Package: intergrowth (via r-universe)

September 12, 2024

Type Package

Title An R Implementation of the INTERGROWTH-21st Standards and Tools

Version 0.0.0.9001

Description The INTERGROWTH-21st Project is a multi-centre, multi-ethnic, population-based project, conducted between 2009 and 2014, in eight demarcated urban areas: Pelotas, Brazil; Shunyi County, Beijing, China; Central Nagpur, India; Turin, Italy; Parklands Suburb, Nairobi, Kenya; Muscat, Oman; Oxford, UK, and Seattle, USA. Its primary aim was to study growth, health, nutrition and neuro-development from less than 14 weeks of gestation to 2 years of age, using the same conceptual framework as the WHO Multicentre Growth Reference Study, so as to produce international prescriptive standards for pregnancy dating, maternal weight gain, fetal growth, newborn size, the postnatal growth of preterm infants and cognitive development at 2 years of age. These scientifically robust clinical tools may be used to monitor and evaluate maternal and fetal well-being, as well as infant health and nutrition at an individual and population level.

License GPL-3

Depends R (>= 2.10)

Imports lubridate, stringr

Suggests testthat, covr, spelling, knitr, rmarkdown

Encoding UTF-8

Language en-GB

LazyData true

RoxygenNote 7.2.3

Roxygen list(markdown = TRUE)

URL https://nutriverse.io/intergrowth/,

https://github.com/nutriverse/intergrowth

BugReports https://github.com/nutriverse/intergrowth/issues

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VignetteBuilder	knitr
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Repository https://nutriverse.r-universe.dev

RemoteUrl https://github.com/nutriverse/intergrowth

RemoteRef HEAD

RemoteSha 2b38cfc719ebde44edd2effe33f471c66b52634a

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Description

International fetal growth standards: table of centiles of abdominal circumference based on gestation age in exact weeks

Usage

```
ac_gestage_centile
```

Format

```
A tibble with 189 rows and 3 columns:

week Gestational age in exact weeks

centile Centiles (3rd, 5th, 10th, 50th, 90th, 95th, 97th)

ac Abdominal circumference in millimetres
```

Source

Papageorghiou AT, Ohuma EO, Altman DG, Todros T, Cheikh Ismail L, Lambert A et al. International standards for fetal growth based on serial ultrasound measurements: the Fetal Growth Longitudinal Study of the INTERGROWTH-21st Project. Lancet 2014, 384(9946):869-79.

```
ac_gestage_centile
```

ac_gestage_sd	International fetal growth standards: table of z-scores of abdominal circumference based on gestation age in exact weeks
	circumperence based on gestation age in exact weeks

Description

International fetal growth standards: table of z-scores of abdominal circumference based on gestation age in exact weeks

Usage

```
ac_gestage_sd
```

Format

A tibble with 189 rows and 3 columns:

```
gestage Gestational age in exact weeks
sd z-scores (-3SD, -2SD, -1SD, 0, 1SD, 2SD, 3SD)
ac Abdominal circumference in millimetres
```

Source

Papageorghiou AT, Ohuma EO, Altman DG, Todros T, Cheikh Ismail L, Lambert A et al. International standards for fetal growth based on serial ultrasound measurements: the Fetal Growth Longitudinal Study of the INTERGROWTH-21st Project. Lancet 2014, 384(9946):869-79.

Examples

```
ac_gestage_sd
```

Description

International Newborn Size References for Very Preterm Infants: table of centiles for birth length-for-gestational age for very preterm infants

```
bl_gestage_pt_centile
```

bl_gestage_pt_sd 5

Format

```
A tibble with 882 rows and 5 columns:

week Gestational age weeks component
day Gestational age days component
sex Sex; 1 = male; 2 = female
centile Centile - 3rd, 5th, 10th, 50th, 90th, 95th, 97th
bl Birth length in centimetres
```

Source

Villar J, Giuliani F, Fenton TR, Ohuma EO, Ismail LC, Kennedy SH et al. INTERGROWTH-21st very preterm size at birth reference charts. Lancet 2016, 387(10021):844-45.

Examples

```
bl_gestage_pt_centile
```

bl_gestage_pt_sd

International Newborn Size References for Very Preterm Infants: table of z-score for birth length-for-gestational age for very preterm infants

Description

International Newborn Size References for Very Preterm Infants: table of z-score for birth lengthfor-gestational age for very preterm infants

Usage

```
bl_gestage_pt_sd
```

Format

```
A tibble with 882 rows and 5 columns:
```

```
week Gestational age weeks component
```

day Gestational age days component

```
sex Sex; 1 = \text{male}; 2 = \text{female}
```

sd Standard deviation (z-score): -3, -2, -1, 0, 1, 2, 3

bl Birth length in centimetres

Source

Villar J, Giuliani F, Fenton TR, Ohuma EO, Ismail LC, Kennedy SH et al. INTERGROWTH-21st very preterm size at birth reference charts. Lancet 2016, 387(10021):844-45.

Examples

```
bl\_gestage\_pt\_sd
```

bl_gestage_term_centile

International Newborn Size Standards: table of centiles for birth length-for-gestational age for infants

Description

International Newborn Size Standards: table of centiles for birth length-for-gestational age for infants

Usage

```
bl_gestage_term_centile
```

Format

A tibble with 980 rows and 5 columns:

week Gestational age weeks component

day Gestational age days component

sex Sex; 1 = male; 2 = female

centile Centile - 3rd, 5th, 10th, 50th, 90th, 95th, 97th

bl Birth length in centimetres

Source

Villar J, Giuliani F, Fenton TR, Ohuma EO, Ismail LC, Kennedy SH et al. INTERGROWTH-21st very preterm size at birth reference charts. Lancet 2016, 387(10021):844-45.

```
bl\_gestage\_term\_centile
```

bl_gestage_term_sd 7

length-for-gestational age for infants	bl_gestage_term_sd	International Newborn Size Standards: length-for-gestational age for infants	table of z-score for birth
--	--------------------	---	----------------------------

Description

International Newborn Size Standards: table of z-score for birth length-for-gestational age for infants

Usage

```
bl_gestage_term_sd
```

Format

```
A tibble with 980 and 5 columns:
```

```
week Gestational age weeks component
```

day Gestational age days component

```
sex Sex; 1 = \text{male}; 2 = \text{female}
```

sd Standard deviation (z-score): -3, -2, -1, 0, 1, 2, 3

bl Birth length in centimetres

Source

Villar J, Giuliani F, Fenton TR, Ohuma EO, Ismail LC, Kennedy SH et al. INTERGROWTH-21st very preterm size at birth reference charts. Lancet 2016, 387(10021):844-45.

Examples

```
{\tt bl\_gestage\_term\_sd}
```

<pre>bpd_gestage_centile</pre>	International fetal growth standards: table of centiles of bi-parietal
	diameter based on gestation age in exact weeks

Description

International fetal growth standards: table of centiles of bi-parietal diameter based on gestation age in exact weeks

```
bpd_gestage_centile
```

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Format

```
A tibble with 189 rows and 3 columns:
week Gestational age in exact weeks
centile Centiles (3rd, 5th, 10th, 50th, 90th, 95th, 97th)
bpd Bi-parietal diameter in millimetres
```

Source

Papageorghiou AT, Ohuma EO, Altman DG, Todros T, Cheikh Ismail L, Lambert A et al. International standards for fetal growth based on serial ultrasound measurements: the Fetal Growth Longitudinal Study of the INTERGROWTH-21st Project. Lancet 2014, 384(9946):869-79.

Examples

```
bpd_gestage_centile
```

 ${\tt bpd_gestage_sd}$

International fetal growth standards: table of z-scores of bi-parietal diameter based on gestation age in exact weeks

Description

International fetal growth standards: table of z-scores of bi-parietal diameter based on gestation age in exact weeks

Usage

```
bpd_gestage_sd
```

Format

```
A tibble with 189 rows and 3 columns:
```

```
gestage Gestational age in exact weeks
sd z-scores (-3SD, -2SD, -1SD, 0, 1SD, 2SD, 3SD)
bpd Bi-parietal diameter in millimetres
```

Source

Papageorghiou AT, Ohuma EO, Altman DG, Todros T, Cheikh Ismail L, Lambert A et al. International standards for fetal growth based on serial ultrasound measurements: the Fetal Growth Longitudinal Study of the INTERGROWTH-21st Project. Lancet 2014, 384(9946):869-79.

```
bpd_gestage_sd
```

bw_gestage_pt_centile 9

Description

International Newborn Size References for Very Preterm Infants: table of centiles for birthweightfor-gestational age for very preterm infants

Usage

```
bw_gestage_pt_centile
```

Format

```
A tibble with 882 rows and 5 columns:
```

```
week Gestational age weeks component
day Gestational age days component
sex Sex; 1 = male; 2 = female
centile Centile - 3rd, 5th, 10th, 50th, 90th, 95th, 97th
bw Birthweight in kilograms
```

Source

Villar J, Giuliani F, Fenton TR, Ohuma EO, Ismail LC, Kennedy SH et al. INTERGROWTH-21st very preterm size at birth reference charts. Lancet 2016, 387(10021):844-45.

Examples

```
bw_gestage_pt_centile
```

Description

International Newborn Size References for Very Preterm Infants: table of z-score for birthweight-for-gestational age for very preterm infants

```
bw_gestage_pt_sd
```

Format

```
A tibble with 882 rows and 5 columns:

week Gestational age weeks component
day Gestational age days component
sex Sex; 1 = male; 2 = female
sd Standard deviation (z-score): -3, -2, -1, 0, 1, 2, 3
bw Birthweight in kilograms
```

Source

Villar J, Giuliani F, Fenton TR, Ohuma EO, Ismail LC, Kennedy SH et al. INTERGROWTH-21st very preterm size at birth reference charts. Lancet 2016, 387(10021):844-45.

Examples

```
bw_gestage_pt_sd
```

```
bw_gestage_term_centile
```

International Newborn Size Standards: table of centiles for birthweight-for-gestational age for infants

Description

International Newborn Size Standards: table of centiles for birthweight-for-gestational age for infants

Usage

```
bw_gestage_term_centile
```

Format

```
A tibble with 980 rows and 5 columns:

week Gestational age weeks component
day Gestational age days component
sex Sex; 1 = male; 2 = female
centile Centile - 3rd, 5th, 10th, 50th, 90th, 95th, 97th
bw Birthweight in kilograms
```

Source

Villar J, Giuliani F, Fenton TR, Ohuma EO, Ismail LC, Kennedy SH et al. INTERGROWTH-21st very preterm size at birth reference charts. Lancet 2016, 387(10021):844-45.

bw_gestage_term_sd 11

Examples

```
bw_gestage_term_centile
```

bw_gestage_term_sd

International Newborn Size Standards: table birthweight-for-gestational age for infants

table of z-score for

Description

International Newborn Size Standards: table of z-score for birthweight-for-gestational age for infants

Usage

```
bw_gestage_term_sd
```

Format

A tibble with 980 rows and 5 columns:

week Gestational age weeks component

day Gestational age days component

sex Sex; 1 = male; 2 = female

sd Standard deviation (z-score): -3, -2, -1, 0, 1, 2, 3

bw Birthweight in kilograms

Source

Villar J, Giuliani F, Fenton TR, Ohuma EO, Ismail LC, Kennedy SH et al. INTERGROWTH-21st very preterm size at birth reference charts. Lancet 2016, 387(10021):844-45.

```
bw_gestage_term_sd
```

Description

Calculate abdominal circumference for gestational age centiles and z-scores

Usage

```
calculate_ac_gestage(gestage = NULL, ac = NULL)
```

Arguments

gestage Gestational age. Gestational age can be provided as a string with a format of

weeks+days or as numeric of exact weeks in decimal format

ac Abdominal circumference in millimetres

Value

A list of 2 elements containing 1) abdominal circumference- for-gestational age z-score; and, 2) abdominal circumference- for-gestational age centile.

Examples

```
calculate_ac_gestage(gestage = "78+0", ac = 55)
```

calculate_bpd_gestage Calculate bi-parietal diameter for gestational age centiles and zscores

Description

Calculate bi-parietal diameter for gestational age centiles and z-scores

Usage

```
calculate_bpd_gestage(gestage = NULL, bpd = NULL)
```

Arguments

gestage Gestational age. Gestational age can be provided as a string with a format of

weeks+days or as numeric of exact weeks in decimal format

bpd Bi-parietal diameter in millimetres

calculate_efw 13

Value

A list of 2 elements containing 1) bi-parietal diameter-for-gestational age z-score; and, 2) bi-parietal diameter-for-gestational age centile.

Examples

```
calculate_bpd_gestage(gestage = "78+0", bpd = 20)
```

calculate_efw

Calculate estimated fetal weight given abdominal circumference and head circumference

Description

Calculate estimated fetal weight given abdominal circumference and head circumference

Usage

```
calculate_efw(ac = NULL, hc = NULL)
```

Arguments

ac Abdominal circumference in centimetres. Use measurements made between

22+0 and 40+0 gestational weeks only.

hc Head circumference in centimetres. Use measurements made between 22+0 and

40+0 gestational weeks only.

Value

Estimated fetal weight in grams.

```
calculate_efw(ac = 55, hc = 90)
```

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calculate_efw_gestage Calculate estimated fetal weight for gestational age centiles and zscores

Description

Calculate estimated fetal weight for gestational age centiles and z-scores

Usage

```
calculate_efw_gestage(gestage = NULL, ac = NULL, hc = NULL)
```

Arguments

gestage	Gestational age. Gestational age can be provided as a string with a format of
	weeks+days or as numeric of exact weeks in decimal format

ac Abdominal circumference in centimetres
hc Head circumference in centimetres

Value

A list of 6 elements containing 1) estimated fetal weight in grams based on abdominal circumference and head circumference; 2) skewness of gestational age; 3) mean gestational age; 4) coefficient of variation of gestational age; 5) estimated fetal weight-for-gestational age z-score; and, 6) estimated fetal weight-for-gestational age centile.

Examples

```
calculate_efw_gestage(gestage = "30+0", ac = 26, hc = 29)
```

Description

Calculate femur length for gestational age centiles and z-scores

Usage

```
calculate_fl_gestage(gestage = NULL, fl = NULL)
```

Arguments

gestage	Gestational age.	Gestational age can be provided as a string with a format of

weeks+days or as numeric of exact weeks in decimal format

f1 Femur length in millimetres

calculate_gestage 15

Value

A list of 2 elements containing 1) femur length-for-gestational age z-score; and, 2) femur length-for-gestational age centile.

Examples

```
calculate_fl_gestage(gestage = "78+0", fl = 10)
```

calculate_gestage Calculate gestational age given crown-rump length and/or head circumference and femur length based on ultrasound

Description

Calculate gestational age given crown-rump length and/or head circumference and femur length based on ultrasound

Usage

```
calculate_gestage(date = Sys.Date(), crl = NULL, hc = NULL, fl = NULL)
```

Arguments

date	Date when measurement/s was/were taken. Defaults to current date.
crl	Crown-rump length measurement in millimetres
hc	Head circumference measurement in millimetres
fl	Femur length measurement in millimetres

Value

A list of 3 elements containing 1) gestational age in weeks (numeric); 2) gestational age in weeks and days (character); and, 3) expected date of delivery (date).

```
calculate_gestage(date = "2016-23-12", crl = 17)
calculate_gestage(date = "2016-23-12", hc = 130, fl = 20)
```

 ${\tt calculate_gestage_crl} \begin{tabular}{ll} {\it Calculate_gestational_age_given_crown-rump_length_(mm)_based_on} \\ {\it ultrasound} \end{tabular}$

Description

Calculate gestational age given crown-rump length (mm) based on ultrasound

Usage

```
calculate_gestage_crl(date = Sys.Date(), crl = NULL)
```

Arguments

date Date when measurement/s was/were taken. Date should be provided in format.

Defaults to current date.

crl Crown-rump length measurement in millimetres.

Value

A list of 3 elements containing 1) gestational age in weeks (numeric); 2) gestational age in weeks and days (character); and, 3) expected date of delivery (date).

Examples

```
calculate_gestage(date = "2016-23-12", crl = 17)
```

calculate_gestage_hcfl

Calculate gestational age given head circumference (mm) and/or femur length (mm) based on ultrasound

Description

Calculate gestational age given head circumference (mm) and/or femur length (mm) based on ultrasound

```
calculate_gestage_hcfl(date = Sys.Date(), hc = NULL, fl = NULL)
```

calculate_gwg_gestage 17

Arguments

date	Date when measurement/s was/were taken. Date should be provided in form	naı.

Defaults to current date.

hc Head circumference measurement in millimetres.

f1 Femur length measurement in millimetres.

Value

A list of 3 elements containing 1) gestational age in weeks (numeric); 2) gestational age in weeks and days (character); and, 3) expected date of delivery (date).

Examples

```
calculate\_gestage\_hcfl(date = "2016-23-12", hc = 130, fl = 20)
```

Description

Calculate gestational weight gain-for-gestational age z-score and centile

Usage

```
calculate_gwg_gestage(gestage = NULL, baseline = NULL, current = NULL)
```

Arguments

gestage	Gestational age.	Gestational	age can be	provided a	as a string wi	th a format	of
gcotagc	Ocstational age.	Ocsidironai	age can be	provided t	as a summe wi	ui a ioiiiat	O1

weeks+days or as numeric of exact weeks in decimal format

baseline Baseline weight in kilograms (up to 2 decimal places) in the first trimester of

pregnancy (less than 14 weeks gestational age)

current Weight at current visit in kilograms (up to 2 decimal places)

Value

A list of 3 elements containing 1) gestational weight gain in kilograms; 2) gestational weight gain-for-gestational age z-score; and, 3) gestational weight gain-for-gestational age centile.

```
calculate_gwg_gestage(gestage = "32+0", baseline = 60, current = 69.52)
```

Description

Calculate head circumference for gestational age centiles and z-scores

Usage

```
calculate_hc_gestage(gestage = NULL, hc = NULL)
```

Arguments

gestage Gestational age. Gestational age can be provided as a string with a format of

weeks+days or as numeric of exact weeks in decimal format

hc Head circumference in millimetres

Value

A list of 2 elements containing 1) head circumference-for-gestational age z-score; and, 2) head circumference-for-gestational age centile.

Examples

```
calculate_hc_gestage(gestage = "78+0", hc = 90)
```

Description

Calculate occipito-frontal diameter for gestational age centiles and z-scores

Usage

```
calculate_ofd_gestage(gestage = NULL, ofd = NULL)
```

Arguments

gestage Gestational age. Gestational age can be provided as a string with a format of

weeks+days or as numeric of exact weeks in decimal format

ofd Occipito-frontal diameter in millimetres

calculate_sfh_gestage 19

Value

A list of 2 elements containing 1) occipito-frontal diameter-for-gestational age z-score; and, 2) occipito-frontal diameter-for-gestational age centile.

Examples

```
calculate_ofd_gestage(gestage = "78+0", ofd = 25)
```

 ${\it calculate_sfh_gestage} \begin{tabular}{ll} {\it Calculate symphysis-fundal height-for-gestational age z-score and } \\ {\it centile} \end{tabular}$

Description

Calculate symphysis-fundal height-for-gestational age z-score and centile

Usage

```
calculate_sfh_gestage(gestage = NULL, sfh = NULL)
```

Arguments

gestage	Gestational age. Gestational age can be provided as a string with a format of weeks+days or as numeric of exact weeks in decimal format
sfh	Symphysis-fundal height measurement in centimetres up to 1 decimal place

Value

A list of 2 elements containing 1) symphysis-fundal height-for-gestational age z-score; and, 2) symphysis-fundal height-for-gestational age centile.

```
calculate_sfh_gestage(gestage = "40+1", sfh = 40)
```

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crl_gestage_centile	International fetal size standards in early pregnancy: table of centiles of crown-rump length based on gestation age in weeks and days

Description

International fetal size standards in early pregnancy: table of centiles of crown-rump length based on gestation age in weeks and days

Usage

```
crl_gestage_centile
```

Format

```
A tibble with 336 rows and 4 columns:

week Gestational age - weeks

day Gestation age - days

centile Centiles (3rd, 5th, 10th, 50th, 90th, 95th, 97th)

crl Crown-rump length in millimetres
```

Source

Napolitano R, Dhami J, Ohuma EO, Ioannou C, Conde-Agudelo A, Kennedy SH et al. Pregnancy dating by fetal crown-rump length: a systematic review of charts. BJOG 2014, 121(5):556-5.

Examples

```
crl_gestage_centile
```

crl_gestage_sd	International fetal size standards in early pregnancy: table of z-scores
	of crown-rump length based on gestation age in weeks and days

Description

International fetal size standards in early pregnancy: table of z-scores of crown-rump length based on gestation age in weeks and days

```
crl_gestage_sd
```

efw_gestage_centile 21

Format

```
A tibble with 336 rows and 4 columns:

week Gestational age - weeks

day Gestation age - days

sd z-scores (-3SD, -2SD, -1SD, 0, 1SD, 2SD, 3SD)

cr1 Crown-rump length in millimetres
```

Source

Napolitano R, Dhami J, Ohuma EO, Ioannou C, Conde-Agudelo A, Kennedy SH et al. Pregnancy dating by fetal crown-rump length: a systematic review of charts. BJOG 2014, 121(5):556-5.

Examples

```
crl_gestage_sd
```

efw_gestage_centile

International fetal growth standards: table of centiles of estimated fetal weight based on gestation age in exact weeks

Description

International fetal growth standards: table of centiles of estimated fetal weight based on gestation age in exact weeks

Usage

```
efw_gestage_centile
```

Format

A tibble with 189 rows and 3 columns: week Gestational age in exact weeks centile Centiles (3rd, 5th, 10th, 50th, 90th, 95th, 97th) efw Estimated fetal weight in grams

Source

Papageorghiou AT, Ohuma EO, Altman DG, Todros T, Cheikh Ismail L, Lambert A et al. International standards for fetal growth based on serial ultrasound measurements: the Fetal Growth Longitudinal Study of the INTERGROWTH-21st Project. Lancet 2014, 384(9946):869-79.

```
efw_gestage_centile
```

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-0 0 -	International fetal growth standards: table of z-scores of estimated fetal weight based on gestation age in exact weeks
--------	---

Description

International fetal growth standards: table of z-scores of estimated fetal weight based on gestation age in exact weeks

Usage

```
efw_gestage_sd
```

Format

```
A tibble with 189 rows and 3 columns:
gestage Gestational age in exact weeks
sd z-scores (-3SD, -2SD, -1SD, 0, 1SD, 2SD, 3SD)
efw Estimated fetal weight in grams
```

Source

Papageorghiou AT, Ohuma EO, Altman DG, Todros T, Cheikh Ismail L, Lambert A et al. International standards for fetal growth based on serial ultrasound measurements: the Fetal Growth Longitudinal Study of the INTERGROWTH-21st Project. Lancet 2014, 384(9946):869-79.

Examples

```
efw_gestage_sd
```

fl_gestage_centile	International fetal growth standards: table of centiles of femur length
	based on gestation age in exact weeks

Description

International fetal growth standards: table of centiles of femur length based on gestation age in exact weeks

```
fl_gestage_centile
```

fl_gestage_sd 23

Format

```
A tibble with 189 rows and 3 columns:
week Gestational age in exact weeks
centile Centiles (3rd, 5th, 10th, 50th, 90th, 95th, 97th)
f1 Femur length in millimetres
```

Source

Papageorghiou AT, Ohuma EO, Altman DG, Todros T, Cheikh Ismail L, Lambert A et al. International standards for fetal growth based on serial ultrasound measurements: the Fetal Growth Longitudinal Study of the INTERGROWTH-21st Project. Lancet 2014, 384(9946):869-79.

Examples

```
fl_gestage_centile
```

Description

International fetal growth standards: table of z-scores of femur length based on gestation age in exact weeks

Usage

```
fl_gestage_sd
```

Format

```
A tibble with 189 rows and 3 columns:
gestage Gestational age in exact weeks
sd z-scores (-3SD, -2SD, -1SD, 0, 1SD, 2SD, 3SD)
```

f1 Femur length in millimetres

Source

Papageorghiou AT, Ohuma EO, Altman DG, Todros T, Cheikh Ismail L, Lambert A et al. International standards for fetal growth based on serial ultrasound measurements: the Fetal Growth Longitudinal Study of the INTERGROWTH-21st Project. Lancet 2014, 384(9946):869-79.

```
fl_gestage_sd
```

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|--|

Description

International dating standards in early pregnancy: table of centiles of gestational age in weeks and days based on crown-rump length in millimetres

Usage

```
gestage_crl
```

Format

```
A tibble with 810 rows and 4 columns:
crl Crown-rump length in millimetres
centile Centile (3rd, 10th, 50th, 90th, 97th)
unit Time unit for age value (week or day)
age Age value
```

Source

Napolitano R, Dhami J, Ohuma EO, Ioannou C, Conde-Agudelo A, Kennedy SH et al. Pregnancy dating by fetal crown-rump length: a systematic review of charts. BJOG 2014, 121(5):556-5.

Examples

```
gestage_crl
```

gwg_gestage_centile	International gestational weight gain standards: table of centiles of gestational weight gain for women with normal body mass index based on gestational age in exact weeks

Description

International gestational weight gain standards: table of centiles of gestational weight gain for women with normal body mass index based on gestational age in exact weeks

```
gwg_gestage_centile
```

gwg_gestage_sd 25

Format

```
A tibble with 182 rows and 3 columns:

week Gestational age in exact weeks

centile Centiles (3rd, 5th, 10th, 50th, 90th, 95th, 97th)

gestwt Gestational weight gain in kilograms
```

Source

Cheikh Ismail L, Bishop DC, Pang R, Ohuma EO, Kac G, Abrams B et al. Gestational weight gain standards based on women enrolled in the Fetal Growth Longitudinal Study of the INTERGROWTH-21st Project: a prospective longitudinal cohort study. BMJ 2016, 352(i):555.

Examples

```
gwg_gestage_centile
```

gwg_gestage_sd

International gestational weight gain standards: table of z-scores of gestational weight gain for women with normal body mass index based on gestational age in exact weeks

Description

International gestational weight gain standards: table of z-scores of gestational weight gain for women with normal body mass index based on gestational age in exact weeks

Usage

```
gwg_gestage_sd
```

Format

```
A tibble with 182 rows and 3 columns:

week Gestational age in exact weeks

sd z-scores (-3SD, -2SD, -1SD, 0, 1SD, 2SD, 3SD)

gestwt Gestational weight gain in kilograms
```

Source

Cheikh Ismail L, Bishop DC, Pang R, Ohuma EO, Kac G, Abrams B et al. Gestational weight gain standards based on women enrolled in the Fetal Growth Longitudinal Study of the INTERGROWTH-21st Project: a prospective longitudinal cohort study. BMJ 2016, 352(i):555.

26 hc_gestage_centile

Examples

```
gwg_gestage_sd
```

hc_gestage_centile

International fetal growth standards: table of centiles of head circumference based on gestation age in exact weeks

Description

International fetal growth standards: table of centiles of head circumference based on gestation age in exact weeks

Usage

```
hc_gestage_centile
```

Format

A tibble with 189 rows and 3 columns:

week Gestational age in exact weeks

centile Centiles (3rd, 5th, 10th, 50th, 90th, 95th, 97th)

hc Head circumference in millimetres

Source

Papageorghiou AT, Ohuma EO, Altman DG, Todros T, Cheikh Ismail L, Lambert A et al. International standards for fetal growth based on serial ultrasound measurements: the Fetal Growth Longitudinal Study of the INTERGROWTH-21st Project. Lancet 2014, 384(9946):869-79.

Examples

hc_gestage_centile

hc_gestage_pt_centile 27

Description

International Newborn Size References for Very Preterm Infants: table of centiles for head circumferencefor-gestational age for very preterm infants

Usage

```
hc_gestage_pt_centile
```

Format

```
A tibble with 882 rows and 5 columns:
```

week Gestational age weeks component

day Gestational age days component

sex Sex; 1 = male; 2 = female

centile Centile - 3rd, 5th, 10th, 50th, 90th, 95th, 97th

hc Head circumference in centimetres

Source

Villar J, Giuliani F, Fenton TR, Ohuma EO, Ismail LC, Kennedy SH et al. INTERGROWTH-21st very preterm size at birth reference charts. Lancet 2016, 387(10021):844-45.

Examples

hc_gestage_pt_centile

 $hc_gestage_pt_sd$

International Newborn Size References for Very Preterm Infants: table of z-score for head circumference-for-gestational age for very preterm infants

Description

International Newborn Size References for Very Preterm Infants: table of z-score for head circumferencefor-gestational age for very preterm infants 28 hc_gestage_sd

Usage

```
hc_gestage_pt_sd
```

Format

```
A tibble with 882 rows and 5 columns:

week Gestational age weeks component
day Gestational age days component
sex Sex; 1 = male; 2 = female
sd Standard deviation (z-score): -3, -2, -1, 0, 1, 2, 3
hc Head circumference in centimetres
```

Source

Villar J, Giuliani F, Fenton TR, Ohuma EO, Ismail LC, Kennedy SH et al. INTERGROWTH-21st very preterm size at birth reference charts. Lancet 2016, 387(10021):844-45.

Examples

```
hc_gestage_pt_sd
```

hc_gestage_sd

International fetal growth standards: table of z-scores of head circumference based on gestation age in exact weeks

Description

International fetal growth standards: table of z-scores of head circumference based on gestation age in exact weeks

Usage

```
hc\_gestage\_sd
```

Format

```
A tibble with 189 rows and 3 columns:

gestage Gestational age in exact weeks

sd z-scores (-3SD, -2SD, -1SD, 0, 1SD, 2SD, 3SD)
```

hc Head circumference in millimetres

Source

Papageorghiou AT, Ohuma EO, Altman DG, Todros T, Cheikh Ismail L, Lambert A et al. International standards for fetal growth based on serial ultrasound measurements: the Fetal Growth Longitudinal Study of the INTERGROWTH-21st Project. Lancet 2014, 384(9946):869-79.

Examples

```
hc_gestage_sd
```

hc_gestage_term_centile

International Newborn Size Standards: table of centiles for head circumference-for-gestational age for infants

Description

International Newborn Size Standards: table of centiles for head circumference-for-gestational age for infants

Usage

```
hc_gestage_term_centile
```

Format

A tibble with 980 rows and 5 columns:

week Gestational age weeks component
day Gestational age days component
sex Sex; 1 = male; 2 = female

centile Centile - 3rd, 5th, 10th, 50th, 90th, 95th, 97th

hc Head circumference in centimetres

Source

Villar J, Giuliani F, Fenton TR, Ohuma EO, Ismail LC, Kennedy SH et al. INTERGROWTH-21st very preterm size at birth reference charts. Lancet 2016, 387(10021):844-45.

```
hc_gestage_term_centile
```

ofd_gestage_centile

circumference-jor-gestational age for infants	hc_gestage_term_sd	International Newborn Size Standards: table of z-score for head circumference-for-gestational age for infants
---	--------------------	---

Description

International Newborn Size Standards: table of z-score for head circumference-for-gestational age for infants

Usage

```
hc_gestage_term_sd
```

Format

```
A tibble with 980 rows and 5 columns:
```

```
week Gestational age weeks component
```

day Gestational age days component

sex Sex; 1 = male; 2 = female

sd Standard deviation (z-score): -3, -2, -1, 0, 1, 2, 3

hc Head circumference in centimetres

Source

Villar J, Giuliani F, Fenton TR, Ohuma EO, Ismail LC, Kennedy SH et al. INTERGROWTH-21st very preterm size at birth reference charts. Lancet 2016, 387(10021):844-45.

Examples

```
hc\_gestage\_term\_sd
```

ofd_gestage_centile	International fetal growth standards: table of centiles of occipito-	
	frontal diameter based on gestation age in exact weeks	

Description

International fetal growth standards: table of centiles of occipito-frontal diameter based on gestation age in exact weeks

```
ofd_gestage_centile
```

ofd_gestage_sd 31

Format

```
A tibble with 189 rows and 3 columns:
week Gestational age in exact weeks
centile Centiles (3rd, 5th, 10th, 50th, 90th, 95th, 97th)
ofd Occipito-frontal diameter in millimetres
```

Source

Papageorghiou AT, Ohuma EO, Altman DG, Todros T, Cheikh Ismail L, Lambert A et al. International standards for fetal growth based on serial ultrasound measurements: the Fetal Growth Longitudinal Study of the INTERGROWTH-21st Project. Lancet 2014, 384(9946):869-79.

Examples

```
ofd_gestage_centile
```

Description

International fetal growth standards: table of z-scores of occipito-frontal diameter based on gestation age in exact weeks

Usage

```
ofd_gestage_sd
```

Format

A tibble with 189 rows and 3 columns:

```
gestage Gestational age in exact weeks
sd z-scores (-3SD, -2SD, -1SD, 0, 1SD, 2SD, 3SD)
ofd Occipito-frontal diameter in millimetres
```

Source

Papageorghiou AT, Ohuma EO, Altman DG, Todros T, Cheikh Ismail L, Lambert A et al. International standards for fetal growth based on serial ultrasound measurements: the Fetal Growth Longitudinal Study of the INTERGROWTH-21st Project. Lancet 2014, 384(9946):869-79.

```
ofd_gestage_sd
```

32 sfh_gestage_sd

	ernational symphysis-fundal height standards: table of centiles of aphysis-fundal height based on gestation age in exact weeks
--	--

Description

International symphysis-fundal height standards: table of centiles of symphysis-fundal height based on gestation age in exact weeks

Usage

```
sfh_gestage_centile
```

Format

A tibble with 189 rows and 3 columns:

```
week Gestational age in exact weeks
centile Centiles (3rd, 5th, 10th, 50th, 90th, 95th, 97th)
sfh Symphysis-fundal height in centimetres
```

Source

Papageorghiou AT, Ohuma EO, Gravett MG, Lamber A, Noble JA, Pang R et al. International standards for symphysis-fundal height based on serial measurements from the Fetal Growth Longitudinal Study of the INTERGROWTH-21st Project: prospective cohort study in eight countries. BMJ 2016, 355:i5662.

Examples

```
sfh_gestage_centile
```

	ymphysis-fundal height standards: table of z-scores of al height based on gestation age in exact weeks
--	---

Description

International symphysis-fundal height standards: table of z-scores of symphysis-fundal height based on gestation age in exact weeks

```
sfh_gestage_sd
```

wlr_gestage_pt_centile 33

Format

```
A tibble with 189 rows and 3 columns:
gestage Gestational age in exact weeks
sd z-scores (-3SD, -2SD, -1SD, 0, 1SD, 2SD, 3SD)
sfh Symphysis-fundal height in centimetres
```

Source

Papageorghiou AT, Ohuma EO, Gravett MG, Lamber A, Noble JA, Pang R et al. International standards for symphysis-fundal height based on serial measurements from the Fetal Growth Longitudinal Study of the INTERGROWTH-21st Project: prospective cohort study in eight countries. BMJ 2016, 355:i5662.

Examples

```
sfh_gestage_sd
```

```
wlr_gestage_pt_centile
```

International Newborn Size References for Very Preterm Infants: table of centiles for weight-length ratio-for-gestational age for very preterm infants

Description

International Newborn Size References for Very Preterm Infants: table of centiles for weight-length ratio-for-gestational age for very preterm infants

Usage

```
wlr_gestage_pt_centile
```

Format

```
A tibble with 882 rows and 5 columns:

week Gestational age weeks component
day Gestational age days component
sex Sex; 1 = male; 2 = female
centile Centile - 3rd, 5th, 10th, 50th, 90th, 95th, 97th
wlr Weight-length ratio in kilograms/metres
```

34 wlr_gestage_pt_sd

Source

Villar J, Giuliani F, Fenton TR, Ohuma EO, Ismail LC, Kennedy SH et al. INTERGROWTH-21st very preterm size at birth reference charts. Lancet 2016, 387(10021):844-45.

Examples

```
wlr_gestage_pt_centile
```

wlr_gestage_pt_sd

International Newborn Size References for Very Preterm Infants: table of z-score for weight-length ratio-for-gestational age for very preterm infants

Description

International Newborn Size References for Very Preterm Infants: table of z-score for weight-length ratio-for-gestational age for very preterm infants

Usage

```
wlr_gestage_pt_sd
```

Format

```
A tibble with 882 rows and 5 columns:
```

week Gestational age weeks component

day Gestational age days component

sex Sex; 1 = male; 2 = female

sd Standard deviation (z-score): -3, -2, -1, 0, 1, 2, 3

wlr Weight-length ratio in kilogram/metre

Source

Villar J, Giuliani F, Fenton TR, Ohuma EO, Ismail LC, Kennedy SH et al. INTERGROWTH-21st very preterm size at birth reference charts. Lancet 2016, 387(10021):844-45.

```
wlr_gestage_pt_sd
```

```
wlr_gestage_term_centile
```

International Newborn Size Standards: table of centiles for weightlength ratio-for-gestational age for infants

Description

International Newborn Size Standards: table of centiles for weight-length ratio-for-gestational age for infants

Usage

```
wlr_gestage_term_centile
```

Format

```
A tibble with 980 rows and 5 columns:

week Gestational age weeks component
day Gestational age days component
sex Sex; 1 = male; 2 = female
centile Centile - 3rd, 5th, 10th, 50th, 90th, 95th, 97th
```

wlr Weight-length ratio in kilograms/metres

Source

Villar J, Giuliani F, Fenton TR, Ohuma EO, Ismail LC, Kennedy SH et al. INTERGROWTH-21st very preterm size at birth reference charts. Lancet 2016, 387(10021):844-45.

Examples

```
wlr_gestage_term_centile
```

 $wlr_gestage_term_sd$

International Newborn Size Standards: table of z-score for weight-length ratio-for-gestational age for infants

Description

International Newborn Size Standards: table of z-score for weight-length ratio-for-gestational age for infants

```
wlr_gestage_term_sd
```

36 wlr_gestage_term_sd

Format

```
A tibble with 980 rows and 5 columns:

week Gestational age weeks component
day Gestational age days component
sex Sex; 1 = male; 2 = female
sd Standard deviation (z-score): -3, -2, -1, 0, 1, 2, 3
wlr Weight-length ratio in kilogram/metre
```

Source

Villar J, Giuliani F, Fenton TR, Ohuma EO, Ismail LC, Kennedy SH et al. INTERGROWTH-21st very preterm size at birth reference charts. Lancet 2016, 387(10021):844-45.

```
wlr\_gestage\_term\_sd
```

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