

GET FILE='N:\PROJECTEN\KMG\boek clinimetrics\opgaven en website\hoofdstuk 5\chapter 5_book_random50_LONG.sav'.
 apter 5_book_random50_LONG.sav'.

*****correlatie en t-toets*****

T-TEST
 PAIRS = ROM.1 WITH ROM.2 (PAIRED)
 /CRITERIA = CI(.95)
 /MISSING = ANALYSIS.

T-Test

[DataSet6] N:\PROJECTEN\KMG\boek clinimetrics\opgaven en website\hoofdstuk 5\chapter 5_book_random50_SHORT.sav

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	ROM.1: range of movement	68.3000	50	17.86029	2.52583
	ROM.2: range of movement	62.3600	50	16.31796	2.30771

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	ROM.1: range of movement & ROM.2: range of movement	50	.815	.000

Paired Samples Test

		Paired Differences					t
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		
					Lower	Upper	
Pair 1	ROM.1: range of movement - ROM.2: range of movement	5.94000	10.50055	1.48500	2.95578	8.92422	4.000

Paired Samples Test

		df	Sig. (2-tailed)
Pair 1	ROM.1: range of movement - ROM.2: range of movement	49	.000

CORRELATIONS
 /VARIABLES=ROM.1 ROM.2
 /PRINT=TWOTAIL NOSIG

```

/STATISTICS DESCRIPTIVES
/MISSING=PAIRWISE .

```

Correlations

[DataSet6] N:\PROJECTEN\KMG\boek clinimetrics\opgaven en website\hoofdstuk 5\chapter 5_book_random50_SHORT.sav

Descriptive Statistics

	Mean	Std. Deviation	N
ROM.1: range of movement	68.3000	17.86029	50
ROM.2: range of movement	62.3600	16.31796	50

Correlations

		ROM.1: range of movement	ROM.2: range of movement
ROM.1: range of movement	Pearson Correlation	1	.815**
	Sig. (2-tailed)		.000
	N	50	50
ROM.2: range of movement	Pearson Correlation	.815**	1
	Sig. (2-tailed)	.000	
	N	50	50

** . Correlation is significant at the 0.01 level (2-tailed).

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DATASET CLOSE DataSet3.

```

*1. calculation of ICCs using variance components.

```

* var comp REML.

```

```

VARCOMP

```

```

ROM BY patcode PTAorB

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```

/RANDOM = patcode PTAorB

```

```

/METHOD = REML

```

```

/CRITERIA = ITERATE(50)

```

```

/CRITERIA = CONVERGE(1.0E-8)

```

```

/DESIGN = patcode PTAorB

```

```

/INTERCEPT = INCLUDE .

```

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N:\PROJECTEN\KMG\boek clinimetrics\opgaven en website\hoofdstuk 5\chapter 5_book_random50_LONG.sav

```

Variance Components Estimation

Factor Level Information

		N	Value Label
patient code	1	2	
	5	2	
	9	2	
	16	2	
	24	2	
	25	2	
	37	2	
	38	2	
	41	2	
	42	2	
	43	2	
	48	2	
	50	2	
	52	2	
	56	2	
	65	2	
	74	2	
	75	2	
	83	2	
	87	2	
	88	2	
	97	2	
	100	2	
	107	2	
	111	2	
	112	2	
	115	2	
	121	2	
	122	2	
	126	2	
	128	2	
	129	2	
	142	2	
153	2		
154	2		
158	2		
159	2		
162	2		
167	2		
170	2		
172	2		
173	2		
174	2		
175	2		
176	2		
180	2		
181	2		
184	2		
193	2		
194	2		
rater 1 is Mary	1	50	mary
rater 2 is Peter	2	50	peter

Dependent Variable: ROM

Variance Estimates

Component	Estimate
Var(patcode)	237.502
Var(PTAorB)	16.539
Var(Error)	55.131

Dependent Variable: ROM

Method: Restricted Maximum Likelihood Estimation

Asymptotic Covariance Matrix

	Var(patcode)	Var(PTAorB)	Var(Error)
Var(patcode)	2898.800	1.241	-62.029
Var(PTAorB)	1.241	622.516	-2.481
Var(Error)	-62.029	-2.481	124.057

Dependent Variable: ROM

Method: Restricted Maximum Likelihood Estimation

* 2. calculation of ICC using Mean Squares.

* First, the data set needs to be reordered.

`SORT CASES BY patcode PTAorB .`

`CASESTOVARS`

`/ID = patcode`

`/INDEX = PTAorB`

`/GROUPBY = VARIABLE .`

Cases to Variables

[DataSet6] N:\PROJECTEN\KMG\boek clinimetrics\opgaven en website\hoofdstuk 5\chapter 5_book_random50_LONG.sav

Generated Variables

Original Variable	rater 1 is Mary rater 2 is Peter	Result	
		Name	Label
range of movement	mary	ROM.1	ROM.1: range of movement
	peter	ROM.2	ROM.2: range of movement

Processing Statistics

Cases In	100
Cases Out	50
Cases In/Cases Out	2.0
Variables In	3
Variables Out	3
Index Values	2

* calculation of ICCs using Mean Squares.

`RELIABILITY`

`/VARIABLES=ROM.1 ROM.2`

`/SCALE('ALL VARIABLES') ALL /MODEL = ALPHA`

`/STATISTICS=ANOVA`

`/ICC=MODEL(RANDOM) TYPE(CONSISTENCY) CIN=95 TESTVAL=0 .`

Reliability

[DataSet6] N:\PROJECTEN\KMG\boek clinimetrics\opgaven en website\hoofdstuk 5\chapter 5_book_random50_SHORT.sav

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	50	100.0
	Excluded ^a	0	.0
	Total	50	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.896	2

ANOVA

		Sum of Squares	df	Mean Square	F	Sig
Between People		25976.610	49	530.135	16.000	.000
Within People	Between Items	882.090	1	882.090		
	Residual	2701.410	49	55.131		
	Total	3583.500	50	71.670		
Total		29560.110	99	298.587		

Grand Mean = 65.3300

Intraclass Correlation Coefficient

	Intraclass Correlation ^a	95% Confidence Interval	
		Lower Bound	Upper Bound
Single Measures	.812 ^b	.690	.889
Average Measures	.896	.817	.941

Two-way random effects model where both people effects and measures effects are random.

Intraclass Correlation Coefficient

	F Test with True Value 0			
	Value	df1	df2	Sig
Single Measures	9.616	49	49	.000
Average Measures	9.616	49	49	.000

Two-way random effects model where both people effects and measures effects are random.

a. Type C intraclass correlation coefficients using a consistency definition-the between-measure variance is excluded from the denominator variance.

b. The estimator is the same, whether the interaction effect is present or not.

* 3. Calculation of ICCs direct via scale.

RELIABILITY

/VARIABLES=ROM.1 ROM.2

/SCALE('ALL VARIABLES') ALL / MODEL = ALPHA

/STATISTICS=ANOVA
 /ICC=MODEL(RANDOM) TYPE(ABSOLUTE) CIN=95 TESTVAL=0 .

Reliability

[DataSet6] N:\PROJECTEN\KMG\boek clinimetrics\opgaven en website\hoofdstuk 5\chapter 5
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Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	50	100.0
	Excluded ^a	0	.0
	Total	50	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.896	2

ANOVA

		Sum of Squares	df	Mean Square	F	Sig
Between People		25976.610	49	530.135	16.000	.000
Within People	Between Items	882.090	1	882.090		
	Residual	2701.410	49	55.131		
	Total	3583.500	50	71.670		
Total		29560.110	99	298.587		

Grand Mean = 65.3300

Intraclass Correlation Coefficient

	Intraclass Correlation ^a	95% Confidence Interval	
		Lower Bound	Upper Bound
Single Measures	.768 ^b	.530	.879
Average Measures	.869	.682	.937

Two-way random effects model where both people effects and measures effects are random.

Intraclass Correlation Coefficient

	F Test with True Value 0			
	Value	df1	df2	Sig
Single Measures	9.616	49	49	.000
Average Measures	9.616	49	49	.000

Two-way random effects model where both people effects and measures effects are random.

- Type A intraclass correlation coefficients using an absolute agreement definition.
- The estimator is the same, whether the interaction effect is present or not.

* 2. Calculation of SEM using SD difference .
 * SEM consistency = SD difference / wortel2 = .

COMPUTE diffscore = ROM.1 - ROM.2 .

EXECUTE .

FREQUENCIES

VARIABLES=diffscore

/STATISTICS=STDDEV MINIMUM MAXIMUM MEAN MEDIAN

/ORDER= ANALYSIS .

Frequencies

[DataSet6] N:\PROJECTEN\KMG\boek clinimetrics\opgaven en website\hoofdstuk 5\chapter 5_book_random50_SHORT.sav

Statistics

diffscore

N	Valid	50
	Missing	0
Mean		5.9400
Median		6.5000
Std. Deviation		10.50055
Minimum		-14.00
Maximum		25.00

diffscore

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid -14.00	1	2.0	2.0	2.0
-13.00	1	2.0	2.0	4.0
-12.00	2	4.0	4.0	8.0
-11.00	1	2.0	2.0	10.0
-9.00	1	2.0	2.0	12.0
-8.00	1	2.0	2.0	14.0
-6.00	2	4.0	4.0	18.0
-5.00	1	2.0	2.0	20.0
-3.00	1	2.0	2.0	22.0
-2.00	3	6.0	6.0	28.0
1.00	1	2.0	2.0	30.0
2.00	1	2.0	2.0	32.0
3.00	1	2.0	2.0	34.0
4.00	2	4.0	4.0	38.0
5.00	4	8.0	8.0	46.0
6.00	2	4.0	4.0	50.0
7.00	2	4.0	4.0	54.0
8.00	2	4.0	4.0	58.0
9.00	2	4.0	4.0	62.0
10.00	2	4.0	4.0	66.0
11.00	2	4.0	4.0	70.0
12.00	4	8.0	8.0	78.0
14.00	3	6.0	6.0	84.0
18.00	1	2.0	2.0	86.0
19.00	1	2.0	2.0	88.0
21.00	1	2.0	2.0	90.0
22.00	1	2.0	2.0	92.0
23.00	2	4.0	4.0	96.0
25.00	2	4.0	4.0	100.0
Total	50	100.0	100.0	

* 3. Calculation of SEM using ICC .

* SEM = syv(1-ICC).

FREQUENCIES

```
VARIABLES=ROM.1 ROM.2  
/STATISTICS=STDDEV MINIMUM MAXIMUM MEAN MEDIAN  
/ORDER= ANALYSIS .
```

Frequencies

[DataSet6] N:\PROJECTEN\KMG\boek clinimetrics\opgaven en website\hoofdstuk 5\chapter 5
_book_random50_SHORT.sav

Statistics

		ROM.1: range of movement	ROM.2: range of movement
N	Valid	50	50
	Missing	0	0
Mean		68.3000	62.3600
Median		70.0000	66.5000
Std. Deviation		17.86029	16.31796
Minimum		10.00	19.00
Maximum		102.00	90.00

Frequency Table

ROM.1: range of movement

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 10.00	1	2.0	2.0	2.0
29.00	1	2.0	2.0	4.0
30.00	1	2.0	2.0	6.0
40.00	1	2.0	2.0	8.0
41.00	1	2.0	2.0	10.0
42.00	1	2.0	2.0	12.0
50.00	1	2.0	2.0	14.0
52.00	1	2.0	2.0	16.0
55.00	1	2.0	2.0	18.0
56.00	1	2.0	2.0	20.0
57.00	2	4.0	4.0	24.0
59.00	1	2.0	2.0	26.0
60.00	2	4.0	4.0	30.0
63.00	1	2.0	2.0	32.0
66.00	1	2.0	2.0	34.0
68.00	3	6.0	6.0	40.0
69.00	2	4.0	4.0	44.0
70.00	4	8.0	8.0	52.0
72.00	1	2.0	2.0	54.0
73.00	1	2.0	2.0	56.0
75.00	1	2.0	2.0	58.0
76.00	1	2.0	2.0	60.0
77.00	2	4.0	4.0	64.0
78.00	3	6.0	6.0	70.0
79.00	2	4.0	4.0	74.0
81.00	2	4.0	4.0	78.0
82.00	2	4.0	4.0	82.0
83.00	2	4.0	4.0	86.0
85.00	2	4.0	4.0	90.0
88.00	2	4.0	4.0	94.0
91.00	1	2.0	2.0	96.0
93.00	1	2.0	2.0	98.0
102.00	1	2.0	2.0	100.0
Total	50	100.0	100.0	

ROM.2: range of movement

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 19.00	1	2.0	2.0	2.0
24.00	1	2.0	2.0	4.0
25.00	1	2.0	2.0	6.0
28.00	1	2.0	2.0	8.0
35.00	1	2.0	2.0	10.0
41.00	1	2.0	2.0	12.0
43.00	1	2.0	2.0	14.0
45.00	1	2.0	2.0	16.0
50.00	1	2.0	2.0	18.0
52.00	1	2.0	2.0	20.0
53.00	1	2.0	2.0	22.0
54.00	2	4.0	4.0	26.0
55.00	1	2.0	2.0	28.0
56.00	1	2.0	2.0	30.0
58.00	1	2.0	2.0	32.0
59.00	1	2.0	2.0	34.0
60.00	1	2.0	2.0	36.0
61.00	1	2.0	2.0	38.0
62.00	1	2.0	2.0	40.0
64.00	2	4.0	4.0	44.0
65.00	2	4.0	4.0	48.0
66.00	1	2.0	2.0	50.0
67.00	3	6.0	6.0	56.0
68.00	2	4.0	4.0	60.0
69.00	2	4.0	4.0	64.0
70.00	2	4.0	4.0	68.0
72.00	2	4.0	4.0	72.0
73.00	2	4.0	4.0	76.0
75.00	3	6.0	6.0	82.0
76.00	1	2.0	2.0	84.0
78.00	2	4.0	4.0	88.0
79.00	2	4.0	4.0	92.0
80.00	1	2.0	2.0	94.0
81.00	1	2.0	2.0	96.0
89.00	1	2.0	2.0	98.0
90.00	1	2.0	2.0	100.0
Total	50	100.0	100.0	

*****Bland & Altman Plot*****

```
FREQUENCIES
  VARIABLES=ROM.1 ROM.2 diffscore
  /STATISTICS=STDDEV MINIMUM MAXIMUM MEAN
  /ORDER= ANALYSIS .
```

Frequencies

[DataSet6] N:\PROJECTEN\KMG\boek clinimetrics\opgaven en website\hoofdstuk 5\chapter 5_book_random50_SHORT.sav

Statistics

		ROM.1: range of movement	ROM.2: range of movement	diffscore
N	Valid	50	50	50
	Missing	0	0	0
Mean		68.3000	62.3600	5.9400
Std. Deviation		17.86029	16.31796	10.50055
Minimum		10.00	19.00	-14.00
Maximum		102.00	90.00	25.00

Frequency Table

ROM.1: range of movement

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	10.00	1	2.0	2.0	2.0
	29.00	1	2.0	2.0	4.0
	30.00	1	2.0	2.0	6.0
	40.00	1	2.0	2.0	8.0
	41.00	1	2.0	2.0	10.0
	42.00	1	2.0	2.0	12.0
	50.00	1	2.0	2.0	14.0
	52.00	1	2.0	2.0	16.0
	55.00	1	2.0	2.0	18.0
	56.00	1	2.0	2.0	20.0
	57.00	2	4.0	4.0	24.0
	59.00	1	2.0	2.0	26.0
	60.00	2	4.0	4.0	30.0
	63.00	1	2.0	2.0	32.0
	66.00	1	2.0	2.0	34.0
	68.00	3	6.0	6.0	40.0
	69.00	2	4.0	4.0	44.0
	70.00	4	8.0	8.0	52.0
	72.00	1	2.0	2.0	54.0
	73.00	1	2.0	2.0	56.0
75.00	1	2.0	2.0	58.0	
76.00	1	2.0	2.0	60.0	
77.00	2	4.0	4.0	64.0	
78.00	3	6.0	6.0	70.0	
79.00	2	4.0	4.0	74.0	
81.00	2	4.0	4.0	78.0	
82.00	2	4.0	4.0	82.0	
83.00	2	4.0	4.0	86.0	
85.00	2	4.0	4.0	90.0	
88.00	2	4.0	4.0	94.0	
91.00	1	2.0	2.0	96.0	
93.00	1	2.0	2.0	98.0	
102.00	1	2.0	2.0	100.0	
Total	50	100.0	100.0		

ROM.2: range of movement

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 19.00	1	2.0	2.0	2.0
24.00	1	2.0	2.0	4.0
25.00	1	2.0	2.0	6.0
28.00	1	2.0	2.0	8.0
35.00	1	2.0	2.0	10.0
41.00	1	2.0	2.0	12.0
43.00	1	2.0	2.0	14.0
45.00	1	2.0	2.0	16.0
50.00	1	2.0	2.0	18.0
52.00	1	2.0	2.0	20.0
53.00	1	2.0	2.0	22.0
54.00	2	4.0	4.0	26.0
55.00	1	2.0	2.0	28.0
56.00	1	2.0	2.0	30.0
58.00	1	2.0	2.0	32.0
59.00	1	2.0	2.0	34.0
60.00	1	2.0	2.0	36.0
61.00	1	2.0	2.0	38.0
62.00	1	2.0	2.0	40.0
64.00	2	4.0	4.0	44.0
65.00	2	4.0	4.0	48.0
66.00	1	2.0	2.0	50.0
67.00	3	6.0	6.0	56.0
68.00	2	4.0	4.0	60.0
69.00	2	4.0	4.0	64.0
70.00	2	4.0	4.0	68.0
72.00	2	4.0	4.0	72.0
73.00	2	4.0	4.0	76.0
75.00	3	6.0	6.0	82.0
76.00	1	2.0	2.0	84.0
78.00	2	4.0	4.0	88.0
79.00	2	4.0	4.0	92.0
80.00	1	2.0	2.0	94.0
81.00	1	2.0	2.0	96.0
89.00	1	2.0	2.0	98.0
90.00	1	2.0	2.0	100.0
Total	50	100.0	100.0	

diffscore

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid -14.00	1	2.0	2.0	2.0
-13.00	1	2.0	2.0	4.0
-12.00	2	4.0	4.0	8.0
-11.00	1	2.0	2.0	10.0
-9.00	1	2.0	2.0	12.0
-8.00	1	2.0	2.0	14.0
-6.00	2	4.0	4.0	18.0
-5.00	1	2.0	2.0	20.0
-3.00	1	2.0	2.0	22.0
-2.00	3	6.0	6.0	28.0
1.00	1	2.0	2.0	30.0
2.00	1	2.0	2.0	32.0
3.00	1	2.0	2.0	34.0
4.00	2	4.0	4.0	38.0
5.00	4	8.0	8.0	46.0
6.00	2	4.0	4.0	50.0
7.00	2	4.0	4.0	54.0
8.00	2	4.0	4.0	58.0
9.00	2	4.0	4.0	62.0
10.00	2	4.0	4.0	66.0
11.00	2	4.0	4.0	70.0
12.00	4	8.0	8.0	78.0
14.00	3	6.0	6.0	84.0
18.00	1	2.0	2.0	86.0
19.00	1	2.0	2.0	88.0
21.00	1	2.0	2.0	90.0
22.00	1	2.0	2.0	92.0
23.00	2	4.0	4.0	96.0
25.00	2	4.0	4.0	100.0
Total	50	100.0	100.0	

COMPUTE meandiff = (ROM.1 + ROM.2)/2 .
EXECUTE .