

# Package ‘capl’

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**Title** Compute and visualize CAPL-2 scores and interpretations

**Version** 1.2

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**Description** This package contains tools to compute and  
visualize CAPL-2 (Canadian Assessment of Physical Literacy, Second  
Edition; www.capl-eclp.ca) scores and interpretations from raw  
data.

**License** GPL-3

**URL** <https://github.com/barnzilla/capl>

**BugReports** <https://github.com/barnzilla/capl/issues>

**Depends** R (>= 2.10)

**VignetteBuilder** knitr

**Encoding** UTF-8

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**LazyData** true

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ggplot2,  
lubridate,  
magrittr,  
readxl,  
stats,  
writexl

**Suggests** klippy,  
knitr,  
rmarkdown

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capitalize_character	<i>Capitalize a character vector.</i>
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---

### Description

This function capitalizes a character vector.

### Usage

```
capitalize_character(x = NA)
```

**Arguments**

x                      A character vector.

**Details**

Other capl functions called by this function include: [validate\\_character\(\)](#).

**Value**

Returns a character vector (if valid) or NA (if not valid).

**Examples**

```
capitalize_character(c("beginning", "progressing", "achieving", "excelling"))  
# [1] "Beginning" "Progressing" "Achieving" "Excelling"
```

---

capl_demo_data	<i>CAPL demo raw data.</i>
----------------	----------------------------

---

**Description**

A dataset containing CAPL-2 demo raw data.

**Usage**

```
capl_demo_data
```

**Format**

A data frame with 500 rows of data on 60 variables that are required to compute CAPL-2 scores and interpretations:

...

**Source**

<https://github.com/barnzilla/capl>

---

export_capl_data	<i>Export CAPL-2 data to an Excel workbook.</i>
------------------	---

---

### Description

This function exports CAPL-2 data to an Excel workbook on a local computer.

### Usage

```
export_capl_data(x = NULL, file_path = NA)
```

### Arguments

x	A data frame.
file_path	A character vector representing the file path to a location on the user's local computer (e.g., "c:/users/user_name/desktop/file.xlsx") where x will be saved as an Excel workbook on the user's computer. The file path is not case-sensitive.

### Details

Other capl functions called by this function include: [validate\\_character\(\)](#).

---

get_24_hour_clock	<i>Convert 12-hour clock values to 24-hour clock values.</i>
-------------------	--

---

### Description

This function converts 12-hour clock values to 24-hour clock values.

### Usage

```
get_24_hour_clock(x = NA)
```

### Arguments

x	A character vector representing values in 12-hour clock format.
---	---

### Details

Other capl functions called by this function include: [validate\\_character\(\)](#) and [validate\\_integer\(\)](#).

### Value

Returns a 24-hour clock vector (if valid) or NA (if not valid).

### Examples

```
get_24_hour_clock(c("5:00 am", "7:10PM", "9:37", NA, "21:13", "", 9, "6:17"))

# [1] "05:00" "19:10" "09:37" NA      "21:13" NA      NA      "06:17"
```

---

get_adequacy_score	<i>Compute an adequacy score.</i>
--------------------	-----------------------------------

---

### Description

This function computes an adequacy score (`adequacy_score`) for responses to items 2, 4 and 6 of the CSAPPA (Children's Self-Perceptions of Adequacy in and Predilection for Physical Activity; Hay, 1992) Questionnaire as they appear in [the CAPL-2 Questionnaire](#). This score is used to compute the motivation and confidence domain score (`mc_score`).

### Usage

```
get_adequacy_score(csappa2 = NA, csappa4 = NA, csappa6 = NA)
```

### Arguments

<code>csappa2</code>	A numeric (integer) vector representing a response to CSAPPA item 2 (valid values are integers between 1 and 4).
<code>csappa4</code>	A numeric (integer) vector representing a response to CSAPPA item 4 (valid values are integers between 1 and 4).
<code>csappa6</code>	A numeric (integer) vector representing a response to CSAPPA item 6 (valid values are integers between 1 and 4).

### Details

Valid values (integers between 1 and 4) represent the following responses:

- 1 = REALLY TRUE for me for "some kids" statements
- 2 = SORT OF TRUE for me for "some kids" statements
- 3 = REALLY TRUE for me for "other kids" statements
- 4 = SORT OF TRUE for me for "other kids" statements

Other capl functions called by this function include: [validate\\_scale\(\)](#).

### Value

Returns a numeric vector with values between 1.8 and 7.5 (if valid) or NA (if not valid).

### Examples

```
get_adequacy_score(  
  csappa2 = c(1:3, 0),  
  csappa4 = c(4, 2, 1, "3"),  
  csappa6 = c(4, 4, 2, 2)  
)  
  
# [1] 4.9 4.8 4.9 NA
```

---

get_binary_score	<i>Compute a binary score.</i>
------------------	--------------------------------

---

### Description

This function computes a binary score (0 = incorrect answer, 1 = correct answer) for a response to a questionnaire item based on the value(s) set as answer(s) to the item.

### Usage

```
get_binary_score(x, answer)
```

### Arguments

x	A character or numeric vector representing a response to a questionnaire item.
answer	A character or numeric vector representing the correct answer(s) to the questionnaire item. The answer argument does not have to match x in case for a correct answer to be computed.

### Details

This function is called by [get\\_fill\\_in\\_the\\_blanks\\_score\(\)](#).

### Value

Returns 1 (if correct), 0 (if incorrect) or NA (if not valid).

### Examples

```
get_binary_score(
  x = c(1:4, NA, ""),
  answer = 3
)

# [1] 0 0 1 0 NA 0

get_binary_score(
  x = c("20 minutes", "30 minutes", "60 minutes or 1 hour", "120 minutes or 2 hours"),
  answer = "60 minutes or 1 hour"
)

# [1] 0 0 1 0

get_binary_score(
  x = c(1:5, "Heart", "hello, world", NA),
  answer = c(3, "heart")
)

# [1] 0 0 1 0 0 1 0 NA
```

---

get_camsa_score	<i>Select the maximum CAMSA skill + time score.</i>
-----------------	---

---

### Description

This function selects the maximum CAMSA (Canadian Agility and Movement Skill Assessment) skill + time score for two trials (camsa\_score) and then divides by 2.8 so that the score is out of 10. This score is used to compute the physical literacy score (pc\_score).

### Usage

```
get_camsa_score(camsa_skill_time_score1 = NA, camsa_skill_time_score2 = NA)
```

### Arguments

**camsa\_skill\_time\_score1**  
A numeric (integer) vector representing the skill + time score from trial 1 (valid values are between 1 and 28).

**camsa\_skill\_time\_score2**  
A numeric (integer) vector representing the skill + time score from trial 2 (valid values are between 1 and 28).

### Details

Other cap1 functions called by this function include: [validate\\_scale\(\)](#).

### Value

Returns a numeric vector with values between 0 and 10 (if valid) or NA (if not valid).

### Examples

```
get_camsa_score(
  camsa_skill_time_score1 = c(1, 5, 10, 28, 29),
  camsa_skill_time_score2 = c(5, 7, 12, NA, 27)
)

# [1] 5 7 12 NA NA
```

---

get_camsa_skill_time_score	<i>Compute the CAMSA skill + time score.</i>
----------------------------	--

---

### Description

This function computes the CAMSA (Canadian Agility and Movement Skill Assessment) skill + time score (e.g., camsa\_skill\_time\_score1) for a given trial. This score is used to compute the CAMSA score (camsa\_score).

**Usage**

```
get_camsa_skill_time_score(camsa_skill_score = NA, camsa_time_score = NA)
```

**Arguments**

`camsa_skill_score`

A numeric (integer) vector representing the CAMSA skill score (valid values are between 0 and 14).

`camsa_time_score`

A numeric vector representing the CAMSA time score (valid values are between 1 and 14).

**Details**

Other cap1 functions called by this function include: [validate\\_scale\(\)](#).

**Value**

Returns a numeric (integer) vector with values between 1 and 28 (if valid) or NA (if not valid).

**Examples**

```
get_camsa_skill_time_score(
  camsa_skill_score = c(0, 5, 10, 14, 15),
  camsa_time_score = c(1, 10, 12, 15, 30)
)

# [1]  1 15 22 NA NA
```

---

`get_camsa_time_score`    *Compute the CAMSA time score.*

---

**Description**

This function computes the CAMSA (Canadian Agility and Movement Skill Assessment) time score based on the time taken (in seconds) to complete a trial.

**Usage**

```
get_camsa_time_score(camsa_time = NA)
```

**Arguments**

`camsa_time`

A numeric vector representing the time taken (in seconds) to complete a CAMSA trial (valid values are > 0).

**Details**

Other cap1 functions called by this function include: [validate\\_number\(\)](#).



**Value**

Returns a numeric vector with values between 1 and 14 (if valid) or NA (if not valid).

**Examples**

```
get_camsa_time_score(c(14, 12, 30, 25, 0))

# [1] 13 14  1  4 NA
```

---

get\_capl

---

*Compute all CAPL-2 scores and interpretations at once.*


---

**Description**

This function is the main function in the capl package. It is a wrapper function that calls all other capl functions to compute all CAPL-2 scores and interpretations from raw data at once. If required CAPL-2 variables are missing, the function will create the variables and set values for these variables to NA so the function can proceed.

**Usage**

```
get_capl(raw_data = NULL, sort = "asis")
```

**Arguments**

raw_data	A data frame of raw CAPL-2 data.
sort	An optional character vector representing how the variables in the returned data frame are to be sorted (valid values are "asis", "abc" and "zyx"; valid values are not case-sensitive). This argument is set to "asis" by default.

**Details**

Other capl functions called by this function include: [get\\_missing\\_capl\\_variables\(\)](#), [get\\_pacer\\_20m\\_laps\(\)](#), [get\\_pacer\\_score\(\)](#), [get\\_capl\\_interpretation\(\)](#), [get\\_plank\\_score\(\)](#), [get\\_camsa\\_time\\_score\(\)](#), [get\\_camsa\\_skill\\_time\\_score\(\)](#), [get\\_camsa\\_score\(\)](#), [get\\_pc\\_score\(\)](#), [get\\_capl\\_domain\\_status\(\)](#), [get\\_pedometer\\_wear\\_time\(\)](#), [validate\\_steps\(\)](#), [get\\_step\\_average\(\)](#), [get\\_step\\_score\(\)](#), [get\\_self\\_report\\_pa\\_score\(\)](#), [get\\_db\\_score\(\)](#), [get\\_predilection\\_score\(\)](#), [get\\_adequacy\\_score\(\)](#), [get\\_intrinsic\\_motivation\\_score\(\)](#), [get\\_pa\\_competence\\_score\(\)](#), [get\\_mc\\_score\(\)](#), [get\\_binary\\_score\(\)](#), [get\\_fill\\_in\\_the\\_blanks\\_score\(\)](#), [get\\_ku\\_score\(\)](#) and [get\\_capl\\_score\(\)](#)

**Value**

Returns a merged data frame of raw data and CAPL-2 scores and interpretations.

**Examples**

```
get_capl(raw_data)
```

---

get_capl_bar_plot	<i>Render a bar plot for a given CAPL-2 domain score, grouped by CAPL-2 interpretative categories.</i>
-------------------	--

---

## Description

This function renders a bar plot for a given CAPL-2 domain score, grouped by CAPL-2 interpretative categories.

## Usage

```
get_capl_bar_plot(
  score = NA,
  interpretation = NA,
  x_label = "Interpretation",
  y_label = "Score",
  colors = c("#333376", "#00a79d", "#f26522", "#a6ce39")
)
```

## Arguments

score	A numeric vector.
interpretation	A character vector representing CAPL-2 interpretative categories ("beginning", "progressing", "achieving", "excelling").
x_label	An optional character vector representing the x-axis label. This argument is set to "Interpretation" by default.
y_label	An optional character vector representing the y-axis label. This argument is set to "Score" by default.
colors	An optional character vector representing the color palette for the bars. This argument is set to CAPL-2 branding colors by default (c("#333376", "#00a79d", "#f26522", "#a6ce39", "#747474")).

## Details

Other capl functions called by this function include: [validate\\_character\(\)](#), [validate\\_number\(\)](#) and [capitalize\\_character\(\)](#).

## Value

Renders a ggplot2 bar plot (if valid).

## Examples

```
capl_results <- get_capl_demo_data(n = 25)

get_capl_bar_plot(
  score = capl_results$capl_score,
  interpretation = capl_results$capl_interpretation,
  x_label = "Overall physical literacy interpretation",
  y_label = "Overall physical literacy score",
)
```

---

get_capl_demo_data	<i>Generate CAPL-2 demo (fake) raw data.</i>
--------------------	--

---

## Description

This function generates a data frame of CAPL-2 demo (fake) raw data containing the 60 required variables that the `capl` package needs to compute scores and interpretations.

## Usage

```
get_capl_demo_data(n = 500)
```

## Arguments

<code>n</code>	A numeric (integer) vector representing the number of rows of data to generate. By default, <code>n</code> is set to 500.
----------------	---

## Value

Returns a data frame containing the 60 required variables that the `capl` package needs to compute scores and interpretations.

## Examples

```
capl_demo_data <- get_capl_demo_data(10000)

str(capl_demo_data)

# 'data.frame': 10000 obs. of 60 variables:
# $ age : int 9 10 8 8 11 9 12 NA 10 7 ...
# $ gender : chr "Girl" "Boy" "Boy" "Girl" ...
# $ pacer_lap_distance : num 20 15 20 20 15 15 15 20 15 20 ...
# $ pacer_laps : int 5 112 150 46 51 82 43 189 55 91 ...
# $ plank_time : int 238 66 95 173 299 172 169 33 277 152 ...
# $ camsa_skill_score1 : int 9 3 7 NA 8 14 13 14 11 11 ...
# $ camsa_time1 : int 17 33 26 22 31 28 NA 24 12 11 ...
# $ camsa_skill_score2 : int 12 11 12 9 NA 9 7 10 14 11 ...
# $ camsa_time2 : int 15 13 15 20 12 15 29 12 12 18 ...
# $ steps1 : int 29663 30231 3157 5751 23362 28283 ...
# $ time_on1 : chr "05:00" "5:13am" "07:00" "8:00am" ...
# $ time_off1 : chr "11:57pm" "10:57 pm" "10:57 pm" "11:57pm" ...
# $ non_wear_time1 : int 38 47 38 40 36 32 36 82 25 51 ...
# $ steps2 : int 29703 9142 5424 23763 3645 28625 3019 ...
# $ time_on2 : chr "07:00" "07:48am" "6:07" "06:00" ...
# $ time_off2 : chr "22:00" "21:00" "8:17pm" "10:57 pm" ...
# $ non_wear_time2 : int 5 34 41 60 84 18 19 47 66 55 ...
# $ steps3 : int 20380 10987 5885 13518 14385 30680 14120 ...
# $ time_on3 : chr "07:00" "06:00" "6:07" "8:00am" ...
# $ time_off3 : chr "11:13pm" "11:57pm" "21:00" "08:30pm" ...
# $ non_wear_time3 : int 54 70 16 36 72 16 89 86 26 81 ...
# $ steps4 : int 13224 20817 19640 2326 16605 25783 23078 ...
# $ time_on4 : chr "07:48am" "5:13am" "5:13am" "6:07" ...
# $ time_off4 : chr "11:13pm" NA "22:00" "23:00" ...
# $ non_wear_time4 : int 2 48 61 NA 81 81 2 30 35 14 ...
```

```

# $ steps5 : int 28408 8845 5802 6966 24499 18561 13771 ...
# $ time_on5 : chr "5:13am" NA "06:00" "6:07" ...
# $ time_off5 : chr "11:13pm" NA "11:57pm" "11:13pm" ...
# $ non_wear_time5 : int 75 10 70 45 77 75 90 61 17 72 ...
# $ steps6 : int 9581 18237 6377 3282 16898 15649 19890 ...
# $ time_on6 : chr "6:13" "6:07" "07:00" "8:00am" ...
# $ time_off6 : chr "11:57pm" "21:00" "10:57 pm" "8:17pm" ...
# $ non_wear_time6 : int 13 14 37 28 14 86 89 19 78 40 ...
# $ steps7 : int 8205 15351 16948 19442 4026 10830 4644 ...
# $ time_on7 : chr "05:00" NA "07:48am" "6:07" ...
# $ time_off7 : chr NA "22:00" "08:30pm" "08:30pm" ...
# $ non_wear_time7 : int 84 40 42 34 13 58 67 86 64 46 ...
# $ self_report_pa : int 4 NA NA 7 1 1 6 7 6 6 ...
# $ csappa1 : int 2 1 1 1 2 1 4 3 3 3 ...
# $ csappa2 : int 3 3 1 4 4 2 3 1 4 4 ...
# $ csappa3 : int 1 2 4 1 2 4 1 4 4 1 ...
# $ csappa4 : int 4 1 3 4 2 3 1 2 2 4 ...
# $ csappa5 : int 2 4 2 2 4 1 1 1 3 1 ...
# $ csappa6 : int 2 2 2 3 4 3 2 3 1 1 ...
# $ why_are_you_active1 : int 5 2 5 5 2 5 1 1 5 1 ...
# $ why_are_you_active2 : int 4 5 2 4 3 1 5 1 4 1 ...
# $ why_are_you_active3 : int 2 1 4 3 1 2 1 5 3 3 ...
# $ feelings_about_pa1 : int 4 1 5 3 4 4 4 5 4 5 ...
# $ feelings_about_pa2 : int 5 3 4 4 1 2 5 2 1 3 ...
# $ feelings_about_pa3 : int 3 4 3 5 1 1 4 2 1 4 ...
# $ pa_guideline : int 1 3 3 1 4 1 1 4 4 2 ...
# $ cardiorespiratory_fitness_means : int 2 3 2 3 4 1 3 4 1 3 ...
# $ muscular_strength_means : int 1 1 4 2 4 4 2 1 1 3 ...
# $ sports_skill : int 3 1 1 4 1 3 1 1 3 2 ...
# $ pa_is : int 10 1 9 5 7 7 8 3 7 10 ...
# $ pa_is_also : int 7 1 7 9 1 6 3 4 3 7 ...
# $ improve : int 3 3 3 3 3 3 10 3 3 3 ...
# $ increase : int 8 8 10 4 8 8 8 9 8 8 ...
# $ when_cooling_down : int 5 2 2 2 2 2 4 2 3 7 ...
# $ heart_rate : int 4 9 7 4 4 4 4 4 5 7 ...

```

---

```
get_capl_domain_status
```

*Compute the status of a CAPL domain.*

---

## Description

This function computes the status ("complete", "missing interpretation", "missing protocol" or "incomplete") of a CAPL domain (e.g., pc\_status, db\_status, mc\_status, ku\_status, capl\_status).

## Usage

```
get_capl_domain_status(x = NULL, domain = NA)
```

## Arguments

**x** A data frame that includes the required variables for a given domain (see Details).

domain            A character vector representing one of the CAPL-2 domains (valid values are "pc", "db", "mc", "ku" and "capl")

### Details

If the domain argument is set to "pc", the following variables must be included in the x argument:

- pc\_score
- pc\_interpretation
- pacer\_score
- plank\_score
- camsa\_score

If the domain argument is set to "db", the following variables must be included the x argument:

- db\_score
- db\_interpretation
- step\_score
- self\_report\_pa\_score

If the domain argument is set to "mc", the following variables must be included the x argument:

- mc\_score
- mc\_interpretation
- predilection\_score
- adequacy\_score
- intrinsic\_motivation\_score
- pa\_competence\_score

If the domain argument is set to "ku", the following variables must be included the x argument:

- ku\_score
- ku\_interpretation
- pa\_guideline\_score
- cardiorespiratory\_fitness\_means\_score
- muscular\_strength\_means\_score
- sports\_skill\_score
- fill\_in\_the\_blanks\_score

If the domain argument is set to "capl", the following variables must be included the x argument:

- capl\_score
- capl\_interpretation
- pc\_score
- db\_score
- mc\_score
- ku\_score
- capl\_score

Other capl functions called by this function include: [validate\\_character\(\)](#) and [validate\\_number\(\)](#).

**Value**

Returns a character vector with a value of "complete", "missing interpretation", "missing protocol" or "incomplete".

**Examples**

```
capl_demo_data <- get_capl_demo_data(3)

capl_results <- get_capl(capl_demo_data)

get_capl_domain_status(capl_results, "pc")

# [1] "complete"          "incomplete"        "missing interpretation"
```

---

```
get_capl_interpretation
```

*Compute a CAPL-2 interpretation for a given CAPL-2 protocol or domain score.*

---

**Description**

This function computes an age- and gender-specific CAPL-2 interpretation for a given CAPL-2 protocol or domain score (e.g., pc\_interpretation).

**Usage**

```
get_capl_interpretation(age = NA, gender = NA, score = NA, protocol = NA)
```

**Arguments**

age	A numeric vector (valid values are between 8 and 12).
gender	A character vector (valid values currently include "girl", "g", "female", "f", "boy", "b", "male", "m").
score	A numeric vector. If the protocol argument is set to "pacer" or "steps", this argument must contain integers.
protocol	A character vector representing a CAPL protocol (valid values include "pacer", "plank", "camsa", "pc", "steps", "self_report_pa", "db", "mc", "ku", "capl"; valid values are not case-sensitive).

**Details**

Other capl functions called by this function include: [validate\\_age\(\)](#), [validate\\_gender\(\)](#), [validate\\_character\(\)](#), [validate\\_number\(\)](#) and [validate\\_scale\(\)](#). This function will check whether a score for a given protocol is within a valid range; if not, NA will be returned.

**Value**

Returns a character vector with values of "beginning", "progressing", "achieving" or "excelling" (if valid) or NA (if not valid).

**Examples**

```

get_capl_interpretation(
  age = 7:13,
  gender = c("g", "g", "b", "Boy", "m", "f", "Female"),
  score = c(50, 25, 100, 5, 150, 23, 78),
  protocol = "pacer"
)

# [1] NA          "achieving"  "excelling"  "beginning"  "excelling"  "progressing"
# [7] NA

```

---

get_capl_score	<i>Compute an overall physical literacy score.</i>
----------------	--

---

**Description**

This function computes an overall physical literacy score (capl\_score) based on the physical competence (pc\_score), daily behaviour (db\_score), motivation and confidence (mc\_score), and knowledge and understanding (ku\_score) domain scores. If one of the scores is missing or invalid, a weighted score will be computed from the other three scores.

**Usage**

```
get_capl_score(pc_score = NA, db_score = NA, mc_score = NA, ku_score = NA)
```

**Arguments**

pc_score	A numeric vector (valid values are between 0 and 30).
db_score	A numeric (integer) vector (valid values are between 0 and 30).
mc_score	A numeric vector (valid values are between 0 and 30).
ku_score	A numeric vector (valid values are between 0 and 10).

**Details**

Other capl functions called by this function include: [validate\\_number\(\)](#), [validate\\_integer\(\)](#) and [validate\\_domain\\_score\(\)](#).

**Value**

Returns a numeric vector with values between 0 and 100 (if valid) or NA (if not valid).

**Examples**

```

get_capl_score(
  pc_score = c(20, 15, 12, 5, 31),
  db_score = c(20, 15, 6, 4.1, 25),
  mc_score = c(20, 20, 19, 15.4, 25),
  ku_score = c(11, 4, 5, 7.8, 10)
)

# [1] 66.66667 54.00000 42.00000 40.28571 85.71429

```

---

get_db_score	<i>Compute a daily behaviour domain score.</i>
--------------	--

---

### Description

This function computes a daily behaviour domain score (db\_score) based on the step and self-reported physical activity scores. This score is used to compute the overall physical literacy score (capl\_score).

### Usage

```
get_db_score(step_score = NA, self_report_pa_score = NA)
```

### Arguments

step_score	A numeric (integer) vector representing the pedometer steps score (valid values are integers between 0 and 25).
self_report_pa_score	A numeric (integer) vector representing the self-reported physical activity score (valid values are integers between 0 and 5).

### Details

Other capl functions called by this function include: [validate\\_scale\(\)](#).

### Value

Returns a numeric (integer) vector with values between 0 and 30 (if valid) or NA (if not valid).

### Examples

```
get_db_score(
  step_score = c(20, 6, 13, 5, NA, 4.5),
  self_report_pa_score = c(3, 2, 1, 4, 7, 3)
)

# [1] 23  8 14  9 NA NA
```

---

get_fill_in_the_blanks_score	<i>Compute a fill in the blanks score.</i>
------------------------------	--

---

### Description

This function computes a score (fill\_in\_the\_blanks\_score) for responses to the fill in the blanks items (story about Sally) in the CAPL-2 Questionnaire. This score is used to compute the knowledge and understanding domain score (ku\_score).



## Usage

```
get_fill_in_the_blanks_score(  
  pa_is = NA,  
  pa_is_also = NA,  
  improve = NA,  
  increase = NA,  
  when_cooling_down = NA,  
  heart_rate = NA  
)
```

## Arguments

pa_is	A vector representing a response to the first fill in the blank item (correct answers are 1, 7, "Fun" or "Good").
pa_is_also	A vector representing a response to the second fill in the blank item (correct answers are 1, 7, "Fun" or "Good").
improve	A vector representing a response to the third fill in the blank item (correct answers are 3 or "Endurance").
increase	A vector representing a response to the fourth fill in the blank item (correct answers are 8 or "Strength").
when_cooling_down	A vector representing a response to the fifth fill in the blank item (correct answers are 2 or "Stretches").
heart_rate	A vector representing a response to the sixth fill in the blank item (correct answers are 4 or "Pulse").

## Details

The following integers represent the responses for the items/arguments in this function:

- 1 = Fun
- 2 = Stretches
- 3 = Endurance
- 4 = Pulse
- 5 = Breathing
- 6 = Flexibility
- 7 = Good
- 8 = Strength
- 9 = Bad
- 10 = Sport

Other cap1 functions called by this function include: [get\\_binary\\_score\(\)](#).

## Value

Returns a numeric (integer) vector with values between 0 and 5 (if valid) or NA (if not valid).

**Examples**

```
get_fill_in_the_blanks_score(
  pa_is = c(2, 3, "fun", 9),
  pa_is_also = c(2, 5, "Fun", 9),
  improve = c(1, 3, 10, "Endurance"),
  increase = c(2, 3.5, "strength", "strength"),
  when_cooling_down = c("stretches", 9, 2, ""),
  heart_rate = c(3, 9, 4, "pulse")
)

# [1] 0 1 3 1
```

---

```
get_intrinsic_motivation_score
```

*Compute an intrinsic motivation score.*

---

**Description**

This function computes an intrinsic motivation score (`intrinsic_motivation_score`) for responses to items 1-3 of the the Behavioral Regulation in Exercise Questionnaire (BREQ) as they appear in [the CAPL-2 Questionnaire](#). This score is used to compute the motivation and confidence domain score (`mc_score`).

**Usage**

```
get_intrinsic_motivation_score(
  why_are_you_active1 = NA,
  why_are_you_active2 = NA,
  why_are_you_active3 = NA
)
```

**Arguments**

`why_are_you_active1`  
A numeric (integer) vector representing a response to BREQ item 1 (valid values are integers between 1 and 5).

`why_are_you_active2`  
a numeric (integer) vector representing a response to BREQ item 2 (valid values are integers between 1 and 5).

`why_are_you_active3`  
a numeric (integer) vector representing a response to BREQ item 3 (valid values are integers between 1 and 5).

**Details**

Other cap1 functions called by this function include: [validate\\_scale\(\)](#).

Valid values (integers between 1 and 5) represent the following responses:

- 1 = Not true for me
- 2 = Not really true for me

- 3 = Sometimes true for me
- 4 = Often true for me
- 5 = Very true for me

### Value

Returns a numeric vector with values between 1.5 and 7.5 (if valid) or NA (if not valid).

### Examples

```
get_intrinsic_motivation_score(
  why_are_you_active1 = c(4, 3, 6, 5, "2"),
  why_are_you_active2 = c(1:5),
  why_are_you_active3 = c(1, 5, 4, 3, 3)
)

# [1] 3 5 NA 6 5
```

---

get_ku_score	<i>Compute a knowledge and understanding domain score.</i>
--------------	--

---

### Description

This function computes a knowledge and understanding domain score (ku\_score) based on the physical activity guideline (pa\_guideline\_score), cardiorespiratory fitness means (cardiorespiratory\_fitness\_means\_score), muscular strength and endurance means (muscular\_strength\_means\_score), sports skill (sports\_skill\_score) or invalid, a weighted domain score will be computed from the other four scores. This score is used to compute the overall physical literacy score (capl\_score').

### Usage

```
get_ku_score(
  pa_guideline_score = NA,
  cardiorespiratory_fitness_means_score = NA,
  muscular_strength_means_score = NA,
  sports_skill_score = NA,
  fill_in_the_blanks_score = NA
)
```

### Arguments

pa_guideline_score	A numeric (integer) vector (valid values are between 0 and 1).
cardiorespiratory_fitness_means_score	A numeric (integer) vector (valid values are between 0 and 1).
muscular_strength_means_score	A numeric (integer) vector (valid values are between 0 and 1).
sports_skill_score	A numeric (integer) vector (valid values are between 0 and 1).
fill_in_the_blanks_score	A numeric (integer) vector (valid values are between 0 and 6).

## Details

Other cap1 functions called by this function include: [validate\\_scale\(\)](#).

## Value

Returns a numeric vector with values between 0 and 10 (if valid) or NA (if not valid).

## Examples

```
get_ku_score(
  pa_guideline_score = c(1, 0, 1, 1, NA),
  cardiorespiratory_fitness_means_score = c(0, 1, "", 2, 1),
  muscular_strength_means_score = c(1, 1, 1, 0, 0),
  sports_skill_score = c(0, 0, 1, 0, 1),
  fill_in_the_blanks_score = c(5, 6, 3, 1, 2)
)

# [1] 7.000000 8.000000 6.666667 2.222222 4.444444
```

---

get\_mc\_score

*Compute a motivation and confidence domain score.*

---

## Description

This function computes a motivation and confidence domain score (mc\_score) based on the predilection (predilection\_score), adequacy (adequacy\_score), intrinsic motivation (intrinsic\_motivation\_score) and physical activity competence (pa\_competence\_score) scores. If one of the scores is missing or invalid, a weighted domain score will be computed from the other three scores. This score is used to compute the overall physical literacy score (cap1\_score).

## Usage

```
get_mc_score(
  predilection_score = NA,
  adequacy_score = NA,
  intrinsic_motivation_score = NA,
  pa_competence_score = NA
)
```

## Arguments

predilection\_score

A numeric vector (valid values are between 1.8 and 7.5).

adequacy\_score A numeric vector (valid values are between 1.8 and 7.5).

intrinsic\_motivation\_score

A numericvector (valid values are between 1.5 and 7.5).

pa\_competence\_score

A numeric vector (valid values are between 1.5 and 7.5).

**Details**

Other capl functions called by this function include: [validate\\_number\(\)](#).

**Value**

Returns a numeric vector with values between 0 and 30 (if valid) or NA (if not valid).

**Examples**

```
get_mc_score(
  predilection_score = c(7, 7.5, 5, 8, 4),
  adequacy_score = c(NA, 5, 3, 1, 4),
  intrinsic_motivation_score = c(5, 7.5, 4, 2, 3.5),
  pa_competence_score = c(6, 3, 6, 7, 2)
)

# [1] 24.0 23.0 18.0 NA 13.5
```

---

```
get_missing_capl_variables
```

*Add required CAPL-2 variables to a data frame of raw data if they are missing.*

---

**Description**

This function adds required CAPL-2 variables (see Details for a full list) to a data frame of raw data if they are missing. When missing variables are added, the values for a given missing variable are set to NA. This function is called within [get\\_capl\(\)](#) so that CAPL-2 score and interpretation computations will run without errors in the presence of missing variables.

**Usage**

```
get_missing_capl_variables(raw_data = NULL)
```

**Arguments**

`raw_data`            a data frame of raw CAPL-2 data.

**Details**

The required CAPL-2 variables include:

- age
- gender
- pacer\_lap\_distance
- pacer\_laps
- plank\_time
- camsa\_skill\_score1
- camsa\_time1

- camsa\_skill\_score2
- camsa\_time2
- steps1
- time\_on1
- time\_off1
- non\_wear\_time1
- steps2
- time\_on2
- time\_off2
- non\_wear\_time2
- steps3
- time\_on3
- time\_off3
- non\_wear\_time3
- steps4
- time\_on4
- time\_off4
- non\_wear\_time4
- steps5
- time\_on5
- time\_off5
- non\_wear\_time5
- steps6
- time\_on6
- time\_off6
- non\_wear\_time6
- steps7
- time\_on7
- time\_off7
- non\_wear\_time7
- self\_report\_pa
- csappa1
- csappa2
- csappa3
- csappa4
- csappa5
- csappa6
- why\_are\_you\_active1
- why\_are\_you\_active2
- why\_are\_you\_active3

- feelings\_about\_pa1
- feelings\_about\_pa2
- feelings\_about\_pa3
- pa\_guideline
- cardiorespiratory\_fitness\_means
- muscular\_strength\_means
- sports\_skill
- pa\_is
- pa\_is\_also
- improve
- increase
- when\_cooling\_down
- heart\_rate

Examining the structure (see [str\(\)](#)) of some CAPL-2 demo data (see [get\\_capl\\_demo\\_data\(\)](#)) provides additional information about these variables.

### Value

returns a merged data frame of raw data and missing required CAPL-2 variables (values are set to NA).

### Examples

```
raw_data <- get_missing_capl_variables(raw_data)
```

---

get_pacer_20m_laps	<i>Convert PACER shuttle run laps to their equivalent in 20-metre laps.</i>
--------------------	---

---

### Description

This function converts PACER (Progressive Aerobic Cardiovascular Endurance Run) shuttle run laps to their equivalent in 20-metre laps (pacer\_laps\_20m). If laps are already 20-metre laps, they are returned unless outside the valid range (1-229). This variable is used to compute the PACER score (pacer\_score).

### Usage

```
get_pacer_20m_laps(lap_distance = NA, laps_run = NA)
```

### Arguments

- |              |  |
|--------------|--|
| lap_distance | A numeric (integer) vector (valid values are 15 or 20).  |
| laps_run     | A numeric (integer) vector (if lap_distance = 15, valid values are integers between 1 and 298; if lap_distance = 20, valid values are integers between 1 and 229). |

**Details**

Other cap1 functions called by this function include: [validate\\_integer\(\)](#) and [validate\\_scale\(\)](#).

**Value**

Returns a numeric (integer) vector with values between 1 and 229 (if valid) or NA (if not valid).

**Examples**

```
get_pacer_20m_laps(
  lap_distance = c(15, 20, NA, "15", 20.5),
  laps_run = rep(100, 5)
)

# [1] 77 100 NA 77 NA
```

---

get_pacer_score	<i>Compute a PACER score.</i>
-----------------	-------------------------------

---

**Description**

This function computes a PACER (Progressive Aerobic Cardiovascular Endurance Run) score (`pacer_score`) based on the number of PACER laps run at a 20-metre distance. This score is used to compute the physical competence domain score variable (`pc_score`).

**Usage**

```
get_pacer_score(pacer_laps_20m = NA)
```

**Arguments**

`pacer_laps_20m` A numeric (integer) vector (valid values between 1 and 229).

**Details**

Other cap1 functions called by this function include: [validate\\_scale\(\)](#) and [validate\\_integer\(\)](#).

**Value**

Returns a numeric (integer) vector with values between 0 and 10 (if valid) or NA (if not valid).

**Examples**

```
get_pacer_score(c(1, 6, 12, 18, NA, 46, 31, 45.1))

# [1] 0 1 2 3 NA 9 6 NA
```



---

`get_pa_competence_score`*Compute a physical activity competence score.*

---

## Description

This function computes a physical activity competence score (`pa_competence_score`) for responses to items 4-6 of the Behavioral Regulation in Exercise Questionnaire (BREQ) as they appear in [the CAPL-2 Questionnaire](#). This score is used to compute the motivation and confidence domain score (`mc_score`).

## Usage

```
get_pa_competence_score(  
  feelings_about_pa1 = NA,  
  feelings_about_pa2 = NA,  
  feelings_about_pa3 = NA  
)
```

## Arguments

`feelings_about_pa1`

A numeric (integer) vector representing a response to BREQ item 4 (valid values are integers between 1 and 5).

`feelings_about_pa2`

A numeric (integer) vector representing a response to BREQ item 5 (valid values are integers between 1 and 5).

`feelings_about_pa3`

A numeric (integer) vector representing a response to BREQ item 6 (valid values are integers between 1 and 5).

## Details

Other capl functions called by this function include: [validate\\_scale\(\)](#).

Valid elements (integers between 1 and 5) represent the following responses:

- 1 = Not true for me
- 2 = Not really true for me
- 3 = Sometimes true for me
- 4 = Often true for me
- 5 = Very true for me

## Value

Returns a numeric vector with values between 1.5 and 7.5 (if valid) or NA (if not valid).

**Examples**

```
get_pa_competence_score(
  feelings_about_pa1 = c(4, 3, 6, 5, "2"),
  feelings_about_pa2 = c(1:5),
  feelings_about_pa3 = c(1, 5, 4, 3, 3)
)

# [1] 3 5 NA 6 5
```

get\_pc\_score

*Compute a physical competence domain score.***Description**

This function computes a physical competence domain score (pc\_score) based on the PACER (Progressive Aerobic Cardiovascular Endurance Run), plank and CAMSA (Canadian Agility and Movement Skill Assessment) scores. If one protocol score is missing or invalid, a weighted domain score will be computed from the other two protocol scores. This score is used to compute the physical competence domain score (pc\_score).

**Usage**

```
get_pc_score(pacer_score = NA, plank_score = NA, camsa_score = NA)
```

**Arguments**

pacer_score	A numeric (integer) vector representing the PACER score (valid values are integers between 0 and 10).
plank_score	a numeric (integer) vector representing the plank score (valid values are integers between 0 and 10).
camsa_score	A numeric vector representing the best CAMSA skill + skill score divided by 2.8 (valid values are between 0 and 10).

**Details**

Other cap1 functions called by this function include: [validate\\_scale\(\)](#).

**Value**

Returns a numeric vector with values between 0 and 30 (if valid) or NA (if not valid).

**Examples**

```
get_pc_score(
  pacer_score = c(1, 5, 8, 10, NA),
  plank_score = c(4, 5, 5, 6, 9),
  camsa_score = c(-1, 0, 6, 4, 3)
)

# [1] 7.5 10.0 19.0 20.0 18.0
```

---

`get_pedometer_wear_time`*Compute pedometer wear time in decimal hours for a given day.*

---

## Description

This function computes pedometer wear time in decimal hours for a given day (e.g., `wear_time1`). This variable is used to compute the `step_average` variable and the step score (`step_score`).

## Usage

```
get_pedometer_wear_time(time_on = NA, time_off = NA, non_wear_time = NA)
```

## Arguments

<code>time_on</code>	A character vector representing the time (in 12- or 24-hour clock format) when the pedometer was first worn on a given day.
<code>time_off</code>	A character vector representing the time (in 12- or 24-hour clock format) when the pedometer was removed at the end of a given day.
<code>non_wear_time</code>	A numeric vector representing the total time (in minutes) the pedometer was not worn during waking hours on a given day.

## Details

Other cap1 functions called by this function include: [get\\_24\\_hour\\_clock\(\)](#) and [validate\\_number\(\)](#).

## Value

Returns a numeric vector with values  $\geq 0$  (if valid) or NA (if not valid).

## Examples

```
get_pedometer_wear_time(  
  time_on = c("6:23", "5:50 am", NA),  
  time_off = c("21:37", "9:17pm", ""),  
  c(60, 90, 0)  
)  
  
# [1] 14.23 13.95    NA
```

---

get_plank_score	<i>Compute a plank score.</i>
-----------------	-------------------------------

---

### Description

This function computes a plank score (plank\_score) based on the duration of time (in seconds) for which a plank is held. This score is used to compute the physical competence domain score (pc\_score).

### Usage

```
get_plank_score(plank_time = NA)
```

### Arguments

plank\_time      A numeric vector representing time (in seconds).

### Details

Other cap1 functions called by this function include: [validate\\_number\(\)](#).

### Value

Returns a numeric vector with values between 0 and 10 (if valid) or NA (if not valid).

### Examples

```
get_plank_score(c(120.5, 75.6, 40, 10.99, 90))
# [1] 10 6 3 0 8
```

---

get_predilection_score	<i>Compute a predilection score.</i>
------------------------	--------------------------------------

---

### Description

This function computes a predilection score (predilection\_score) for responses to items 1, 3 and 5 of the CSAPPA (Children's Self-Perceptions of Adequacy in and Predilection for Physical Activity; Hay, 1992) Questionnaire as they appear in [the CAPL-2 Questionnaire](#). This score is used to compute the motivation and confidence domain score (mc\_score).

### Usage

```
get_predilection_score(csappa1 = NA, csappa3 = NA, csappa5 = NA)
```

**Arguments**

csappa1	A numeric (integer) vector representing a response to CSAPPA item 1 (valid values are integers between 1 and 4).
csappa3	A numeric (integer) vector representing a response to CSAPPA item 3 (valid values are integers between 1 and 4).
csappa5	A numeric (integer) vector representing a response to CSAPPA item 5 (valid values are integers between 1 and 4).

**Details**

Valid values (integers between 1 and 4) represent the following responses:

- 1 = REALLY TRUE for me for "some kids" statements
- 2 = SORT OF TRUE for me for "some kids" statements
- 3 = REALLY TRUE for me for "other kids" statements
- 4 = SORT OF TRUE for me for "other kids" statements

Other cap1 functions called by this function include: [validate\\_scale\(\)](#).

**Value**

Returns a numeric vector with values between 1.8 and 7.5 (if valid) or NA (if not valid).

**Examples**

```
get_predilection_score(
  csappa1 = c(1:3, 0),
  csappa3 = c(4, 2, 1, "3"),
  csappa5 = c(4, 4, 2, 2)
)

# [1] 4.2 4.2 4.3 NA
```

---

get\_self\_report\_pa\_score

*Compute a score for a response to the self-reported physical activity question.*

---

**Description**

This function computes a score (self\_report\_pa\_score) for a response to "During the past week (7 days), on how many days were you physically active for a total of at least 60 minutes per day? (all the time you spent in activities that increased your heart rate and made you breathe hard)?" in the CAPL-2 Questionnaire. This score is used to compute the daily behaviour domain score (db\_score).

**Usage**

```
get_self_report_pa_score(x = NA)
```

**Arguments**

`x` A numeric (integer) vector representing the self-reported physical activity question (valid values are integers between 0 and 7).

**Details**

Other cap1 functions called by this function include: `validate_scale()`.

**Value**

Returns a numeric (integer) vector with values between 0 and 5 (if valid) or NA (if not valid).

**Examples**

```
get_self_report_pa_score(c(1, 8, 3, 4, 5, 2, 7))
# [1] 0 NA 2 3 4 1 5
```

---

get_step_average	<i>Compute average daily steps taken.</i>
------------------	---

---

**Description**

This function computes the daily arithmetic mean of a week of steps taken as measured by a pedometer (step\_average). This variable is used to compute the step score (step\_score).

**Usage**

```
get_step_average(raw_data = NULL)
```

**Arguments**

`raw_data` A data frame that includes seven days of pedometer steps and their corresponding on and off times. See Details for how these variables must be named.

**Details**

This function will throw an error unless the following variables are found in the `raw_data` argument:

- steps1
- steps2
- steps3
- steps4
- steps5
- steps6
- steps7
- time\_on1
- time\_on2

- time\_on3
- time\_on4
- time\_on5
- time\_on6
- time\_on7
- time\_off1
- time\_off2
- time\_off3
- time\_off4
- time\_off5
- time\_off6
- time\_off7

There must be at least three valid days for an arithmetic mean to be computed. If only three valid days, one of the step values from a valid day will be randomly sampled and used for the fourth valid day before computing the mean.

Other cap1 functions called by this function include: [validate\\_steps\(\)](#) and [get\\_pedometer\\_wear\\_time\(\)](#).

### Value

Returns a data frame with nine columns: steps1 (validated), steps2 (validated), steps3 (validated), steps4 (validated), steps5 (validated), steps6 (validated), steps7 (validated), valid\_days and step\_average. The steps are validated with the [validate\\_steps\(\)](#) function.

### Examples

```
cap1_demo_data <- get_cap1_demo_data(10)

get_step_average(cap1_demo_data)$step_average

# [1] 18365 12655 15493 12966 11396 13954 18456 13589 17543 11276
```

---

get_step_score	<i>Compute a step score.</i>
----------------	------------------------------

---

### Description

This function computes a step score (step\_score) based on the average daily steps taken as measured by a pedometer. This score is used to compute the daily behaviour domain score (db\_score).

### Usage

```
get_step_score(step_average = NA)
```

### Arguments

step\_average    A numeric vector representing average daily steps taken. See [get\\_step\\_average\(\)](#).

**Details**

Other capl functions called by this function include: [validate\\_number\(\)](#).

**Value**

Returns a numeric (integer) vector with values between 0 and 25 (if valid) or NA (if not valid).

**Examples**

```
capl_demo_data <- get_capl_demo_data(10)

step_average <- get_step_average(capl_demo_data)$step_average

get_step_score(step_average)

# [1] 25 18 22 18 15 20 25 20 24 15
```

---

import_capl_data	<i>Import CAPL-2 data from an Excel workbook.</i>
------------------	---

---

**Description**

This function imports CAPL-2 data from an Excel workbook on a local computer.

**Usage**

```
import_capl_data(file_path = NA, sheet_name = NA)
```

**Arguments**

file_path	A character vector representing the file path to an Excel workbook on the user's local computer (e.g., "c:/users/user_name/desktop/file.xlsx"). The file path is not case-sensitive.
sheet_name	An optional character vector representing the sheet to import from the Excel workbook. If this argument is not set, the first sheet in the workbook will be imported.

**Details**

Other capl functions called by this function include: [validate\\_character\(\)](#).

**Value**

Returns a data frame if the Excel workbook sheet is successfully imported.



**Examples**

```

capl_demo_data <- import_capl_data(
  file_path = "c:/users/joel/desktop/capl_demo_data.xlsx",
  sheet_name = "Sheet1"
)

str(capl_demo_data)

# tibble [500 x 60] (S3: tbl_df/tbl/data.frame)
# $ age                               : num [1:500] 8 9 9 8 12 10 12 10 12 9 ...
# $ gender                           : chr [1:500] "Male" "Female" "Male" "f" ...
# $ pacer_lap_distance                : num [1:500] 15 20 20 15 20 15 15 15 15 NA ...
# $ pacer_laps                       : num [1:500] 23 31 169 50 63 15 32 143 43 182 ...
# $ plank_time                       : num [1:500] 274 282 9 228 252 110 21 185 6 41 ...
# $ camsa_skill_score1               : num [1:500] 14 5 6 13 2 9 4 11 5 11 ...
# $ camsa_time1                     : num [1:500] 34 27 13 35 21 NA NA 16 20 14 ...
# $ camsa_skill_score2              : num [1:500] 14 5 13 11 14 14 0 4 0 4 ...
# $ camsa_time2                     : num [1:500] 35 23 14 35 23 23 33 30 29 18 ...
# $ steps1                          : num [1:500] 30627 27788 8457 8769 14169 ...
# $ time_on1                        : chr [1:500] "5:13am" "6:13" "6:07" "6:13" ...
# $ time_off1                       : chr [1:500] "22:00" NA "21:00" "22:00" ...
# $ non_wear_time1                  : num [1:500] 25 31 33 25 83 67 20 10 49 64 ...
# $ steps2                          : num [1:500] 14905 24750 30111 21077 15786 ...
# $ time_on2                        : chr [1:500] "06:00" "5:13am" "6:13" "6:13" ...
# $ time_off2                       : chr [1:500] "21:00" "23:00" "11:13pm" "23:00" ...
# $ non_wear_time2                  : num [1:500] 20 82 4 55 1 53 65 47 82 79 ...
# $ steps3                          : num [1:500] 21972 15827 14130 13132 18022 ...
# $ time_on3                        : chr [1:500] "07:00" "05:00" "07:48am" NA ...
# $ time_off3                       : chr [1:500] "11:57pm" NA "08:30pm" NA ...
# $ non_wear_time3                  : num [1:500] 6 79 23 65 34 15 72 76 60 40 ...
# $ steps4                          : num [1:500] 28084 27369 14315 9963 6993 ...
# $ time_on4                        : chr [1:500] "05:00" "6:13" "6:07" NA ...
# $ time_off4                       : chr [1:500] "08:30pm" "10:57 pm" "22:00" "11:13pm" ...
# $ non_wear_time4                  : num [1:500] 32 38 74 20 75 22 84 59 42 22 ...
# $ steps5                          : num [1:500] 14858 21112 16880 11707 20917 ...
# $ time_on5                        : chr [1:500] "6:07" "6:13" "06:00" "05:00" ...
# $ time_off5                       : chr [1:500] "11:57pm" "23:00" "8:17pm" "8:17pm" ...
# $ non_wear_time5                  : num [1:500] 61 64 73 23 82 42 66 38 55 18 ...
# $ steps6                          : num [1:500] 17705 5564 16459 12235 27766 ...
# $ time_on6                        : chr [1:500] "06:00" "06:00" NA "6:07" ...
# $ time_off6                       : chr [1:500] "21:00" NA "10:57 pm" "08:30pm" ...
# $ non_wear_time6                  : num [1:500] 33 24 89 8 27 56 66 21 14 7 ...
# $ steps7                          : num [1:500] 11067 13540 12106 18795 15039 ...
# $ time_on7                        : chr [1:500] "6:07" "6:07" "8:00am" "06:00" ...
# $ time_off7                       : chr [1:500] "08:30pm" "11:13pm" "8:17pm" "10:57 pm" ...
# $ non_wear_time7                  : num [1:500] 8 72 4 38 9 32 49 36 34 43 ...
# $ self_report_pa                  : num [1:500] NA 2 2 4 3 5 NA 7 6 7 ...
# $ csappa1                         : num [1:500] 1 2 4 2 2 2 3 2 2 3 ...
# $ csappa2                         : num [1:500] 3 2 1 1 1 1 4 1 4 3 ...
# $ csappa3                         : num [1:500] 2 3 2 1 NA 1 3 3 4 4 ...
# $ csappa4                         : num [1:500] 4 1 1 3 4 4 4 4 4 1 ...
# $ csappa5                         : num [1:500] 4 2 3 2 1 2 2 2 4 1 ...
# $ csappa6                         : num [1:500] 3 4 1 4 2 2 2 3 4 4 ...
# $ why_are_you_active1             : num [1:500] 4 3 5 3 1 5 4 1 1 2 ...
# $ why_are_you_active2             : num [1:500] 5 3 4 2 5 3 5 NA 5 NA ...
# $ why_are_you_active3             : num [1:500] 3 3 1 4 2 3 4 4 5 3 ...

```

```
# $ feelings_about_pa1      : num [1:500] 4 3 2 2 1 1 3 4 4 2 ...
# $ feelings_about_pa2      : num [1:500] 5 2 2 3 4 2 4 4 2 5 ...
# $ feelings_about_pa3      : num [1:500] 2 5 2 5 3 2 2 1 3 5 ...
# $ pa_guideline            : num [1:500] 2 3 4 1 2 4 3 2 2 2 ...
# $ cardiorespiratory_fitness_means: num [1:500] 1 4 4 2 2 1 2 1 4 1 ...
# $ muscular_strength_means  : num [1:500] 3 2 1 2 3 1 1 2 4 2 ...
# $ sports_skill            : num [1:500] 2 4 4 1 3 1 3 1 4 3 ...
# $ pa_is                  : num [1:500] 10 1 1 1 1 1 1 2 1 3 1 ...
# $ pa_is_also             : num [1:500] 5 1 4 4 1 7 2 7 2 8 ...
# $ improve                : num [1:500] 3 3 9 3 9 9 3 3 3 6 ...
# $ increase               : num [1:500] 2 8 3 8 8 1 3 3 8 8 ...
# $ when_cooling_down       : num [1:500] 4 2 4 2 2 2 2 5 2 2 ...
# $ heart_rate             : num [1:500] 5 6 4 4 4 9 4 8 7 4 ...
```

---

rename_variable	<i>Rename variables in a data frame.</i>
-----------------	--

---

## Description

This function renames variables in a data frame.

## Usage

```
rename_variable(x = NULL, search = NA, replace = NA)
```

## Arguments

x	A data frame.
search	A character vector representing the variable names to be renamed.
replace	A character vector representing the new names for those variables identified in the search argument.

## Details

Other capl functions called by this function include: [validate\\_character\(\)](#).

## Value

Returns a data frame with the renamed variables (if variables in the search argument are successfully found and renamed).

## Examples

```
capl_demo_data <- get_capl_demo_data(n = 25)

str(capl_demo_data[, 1:2])

# 'data.frame': 25 obs. of 2 variables:
# $ age : int 11 9 10 11 9 8 11 9 10 12 ...
# $ gender: chr "Female" "Girl" "Girl" "f" ...

capl_demo_data <- rename_variable(
```

```

x = capl_demo_data,
  search = c("age", "gender"),
  replace = c("hello", "world")
)

str(capl_demo_data[, 1:2])

# 'data.frame': 25 obs. of 2 variables:
# $ hello: int  11 9 10 11 9 8 11 9 10 12 ...
# $ world: chr  "Female" "Girl" "Girl" "f" ...

```

---

validate\_age

*Check whether an age is valid for CAPL-2.*


---

## Description

This function checks whether an age is valid (numeric and between 8 and 12). CAPL-2 scores and interpretations are valid for children between the ages of 8 and 12 years.

## Usage

```
validate_age(x)
```

## Arguments

x                      A numeric vector.

## Details

If x contains a decimal value that is otherwise valid (e.g., 8.5, 10.1), this function will return the [floor\(\)](#) of the value.

Other capl functions called by this function include: [validate\\_number\(\)](#).

## Value

Returns a numeric (integer) vector with a value between 8 and 12 (if valid) or NA (if not valid).

## Examples

```

validate_age(c(7:13, "", NA, "12", 8.5))

# [1] NA  8  9 10 11 12 NA NA NA 12  8

```

---

validate_character	<i>Check whether a vector is a character and not of length zero or "".</i>
--------------------	--

---

**Description**

This function checks whether a vector is a character and not of length zero or "".

**Usage**

```
validate_character(x)
```

**Arguments**

x	A vector.
---	-----------

**Value**

Returns a character vector (if valid) or NA (if not valid).

**Examples**

```
validate_character(c("beginning", "progressing", "achieving", "excelling", "", NA, 7))

# [1] "beginning" "progressing" "achieving" "excelling" NA NA
# [7] "7"
```

---

validate_domain_score	<i>Check whether a CAPL-2 domain score is valid.</i>
-----------------------	--

---

**Description**

This function checks whether a CAPL-2 domain score is numeric and within a valid range.

**Usage**

```
validate_domain_score(x = NA, domain = NA)
```

**Arguments**

x	A vector representing a CAPL domain score.
domain	A character vector representing domains within CAPL (valid values are "pc", "db", "mc", "ku"; valid values are not case-sensitive).

**Details**

Other capl functions called by this function include: [validate\\_number\(\)](#) and [validate\\_integer\(\)](#).

**Value**

Returns a numeric vector (if valid) or NA (if not valid).

**Examples**

```
validate_domain_score(
  x = c(34, 15, 10, 12.5, 25),
  domain = "pc"
)

# [1] NA 15.0 10.0 12.5 25.0
```

---

 validate\_gender

---

*Check whether a vector can be classified as "girl" or "boy".*


---

**Description**

This function checks whether a vector can be classified as "girl" or "boy".

**Usage**

```
validate_gender(x)
```

**Arguments**

**x** A vector (see Examples for valid values).

**Value**

Returns a character vector with values of "girl" or "boy" (if valid) or NA (if not valid).

**Examples**

```
validate_gender(c("Girl", "GIRL", "g", "G", "Female", "f", "F", "", NA, 1))

# [1] "girl" "girl" "girl" "girl" "girl" "girl" "girl" "girl" NA      NA      "girl"

validate_gender(c("Boy", "BOY", "b", "B", "Male", "m", "M", "", NA, 0))

# [1] "boy" "boy" "boy" "boy" "boy" "boy" "boy" "boy" NA      NA      "boy"
```

---

 validate\_integer

---

*Check whether a vector is an integer.*


---

**Description**

This function checks whether a vector is an integer.

**Usage**

```
validate_integer(x)
```

**Arguments**

x                      A vector.

**Value**

Returns a numeric (integer) vector (if valid) or NA (if not valid).

**Examples**

```
validate_integer(c(2, 6, 3.3, "", NA, "6", "hello, world"))  
  
# [1]  2  6 NA NA NA  6 NA
```

---

validate_number	<i>Check whether a vector is numeric.</i>
-----------------	---

---

**Description**

This function checks whether a vector is numeric.

**Usage**

```
validate_number(x)
```

**Arguments**

x                      A vector.

**Value**

Returns a numeric vector (if valid) or NA (if not valid).

**Examples**

```
validate_number(c(1:5, "5", "", NA, "hello, world!"))  
  
# [1]  1  2  3  4  5  5 NA NA NA
```

---

validate_scale	<i>Check whether a response to a given questionnaire item or scale is valid.</i>
----------------	--

---

### Description

This function checks whether a vector for a given questionnaire item or scale is valid.

### Usage

```
validate_scale(x, lower_bound = NA, upper_bound = NA)
```

### Arguments

x	A numeric (integer) vector representing the response to a questionnaire item (valid values are between the values set by the lower_bound and upper_bound arguments).
lower_bound	A numeric (integer) vector representing the value below which x is invalid.
upper_bound	A numeric (integer) vector representing the value above which x is invalid.

### Value

Returns a numeric (integer) vector (if valid) or NA (if not valid).

### Examples

```
validate_scale(
  x = c(0:10, NA, "7"),
  lower_bound = 1,
  upper_bound = 7
)

# [1] NA  1  2  3  4  5  6  7 NA NA NA NA  7
```

---

validate_steps	<i>Check whether daily steps as measured by a pedometer are valid.</i>
----------------	--

---

### Description

This function checks whether daily steps as measured by a pedometer are valid. The variables from this function are used to compute step\_average and the step score (step\_score).

### Usage

```
validate_steps(steps = NA, wear_time = NA)
```

**Arguments**

steps	A numeric (integer) vector representing the steps taken on a given day (valid values are between 1000 and 30000).
wear_time	A numeric vector representing the duration of time (in decimal hours) that a pedometer was worn on a given day (valid values are $\geq 10.0$ hours).

**Details**

Other cap1 functions called by this function include: [validate\\_scale\(\)](#) and [validate\\_number\(\)](#).

**Value**

Returns the steps argument (if valid) or NA (if not valid).

**Examples**

```
validate_steps(  
  steps = c(5400, 11001, 999, 31000, 8796),  
  wear_time = c(10.1, 12.6, 10.2, 10.9, 9.5)  
)  
  
# [1] 5400 11001    NA    NA    NA
```



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