Config/testthat/edition 3

URL <https://github.com/alexpaynter/strength>

BugReports <https://github.com/alexpaynter/strength/issues>

VignetteBuilder knitr

Config/pak/sysreqs libicu-dev

Repository <https://alexpaynter.r-universe.dev>

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create_map_rep_rpe_to_pct
Create a mapping from reps and rpe to pct_1rm

Description

Create a mapping from reps and rpe to pct_1rm

Usage

```
create_map_rep_rpe_to_pct(pct_lookup_tab)
```

Arguments

pct_lookup_tab A lookup table that contains columns reps, rpe and pct_1rm.

Value

A function taking arguments reps and rpe, returning a numeric vector.

Examples

```
resulting_function <- create_map_rep_rpe_to_pct(pct_lookup_rts)
```

| | |
|------|------------------------------|
| e1rm | <i>Estimated one rep max</i> |
|------|------------------------------|

Description

Estimated one rep max

Usage

```
e1rm(weight, reps, rpe, pct1rm_func)
e1rm_rts(...)
e1rm_helms(...)
e1rm_brzycki(...)
```

Arguments

| | |
|-------------|---|
| weight | Numeric vector of weights, one entry per set. |
| reps | Numeric vector of reps, one entry per set. |
| rpe | Numeric vector of RPEs, one entry per set. |
| pct1rm_func | A function which takes reps,rpe and returns an estimated percentage of one rep max. |
| ... | Arguments passed to e1rm(). |

Value

A numeric vector of estimated one rep max values for each set.

Examples

```
e1rm(c(400, 300), c(1, 10), c(9, 6), pct1rm_rts)
e1rm_rts(c(400, 300), c(1, 10), c(9, 6))
e1rm_helms(c(400, 300), c(1, 10), c(9, 6))
e1rm_brzycki(c(400, 300), c(1, 10), c(9, 6))
```

| | |
|-----------|----------------------------|
| hard_sets | <i>Number of hard sets</i> |
|-----------|----------------------------|

Description

Number of hard sets

Usage

```
hard_sets(rpe, cutoff = 7)
```

Arguments

| | |
|--------|--|
| rpe | A numeric vector of set RPE values. |
| cutoff | RPE cutoff for what qualifies as a hard set. The boundary is included. |

Value

A numeric value counting the number of hard sets.

Examples

```
hard_sets(c(6, 7, 10, 9, NA))
```

| | |
|--------------------|--|
| pct_lookup_brzycki | <i>Percentage lookup from Brzycki.</i> |
|--------------------|--|

Description

Percentage lookup from Brzycki.

Usage

```
pct_lookup_brzycki
```

Format

pct_lookup_brzycki:

A data frame with 135 rows and 3 columns:

reps Number of reps performed

rpe Rating of perceived exertion

pct_1rm Percentage of one-repetition maximum associated with reps at rpe.

Source

Derived from rpe_tab_brzycki.

| | |
|------------------|---|
| pct_lookup_helms | <i>Percentage lookup from Helms and colleagues.</i> |
|------------------|---|

Description

Percentage lookup from Helms and colleagues.

Usage

pct_lookup_helms

Format

pct_lookup_helms:

A data frame with 90 rows and 3 columns:

reps Number of reps performed

rpe Rating of perceived exertion

pct_1rm Percentage of one-repetition maximum associated with reps at rpe.

Source

Derived from rpe_tab_helms.

| | |
|----------------|---|
| pct_lookup_rts | <i>Percentage lookup from reactive training systems (RTS)</i> |
|----------------|---|

Description

Percentage lookup from reactive training systems (RTS)

Usage

pct_lookup_rts

Format

pct_lookup_rts:

A data frame with 165 rows and 5 columns:

reps Number of reps performed

rpe Rating of perceived exertion

pct_1rm Percentage of one-repetition maximum associated with reps at rpe.

Source

Derived from rpe_tab_rts.

pct1rm

Mapping from reps and rpe to pct_1rm.

Description

pct1rm_rts() uses the table provided by reactive training systems. pct1rm_helms() uses the table provided in a paper by Helms and colleagues. pct1rm_brzycki() uses the table provided by Brzycki in his book. pct1rm() takes a user-supplied lookup table to convert.

Usage

```
pct1rm(reps, rpe, pct_lookup_tab)
```

```
pct1rm_rts(reps, rpe)
```

```
pct1rm_helms(reps, rpe)
```

```
pct1rm_brzycki(reps, rpe)
```

Arguments

| | |
|----------------|--|
| reps | A vector of repetitions performed in a set. |
| rpe | A vector of ratings of perceived exertion. |
| pct_lookup_tab | A dataframe with columns rpe, reps and pct_1rm, expressing the desired conversion. |

Details

reps must be length 1 or the same length as rpe. RPE must be length 1 or the same length as reps.

Value

A numeric vector listing the percentage of one 1 rep max.

Examples

```
pct1rm_rts(reps = 10, rpe = 8)
resulting_function <- create_map_rep_rpe_to_pct(pct_lookup_rts)
pct1rm_rts(reps = 10, rpe = 8)
pct1rm_helms(reps = 5, rpe = 8)
pct1rm_helms(reps = 5, rpe = 8)
```

| | |
|-----------------|--------------------------------|
| rpe_tab_brzycki | <i>RPE table from Brzycki.</i> |
|-----------------|--------------------------------|

Description

RPE table from Brzycki.

Usage

rpe_tab_brzycki

Format

rpe_tab_brzycki:

A dataframe with 9 rows and 16 columns.

RPE The rating of perceived exertion

- 1 Estimated percentage of one rep max doing 1 rep at the RPE given by RPE.
- 2 Estimated percentage of one rep max doing 2 reps at the RPE given by RPE.'
- ... And so on...

Source

ISBN 978-1935628132, "A practical approach to strength training". This is a rep-max resource and we extended to RPE using the reps in reserve definition for RPE (see rep_tab_helms for a paper link that explains this.)

| | |
|---------------|--|
| rpe_tab_helms | <i>RPE table Helms and colleagues.</i> |
|---------------|--|

Description

RPE table Helms and colleagues.

Usage

rpe_tab_helms

Format

rpe_tab_helms:

A dataframe with 10 rows and 11 columns.

RPE The rating of perceived exertion

- 1 Estimated percentage of one rep max doing 1 rep at the RPE given by RPE.
- 2 Estimated percentage of one rep max doing 2 reps at the RPE given by RPE.'
- ... And so on...

Source

<https://doi.org/10.1519/SSC.0000000000000218>. Based on earlier work by Zourdos and Helms

| | |
|-------------|----------------------|
| rpe_tab_rts | <i>RPE table RTS</i> |
|-------------|----------------------|

Description

RPE table RTS

Usage

rpe_tab_rts

Format

rpe_tab_rts:

A dataframe with 11 rows and 16 columns.

RPE The rating of perceived exertion

- 1 Estimated percentage of one rep max doing 1 rep at the RPE given by RPE.
- 2 Estimated percentage of one rep max doing 2 reps at the RPE given by RPE.'
- ... And so on...

Source

Pulled from the TRAC system on Reactive Training Systems in Dec 2025

| | |
|-------------------|----------------------------------|
| rpe_tab_to_lookup | <i>RPE table to lookup table</i> |
|-------------------|----------------------------------|

Description

RPE table to lookup table

Usage

rpe_tab_to_lookup(rpe_tab)

Arguments

| | |
|---------|--|
| rpe_tab | A tibble with columns RPE, 1, 2, 3, ... containing the percentage of one rep max associated with doing x reps at RPE rating of perceived exertion. |
|---------|--|

rpe_tab_to_lookup

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Value

A tibble with columns `rpe`, `reps`, `pct_1rm`.

Examples

```
rpe_tab_to_lookup(rpe_tab_rts)
```

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