Score\_Calculator.R

## Usage

1. Change the working directory in line 17 to the directory containing the file "all\_para\_tables.RData"
2. Make sure that the packages "gamlss", "plyr" and "dplyr" are installed
3. Run the whole script to be able to use the function "ScoreCalc()"

# ScoreCalc()

## Description

Add percentiles, z-scores, Mets-scores and action level and monitoring level classifications to an existing data set containing anthropometric and other medical data for children. The scores and classification is based on the formula and percentiles calculated in the IDEFICS study.  
More information on <https://www.bips-institut.de/en/research/software/mets-score.html>

## Usage

ScoreCalc(input)

## Arguments

### Input:

A data set that meets certain requirements concerning the variables/column names (see below).

## Required Functions in the Environment (Contained in Score\_Calculator.R)

paravalues()  
MetSScore()  
waistlvl()  
bloodlvl()  
lipidlvl()  
glulvl()  
showlvl()

# Data Set Variables

The "ScoreCalc ()" function uses various variables for the calculations. Some of them are necessary for function to work without error messages, and some are optional. A lack of optional variables means that fewer values can be added to the data set.  
A certain formatting is also required for the variables.

## Necessary Variables

|  |  |  |  |
| --- | --- | --- | --- |
| Variable definition | Variable / Column name | Unit / Classes | Remarks |
| Sex | sex | d, f, m | No calculation for diverse children (lack of data base).  *NA’*s lead to a drop out of the data set. |
| Age | age | Years, rounded to the first decimal |  |
| Height | height | cm, no decimals | Stratification variable for blood pressure. Very small or large values, relative to age, lead to *NA*’s in sbp and dbp calculations. |

## Optional Variables

|  |  |  |  |
| --- | --- | --- | --- |
| Waist Circumference | waist | cm | Necessary for MetS-score calculation.  Data base for age 2.0 – 10.9 |
| Body Mass Index | bmi | kg/m2 | Data base for age 2.0 – 11.0 |
| Systolic Blood Pressure | sbp | mm Hg | Necessary for MetS-score calculation.  Data base for age 2.0 – 10.9 |
| Diastolic Blood Pressure | dbp | mm Hg | Necessary for MetS-score calculation.  Data base for age 2.0 – 10.9 |
| Triglycerides | trg | mg/dl | Necessary for MetS-score calculation.  Data base for age 2.0 – 10.9 |
| High-density lipoprotein | hdl | mg/dl | Necessary for MetS-score calculation.  Data base for age 2.0 – 10.9 |
| Fasting blood glucose | glu | mg/dl | Data base for age 3.0 – 10.9 |
| Fasting insulin | insu | µIU/ml | Data base for age 3.0 – 10.9 |
| Homeostasis model assessment (HOMA-IR) | homa | glu x insu / 405 | Necessary for MetS-score calculation.  Data base for age 3.0 – 10.9 |

# Outcome Variables

|  |  |
| --- | --- |
| Variable | Explanation |
| Perc.x | The percentile of the variable x of the data point |
| z.x | The z-score of the variable x of the data point |
| mets | The IDEFICS MetS-score of the data point |
| x.monit | Indicator, whether the monitoring level (0.9 percentile) is reached for Excess adiposity, blood pressure, blood lipids or blood glucose/insulin. |
| x.action | Indicator, whether the action level (0.95 percentile) is reached for Excess adiposity, blood pressure, blood lipids or blood glucose/insulin. |
| monit.level | Indicator whether the monitoring level is reached, i.e. at least 3 of the x.monit values are TRUE. |
| action.level | Indicator whether the action level is reached, i.e. at least 3 of the x.monit values are TRUE. |