

Package ‘rCGM2’

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Type Package

Title What the Package Does (Title Case)

Version 0.1.0

Author Who wrote it

Maintainer The package maintainer <yourself@somewhere.net>

Description More about what it does (maybe more than one line)

Use four spaces when indenting paragraphs within the Description.

License What license is it under?

Encoding UTF-8

LazyData true

RoxygenNote 6.1.1

Depends irr,

Metrics,

dplyr,

tidyr,

cowplot,

readxl,

ggplot2

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accrossAssessorReport *accrossAssessorReport*

Description

Report of across assessor differences

Usage

```
accrossAssessorReport(semAllAssessordf, nAssesor, nParticipant)
```

Arguments

semAllAssessordf	[dataframe] standard error of measurement table computed for ALL assessors
nAssesor	[integer] number of assessors
nParticipant	[integer] number of participants

Value

```
addCumulatedCycleindex
      addCumulatedCycleindex
```

Description

add new col CycleCum, cumulating cycle number from both left and right contexts

Usage

```
addCumulatedCycleindex(table, groupByList)
```

Arguments

table [dataframe] all-cycle table.
groupByList [list] group-by independant variables .

Value

update all-cycle table

Examples

```
addCumulatedCycleindex(kinematicTable, c("Id"))
```

```
addGaitDescriptiveEventsLines
      addGaitDescriptiveEventsLines
```

Description

add gait events of a specific context as vertical lines to a figure

Usage

```
addGaitDescriptiveEventsLines(fig, descStatsPhaseTable, iContext,
  colorFactor = NULL, linetypeFactor = NULL)
```

Arguments

colorFactor [string] line color according an independant variable
linetypeFactor [string] line type defined according an independant variable
[fig] ggplot2 figure
[descStatsPhaseTable] descriptive stats table of gait phase scalar (must include c("stancePhase","doubleStance1","doubleStance2"))
[Context] selected context

Value

betweenAssessors	<i>betweenAssessors</i>
------------------	-------------------------

Description

assess between assessor difference

Usage

```
betweenAssessors(sessionAverage)
```

Arguments

sessionAverage [dataframe] session average table

betweenAssessorsReport	<i>betweenAssessorsReport</i>
------------------------	-------------------------------

Description

report of between assessor differences

Usage

```
betweenAssessorsReport(betweenAssessorAssement)
```

Arguments

betweenAssessorAssement
[dataframe] between assessor assessment table

computeDescriptiveStats	<i>computeDescriptiveStats</i>
-------------------------	--------------------------------

Description

return descriptive statistics for a series of dependant variables and a combinaison of factors

Usage

```
computeDescriptiveStats(table, dependantVariables, groupByList,  
  bySubjectFlag = TRUE)
```

Arguments

table [dataframe] all-cycle table.
dependantVariables [list] dependant variables
groupByList [list] group-by independant variables
bySubjectFlag [bool] group results by subject

Value

table

Examples

TODO

computeDescriptiveStats_onFrameSequences
computeDescriptiveStats_onFrameSequences

Description

return descriptive stats for all frame sequences

Usage

```
computeDescriptiveStats_onFrameSequences(table, groupByList,  
bySubjectFlag = TRUE)
```

Arguments

table [dataframe] all-cycle table
groupByList [list] group-by independant variables
bySubjectFlag [bool] output table grouped by subject

Value

table

Examples

TODO

```
computeMetrics_onFrameSequence
      metrics_onFrames_local
```

Description

compute basic metrics between two modalities of the ComparisonFactor Factor for a specific point

Usage

```
computeMetrics_onFrameSequence(table, metricsFunction, Label, Context,
  Axes, modality1, modality2, comparisonLabel = NULL)
```

Arguments

table	[dataframe] all-cycle table
metricsFunction	[string] metrics (eg, mae, rmse) to apply
Label	[string] label of the frame sequence
Context	[string] context of the frame sequence
Axes	[string] axis of the frame sequence
modality1	[string] 1st selected modality of the independant variable (ComparisonFactor)
modality2	[string] 2nd selected modality of the independant variable (ComparisonFactor)
comparisonLabel	[string] label given to the comparison
frameIndexes	[list] selected frame indexes

Value

dataframe

Warning

need construction of the factor ComparisonFactor

Examples

```
computeMetrics_onFrameSequence(kinematicTable,"rmse", "LKneeAngles","Left",c("X","Y","Z"),"Rigid","THIsta")
```

```
computeMetrics_onFrameSequences
      computeMetrics_onFrameSequences
```

Description

compute basic metrics between two modalities of the independant variable (\textbf{ComparisonFactor}) for all frame sequences

Usage

```
computeMetrics_onFrameSequences(table, metricsFunction, modality1,
      modality2, comparisonLabel = NULL, frameIndexes = NULL)
```

Arguments

table	[dataframe] all-cycle table
metricsFunction	[string] metrics (eg, mae, rmse) to apply
modality1	[string] 1st selected modality of the independant variable (ComparisonFactor)
modality2	[string] 2nd selected modality of the independant variable (ComparisonFactor)
comparisonLabel	[string] label given to the comparison
frameIndexes	[list] selected frame indexes

Value

dataframe

Warning

need construction of the factor ComparisonFactor

Examples

```
computeMetrics_onFrameSequences(kinematicTable,"rmse", "modality1","modality2",comparisonLabel = "mod1_mod2")
```

```
computeMetrics_onScalar
      computeMetrics_onScalar
```

Description

compute basic metrics between two modalities of the independant variable (\textbf{ComparisonFactor}) for a specific Scalar

Usage

```
computeMetrics_onScalar(table, metricsFunction, DiscreteLabel, modality1,
      modality2, comparisonLabel = NULL)
```

Arguments

table	[dataframe] all-cycle table
metricsFunction	[string] metrics (eg, mae, rmse) to apply
modality1	[string] 1st selected modality of the independant variable (ComparisonFactor)
modality2	[string] 2nd selected modality of the independant variable (ComparisonFactor)
comparisonLabel	[string] label given to the comparison

Value

dataframe

Warning

- need construction of the factor ComparisonFactor
- need construction of the factor ComparisonFactor

Examples

TODO

ComputeSessionAverage	<i>ComputeSessionAverage</i>
-----------------------	------------------------------

Description

compute average of all sessions

Usage

ComputeSessionAverage(table)

Arguments

table	[dataframe] all-table
-------	-----------------------

Value

dataframe

Examples

TODO

consistencyPlot	<i>consistencyPlot</i>
-----------------	------------------------

Description

plot all cycle of a frame sequence

Usage

```
consistencyPlot(table, iContext, iLabel, iAxis, iTitle = "",
  ylabel = "Deg", legendPosition = "none", ylimits = NULL,
  colorFactor = NULL, facetFactor = NULL, linetypeFactor = NULL)
```

Arguments

table	[dataframe] all-cycle table
iContext	[string] context of the frame sequence
iLabel	[string] label of the frame sequence
iAxis	[string] axis of the frame sequence
iTitle	[string] plot title
ylabel	[string] label of the Y-axis
legendPosition	[string] position of the legend (see legend.position of ggplot2)
ylimits	[list] limits of the y-axis
colorFactor	[string] line color according an independant variable
facetFactor	[string] create \textit{facet} plot (see ggplot2) for an independant variable
linetypeFactor	[string] line type defined according an independant variable

Value

fig [ggplot2 figure]

consistencyPlot_bothContext	<i>consistencyPlot_bothContext</i>
-----------------------------	------------------------------------

Description

plot all left and right cycles of a frame sequence

Usage

```
consistencyPlot_bothContext(table, LabelLeft, AxisLeft, LabelRight,
  AxisRight, iTitle = "", ylabel = "Deg", legendPosition = "none",
  ylimits = NULL)
```

Arguments

table	[dataframe] all-cycle table
LabelLeft	[string] label of the frame sequence for the left context
AxisLeft	[string] axis of the frame sequence for the left context
LabelRight	[string] label of the frame sequence for the right context
AxisRight	[string] axis of the frame sequence for the Left context
iTitle	[string] plot title
yLabel	[string] label of the Y-axis
legendPosition	[string] position of the legend (see legend.position of ggplot2)
ylimits	[list] limits of the y-axis

Value

fig [ggplot2 figure]

constructOverallTable *constructOverallTable*

Description

merge left and right contexts. Left and Right modalities are replaced by Overall

Usage

```
constructOverallTable(table)
```

Arguments

table [dataframe] all-cycle table.

Value

update all-cycle table.

Warning

function addCumulatedCycleindex needs to be run before

Examples

```
constructOverallTable(kinematicTable)
```

constructTableFromXls	<i>constructTableFromXls</i>
-----------------------	------------------------------

Description

load and concatenate a list of excel spreadsheet

Usage

```
constructTableFromXls(fullXlsFiles, sheet)
```

Arguments

sheet	[String] sheet name
fullXlsFile	[String] full filename (path+filename) of excel spreadsheets

Value

descriptiveGait	<i>descriptiveGait</i>
-----------------	------------------------

Description

return descriptive stats of both frame sequence and gait event scalars

Usage

```
descriptiveGait(table, groupByList, bySubjectFlag = TRUE)
```

Arguments

table	[dataframe] all-cycle table
bySubjectFlag	[bool] group-by independant variables

Value

list Frames : descriptive stats of frame-based variables , Events : descriptive stats of events

Examples

```
TODO
```

```
descriptiveKinematicGaitPanel
    descriptiveKinematicGaitPanel
```

Description

convenient descriptive plot panel of gait kinematics for a specific context

Usage

```
descriptiveKinematicGaitPanel(descStatsFrameSequence, descStatsPhases,
    iContext, colorFactor = NULL, linetypeFactor = NULL,
    normativeData = NULL, stdCorridorFlag = FALSE,
    manualLineType = NULL, manualSizeType = NULL)
```

Arguments

```
descStatsFrameSequence    [dataframe] descriptive stats table of all frame sequences
descStatsPhases            [dataframe] descriptive stats table of gait phase scalar ()
iContext                   [string] context of the frame sequence
colorFactor                [string] line color according an independant variable
linetypeFactor             [string] line type defined according an independant variable
normativeData              [dataframe] table of a normative dataset
stdCorridorFlag            [Bool] add std corridor to plot
manualLineType             [list] manual line type ( see ggplot2 doc)
manualSizeType             [float] manual line size ( see ggplot2 doc)
```

Value

```
fig [ggplot2 figure]
```

```
descriptiveKinematicGaitPanel_bothContext
    descriptiveKinematicGaitPanel_bothContext
```

Description

convenient descriptive plot panel of gait kinematics for left and right contexts

Usage

```
descriptiveKinematicGaitPanel_bothContext(descStatsFrameSequence,
    descStatsPhases = NULL, normativeData = NULL,
    stdCorridorFlag = TRUE)
```

Arguments

descStatsFrameSequence
[dataframe] descriptive stats table of all frame sequences

descStatsPhases
[dataframe] descriptive stats table of gait phase scalar ()

normativeData [dataframe] table of a normative dataset

stdCorridorFlag
[Bool] add std corridor to plot

Value

fig [ggplot2 figure]

descriptiveKineticGaitPanel
descriptiveKineticGaitPanel

Description

convenient descriptive plot panel of gait kinetics for a specific context

Usage

```
descriptiveKineticGaitPanel(descStatsFrameSequence, descStatsPhases,
  iContext, colorFactor = NULL, linetypeFactor = NULL,
  normativeData = NULL, stdCorridorFlag = FALSE,
  manualLineType = NULL, manualSizeType = NULL)
```

Arguments

descStatsFrameSequence
[dataframe] descriptive stats table of all frame sequences

descStatsPhases
[dataframe] descriptive stats table of gait phase scalar ()

iContext [string] context of the frame sequence

colorFactor [string] line color according an independant variable

linetypeFactor [string] line type defined according an independant variable

normativeData [dataframe] table of a normative dataset

stdCorridorFlag
[Bool] add std corridor to plot

manualLineType [list] manual line type (see ggplot2 doc)

manualSizeType [float] manual line size (see ggplot2 doc)

Value

fig [ggplot2 figure]

descriptiveKineticGaitPanel_bothContext	<i>descriptiveKineticGaitPanel_bothContext</i>
---	--

Description

convenient descriptive plot panel of gait kinematics for left and right contexts

Usage

```
descriptiveKineticGaitPanel_bothContext(descStatsFrameSequence,  
  descStatsPhases = NULL, normativeData = NULL,  
  stdCorridorFlag = FALSE)
```

Arguments

- descStatsFrameSequence [dataframe] descriptive stats table of all frame sequences
- descStatsPhases [dataframe] descriptive stats table of gait phase scalar ()
- normativeData [dataframe] table of a normative dataset
- stdCorridorFlag [Bool] add std corridor to plot

Value

fig [ggplot2 figure]

descriptivePlot	<i>descriptivePlot</i>
-----------------	------------------------

Description

plot descriptive statistics of a frame sequence

Usage

```
descriptivePlot(descStatsFrameSequence, iContext, iLabel, iAxis,  
  iTitle = "", yLabel = "Deg", legendPosition = "none",  
  colorFactor = NULL, facetFactor = NULL, linetypeFactor = NULL,  
  ylimits = NULL, lineWidth = 0.5)
```

Arguments

descStatsFrameSequence	[dataframe] descriptive stats table of frame sequence
iContext	[string] context of the frame sequence
iLabel	[string] label of the frame sequence
iAxis	[string] axis of the frame sequence
iTitle	[string] plot title
yLabel	[string] label of the Y-axis
legendPosition	[string] position of the legend (see legend.position of ggplot2)
colorFactor	[string] line color according an independant variable
facetFactor	[string] create \textit{facet} plot (see ggplot2) for an independant variable
linetypeFactor	[string] line type defined according an independant variable
ylimits	[list] limits of the y-axis
lineWidth	[float] line width value

Value

fig [ggplot2 figure]

descriptivePlot_bothContext
descriptivePlot_bothContext

Description

plot left and right descriptivestats of a frame sequence

Usage

```
descriptivePlot_bothContext(descStatsFrameSequence, LabelLeft, AxisLeft,
  LabelRight, AxisRight, iTitle = "", yLabel = "Deg",
  legendPosition = "none", ylimits = NULL)
```

Arguments

descStatsFrameSequence	[dataframe] descriptive stats table of frame sequence
LabelLeft	[string] label of the frame sequence for the left context
AxisLeft	[string] axis of the frame sequence for the left context
LabelRight	[string] label of the frame sequence for the right context
AxisRight	[string] axis of the frame sequence for the Left context
iTitle	[string] plot title
yLabel	[string] label of the Y-axis
legendPosition	[string] position of the legend (see legend.position of ggplot2)
ylimits	[list] limits of the y-axis

Value

fig [ggplot2 figure]

gather_descriptiveStats_FrameSequences

gather_descriptiveStats_FrameSequences

Description

#' applicatio of dplyr::gather function on frame sequence descriptive stats table. (return a \textit{long} table)

Usage

gather_descriptiveStats_FrameSequences(frameSeqDescStats)

Arguments

frameSeqDescStats
[dataframe] frame sequence descriptive stats

Value

dataframe.

Examples

TODO

gather_descriptiveStats

gather_DescriptiveStats

Description

applicatio of dplyr::gather function on descriptive stats table. (return a \textit{long} table)

Usage

gather_descriptiveStats(descStatTable, dependantVariables, groupByList)

Arguments

descStatTable [dataframe] descriptive stats table.
dependantVariables
[list] dependant variables
groupByList [list] group-by independant variables

Value

table

Examples

TODO

geom_normative_ribbon	<i>geom_normative_ribbon</i>
-----------------------	------------------------------

Description

new ggplot2 geom displaying corridor of normative data

Usage

```
geom_normative_ribbon(data)
```

Arguments

data	[dataframe] normative data table
------	----------------------------------

Value**Note**

programming as a new geom (see <https://rpubs.com/hadley/97970>)

geom_stdRibbon	<i>geom_stdRibbon</i>
----------------	-----------------------

Description

new ggplot2 geom displaying std corridor

Usage

```
geom_stdRibbon(table)
```

Arguments

table	[dataframe] all cycle table
-------	-----------------------------

Value**Note**

programming as a new geom (see <https://rpubs.com/hadley/97970>)

geom_vline_descriptiveEvents_bothContext

addGaitDescriptiveEventsLines_bothContext

Description

add gait events from left and right context as vertical lines to a figure

Usage

geom_vline_descriptiveEvents_bothContext(descStatsPhaseTable)

Arguments

[fig] ggplot2 figure
[descStatsPhaseTable] descriptive stats table of gait phases (must include c("stancePhase","doubleStance1","doubleStance2")

Value

getGlobalVariance

getGlobalVariance

Usage

getGlobalVariance(varianceTable)

Arguments

[]

Value

getNumberOfCycles	<i>getNumberOfCycles</i>
-------------------	--------------------------

Description

return number of cycles for a label, its axis and a combinaison of factor

Usage

```
getNumberOfCycles(table, label, axis, groupByList)
```

Arguments

table	[dataframe] all-cycle table
label	[string] label of the frame sequence
axis	[string] axis of the frame sequence
groupByList	[list] group-by independant variables

Value

dataframe.

Examples

```
getNumberOfCycles(kinematicTable, "LHipAngles", "X", c("Id", "Operator", "Session"))
```

getStdCorridorLimits_fromDescStatFrameSequences	<i>getStdCorridorLimits_fromDescStatFrameSequences</i>
---	--

Description

return corridor limits of frame sequence descriptive stats

Usage

```
getStdCorridorLimits_fromDescStatFrameSequences(frameSeqDescStats)
```

Arguments

frameSeqDescStats	[dataframe] frame sequence descriptive stats
-------------------	--

Value

dataframe.

Examples

TODO

hello	<i>Hello, World!</i>
-------	----------------------

Description

Prints 'Hello, world!'.

Usage

```
hello()
```

Examples

```
hello()
```

homogeniseCycles	<i>homogeniseCycles</i>
------------------	-------------------------

Description

homogenise the number of cycle for a combinaison of independant variables

Usage

```
homogeniseCycles(table, groupByList)
```

Arguments

table	[dataframe] all-cycle table
groupByList	[list] group-by independant variables .

Value

update all-cycle table

Examples

```
homogeniseCycles(kinematicTable, c("Id","Operator","Session"))
```

LinearFit_onFrameSequences

LinearFit_onFrameSequences

Description

Linear fitting between two modalities of the independant variable (\textbf{ComparisonFactor})

Usage

```
LinearFit_onFrameSequences(table, modality1, modality2,
    comparisonLabel = NULL, frameIndexes = NULL)
```

Arguments

table	[dataframe] all-cycle table
modality1	[string] 1st selected modality of the independant variable (ComparisonFactor)
modality2	[string] 2nd selected modality of the independant variable (ComparisonFactor)
comparisonLabel	[string] label given to the comparison
frameIndexes	[list] selected frame indexes

Value

dataframe

Warning

need construction of the factor ComparisonFactor

Examples

TODO

loadNormativeDataSet *loadNormativeDataSet*

Description

load normative dataset

Usage

```
loadNormativeDataSet(fullXlsFile, sheet)
```

Arguments

fullXlsFile	[String] full filename (path+fileame) of the selected dataset
-------------	---

Value

MeanAbsoluteVariability
<i>MeanAbsoluteVariability</i>

Description

compute the mean absolute variability (see Mantovani2016) for all modalities of the independant variables (`\textbf{ComparisonFactor}`)

Usage

`MeanAbsoluteVariability(table)`

Arguments

`table` `[dataframe]` all-cycle table

Value

`dataframe`

Warning

need construction of the factor `ComparisonFactor`

Examples

`MeanAbsoluteVariability(kinematicCyles)`

MinDetectableChange	<i>MinDetectableChange</i> <i>f</i>
---------------------	-------------------------------------

Description

compute the min detectable change (see Mantovani2016) for specific dependant variables

Usage

`MinDetectableChange(table, dependantVariables)`

Arguments

`table` `[dataframe]` all-cycle table
`dependantVariables`
 `[list]` dependant variables

Value

`dataframe`

Warning

need construction of the factor ComparisonFactor

Examples

```
mdc = MinDetectableChange(kinematicTable,c("Frame0","Frame001") )
```

normativeDataSetTransformation
<i>normativeDataSetTransformation</i>

Description

transform the normative table as long table with new columns max (mean+std) and min (mean-std)

Usage

```
normativeDataSetTransformation(normativeTable)
```

Arguments

normativeTable [dataframe] normative table

Value

dataframe.

Examples

```
TODO
```

plotVariance	<i>plotVariance</i>
--------------	---------------------

Usage

```
plotVariance(varianceTable)
```

Arguments

[]

Value

Sem_allAssessors	<i>Sem_allAssessors</i>
------------------	-------------------------

Description

compute the standard error of measurement for all assessors

Usage

```
Sem_allAssessors(sessionAverage, Anova = TRUE)
```

Arguments

sessionAverage [dataframe] session average table
 Anova [Bool] computation done with anova

Sem_byAssessor	<i>Sem_byAssessor</i>
----------------	-----------------------

Description

compute the standard error of measurement by assessors

Usage

```
Sem_byAssessor(sessionAverage, Anova = TRUE)
```

Arguments

sessionAverage [dataframe] session average table
 Anova [Bool] computation done with anova

VarianceEstCore	<i>VarianceEstCore</i>
-----------------	------------------------

Usage

```
VarianceEstCore(parameterTable, formStr)
```

Arguments

[]

Value

withinAssessorReport	<i>withinAssessorReport</i>
----------------------	-----------------------------

Description

Report of the within asessor differences

Usage

withinAssessorReport(sembyAssessordf, nAssesor, nParticipant)

Arguments

sembyAssessordf [dataframe] standard error of measurement table computed by assessor
nAssesor [integer] number of assessors
nParticipant [integer] number of participants

Value

withinOperatorStandardDeviation	<i>withinOperatorStandardDeviation</i>
---------------------------------	--

Description

compute the within-Operator standard deviation

Usage

withinOperatorStandardDeviation(sessionAverage, Anova = FALSE)

Arguments

sessionAverage [dataframe] session average table
Anova [Bool] computation done with anova

Value

dataframe

Warning

within-operator standard deviation matches Richard Baker’s spreadsheet processing. You might also compute this value through Anova outputs. In this case, slight differences might occur

```
withinSubjectStandardDeviation  
  withinSubjectStandardDeviation
```

Description

compute the within-subject standard deviation

Usage

```
withinSubjectStandardDeviation(sessionAverage, Anova = FALSE)
```

Arguments

sessionAverage [dataframe] session average table
Anova [Bool] computation done with anova

Value

dataframe

Warning

within-subject standard deviation matches Richard Baker's spreadsheet processing. You might also compute this value through Anova outputs. In this case, slight differences might occur

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