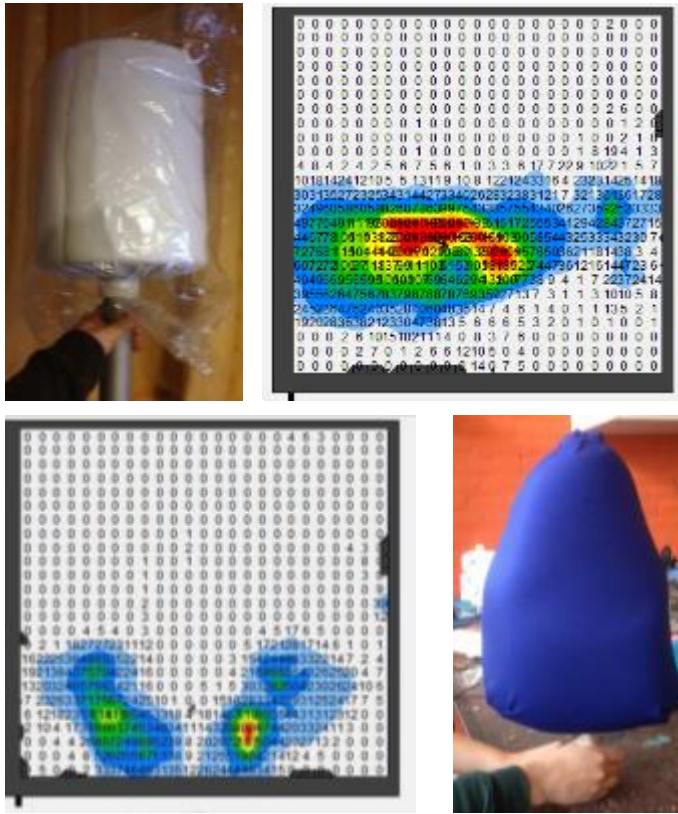


Appendix

A new design of the positioning system during hip arthroscopy operation



Human & Technology

Human Kinetic Technology at The Hague University of Applied Sciences
Department of Orthopaedics | Reinier de Graaf Gasthuis Hospital Delft

Lisa Damhuis 11056274
Tirza Lagrand 12007730

Supervisor team:
D. Wezenberg
A.N. Vardy

Clients:
Dr. N.M.C Mathijssen
Dr. G. Kraan
Dr. R. Bloem

A new design of the positioning system during hip arthroscopy operation

Appendix

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Appendix I Brainstorm session

Figure 1 The brainstorm session, with the main word: Perineal Post

Appendix II Questionnaire phase

How to hold power?

Stone	Vacuum	A heavy weight
Tie down	Strap	A counter weight
Fixed object	Push back	A massive object

How to hold power?

Stone	Vacuum	A heavy weight
Tie down	Strap	A counter weight
Fixed object	Push back	A massive object

How can you position someone?

Back	Tie rips	Clay
Side	Tie down	Climbing belt
Belly	Bracing	Beanbag
Upside down	Tape	Mattress
Standing	Harness	Handcuffs

How to distribute pressure?

Adjust forms	Material	Moisture between
Larger area	Friction	

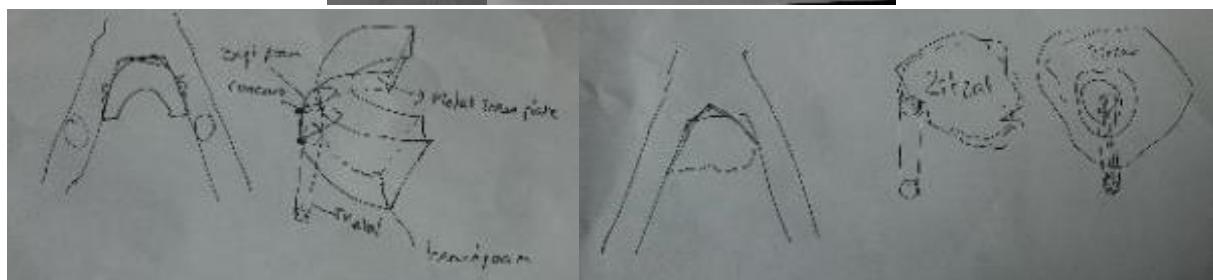
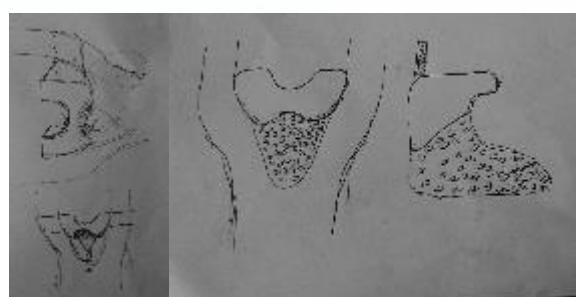
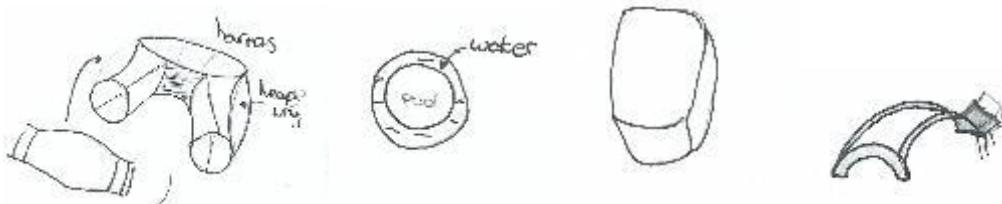
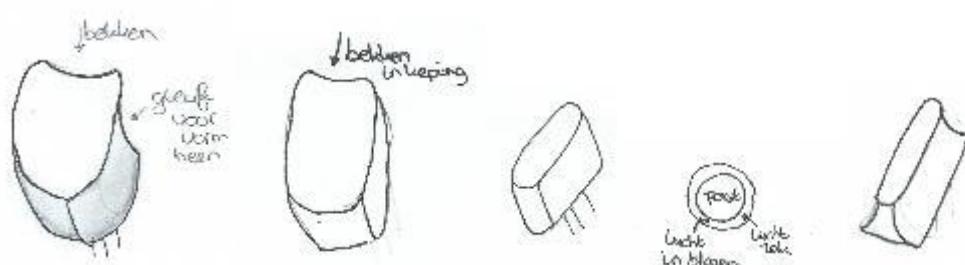
How to spread legs?

Put something between	Tie	External object
-----------------------	-----	-----------------

How to reduce the neuropraxia complications

Don't obstruct the nerve Divide pressure over a surface Other points with a higher pressure.

Appendix III Sketches



Appendix IV Cardinal method

Table 1 Cardinal method, the four concepts tested to the list of requirements

Appendix V Inspiration phase



Saddle



Figure 1 Inspiration phase, different kind of saddle and shapes

Appendix VI Test protocol

The proof of concept will be tested to check if it meets the requirements. The current perineal post will be tested as well and both perineal posts will be compared afterwards.

Introduction

To proof if the designed idea works the proof of concept will be tested. The most important outcome of the testing will be the 20% reducing of the pressure distribution at the perineal area. A test setup will be created to compare both perineal posts. Unfortunately it is not possible to test at the operation room, therefore an OR look-a-like setting will be created. The measurements will be done at the Sophia Rehabilitation Delft.

Study

Study date: 24th of May 2016
Additional possibility: 27th of May 2016
Study location: Sophia Rehabilitation Delft

Study population

Seven subjects will be measured.

Inclusion criteria

- >16 year
- Male and female
- Length > 128 cm

Exclusion criteria

- People who have undergone hip surgery before
- People who have a problem with the joints, ligaments, nerves and muscles in the affected area (ankle, knee, hip)
- People with muscular diseases in the affected area
- People with nerve problems in the affected area
- People with an amputated limb on the test side

Materials

- Physical therapist table
- Perineal post
 - The current perineal post (figure 1 left)
 - The proof of concept (figure 1 right)
- Pressure mat: BodiTrak 1510 seat (figure 2 left)
- Force gauge: SAUTER FL2K (figure 2 middle)
- Software: FSA software (figure 2 right)
- Laptop



Figure 1 Left: current perineal post, right: proof of concept

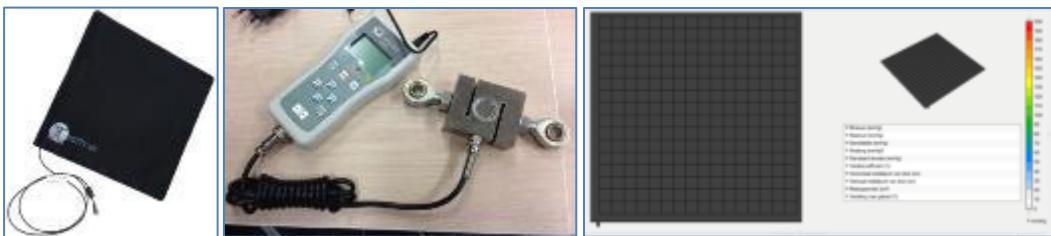


Figure 2 Left: BodiTrak pressure mat, middle: force gauge, right: FSA software

Study design

All seven subjects will be measured twice (current post & proof of concept). During the hip arthroscopy traction forces around 800 N are applied to dislocate the caput femur, but for the test setting a traction force of 150 N will be used. The subject will be placed at the physical therapist table, with traction of 150 N at the right leg, with the left leg positioned in flexion and abduction, and a little traction to counter a pelvic tilt. The traction will be achieved by pulling in the direction of the leg, at the end of the leg a pulley will be used, with 15 kilograms attached to it. Between the legs the perineal post will be placed, this will be randomized per subject. Both perineal posts will be placed out of the centre, traction will be applied at the right leg, therefore the post has to be placed slightly to the right leg. The pressure mat will surround the perineal post, to measure the pressure. . The pressure mat will be directly connected to the software programme FSA on the laptop, so that the measurements can be recorded. The measurements will take three minutes, at every 30 seconds the subject will be asked to give the VAS score. Between the measurements the subject has to rest at least 15 minutes. The VAS score is a visual analogue scale (figure 3), for the pain registration score, a scale between 0 and 10. When a VAS score of seven will be reached the test will be stopped immediately. After both measurements the subjects will be asked to give their preference post.

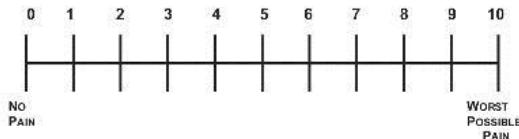


Figure 3 VAS Score line, pain registration with a scale between 0 and 10

Analysis

The output data is the recorded data at the FSA programme and the solicited VAS scores. The output data will be analysed at four different aspects: the maximum pressure, pressure distribution of the left and right tuberculum ischiadicum, the pressure distribution at the perineal area, and the subject's preferences.

Maximum pressure

The maximum pressure is defined as the maximum pressure during the measurement. Maximum pressure is presented in mmHg, which will be transferred to N/cm^2 . The maximum measurable pressure with the BodiTrak pressure mat, is $2,67\text{ }N/cm^2$ per sensor. The maximum pressure at the seven subjects will be compared every 30 seconds for 3:00 minutes.

Left tuberculum ischiadicum, right tuberculum ischiadicum & perineal area

The pressure distribution is the most important value to compare both perineal posts. To analyse the data exactly three areas of interest will be defined. Those three areas will be: the left tuberculum ischiadicum, the right tuberculum ischiadum, and the perineal area. In figure 4 is shown that the both tuberculum ischiadicae areas will be defined as 25 sensors, and the perineal area will be defined with 48 sensors. The centre of the tuberculum ischiadicae areas will be defined as the place where the tuberculum ischiadum are located.

Traction is applied at the right leg, the right tuberculum ischiadum is shown in purple, the left tuberculum ischiadum is shown in green, and the perineal area is shown in blue.

The pressure of the left and right tuberculum ischiadicum, and the perineal area will be defined at 2:00 minutes.

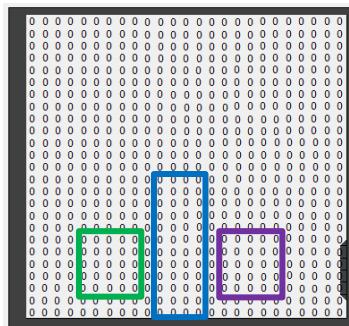


Figure 4 The 3 defined areas: green: the left tuberculum ischiadicum, purple: right tuberculum ischiadicum, and blue the perineal area

Appendix VII Input form researcher

Pressure measurement perineal post

Subject number: _____

Measurement: Current / Redesign

Subject

Date of birth: _____

Age: _____

Sex: _____

Length (cm): _____

Weight (kg): _____

Traction (N): _____

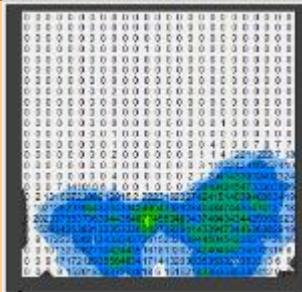
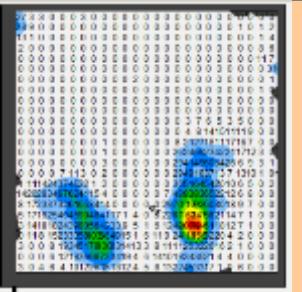
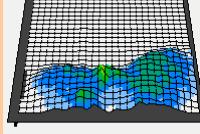
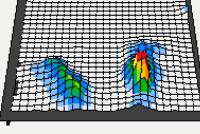
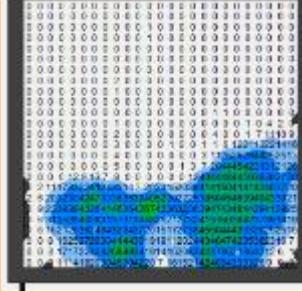
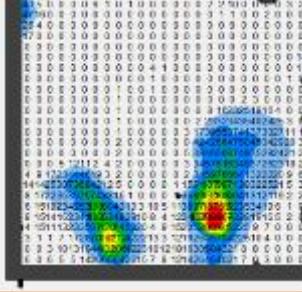
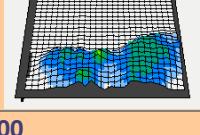
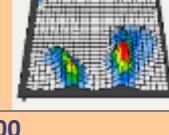
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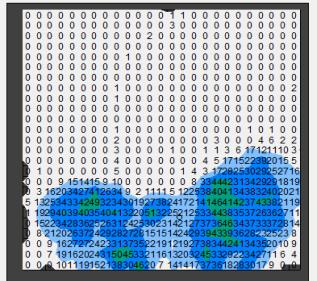
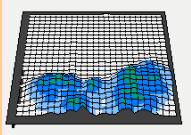
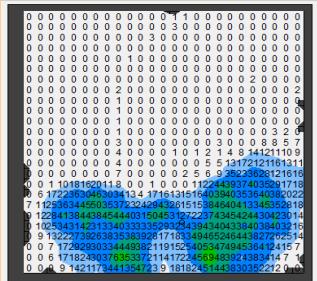
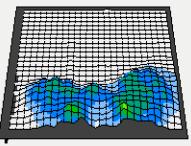
Output	0:00	0:30	1:00	1:30	2:00	2:30	3:00
Minimum (mmHg)							
Maximum (mmHg)							
Mean (mmHg)							
Deviation (mmHg ²)							
Standard deviation(mmHg)							
Variation coefficient (%)							
Horizontal centre of pressure (cm)							
Vertical centre of pressure (cm)							
Measuring Surface (cm ²)							
Distribution by region (%)							
Traction (N)							
VAS (1-10)							
Preferred post	Current / Proof of concept / No difference						

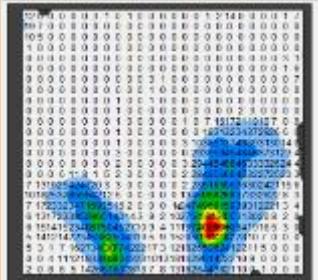
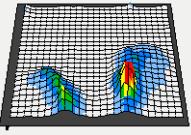
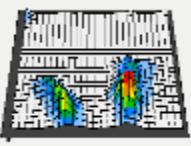
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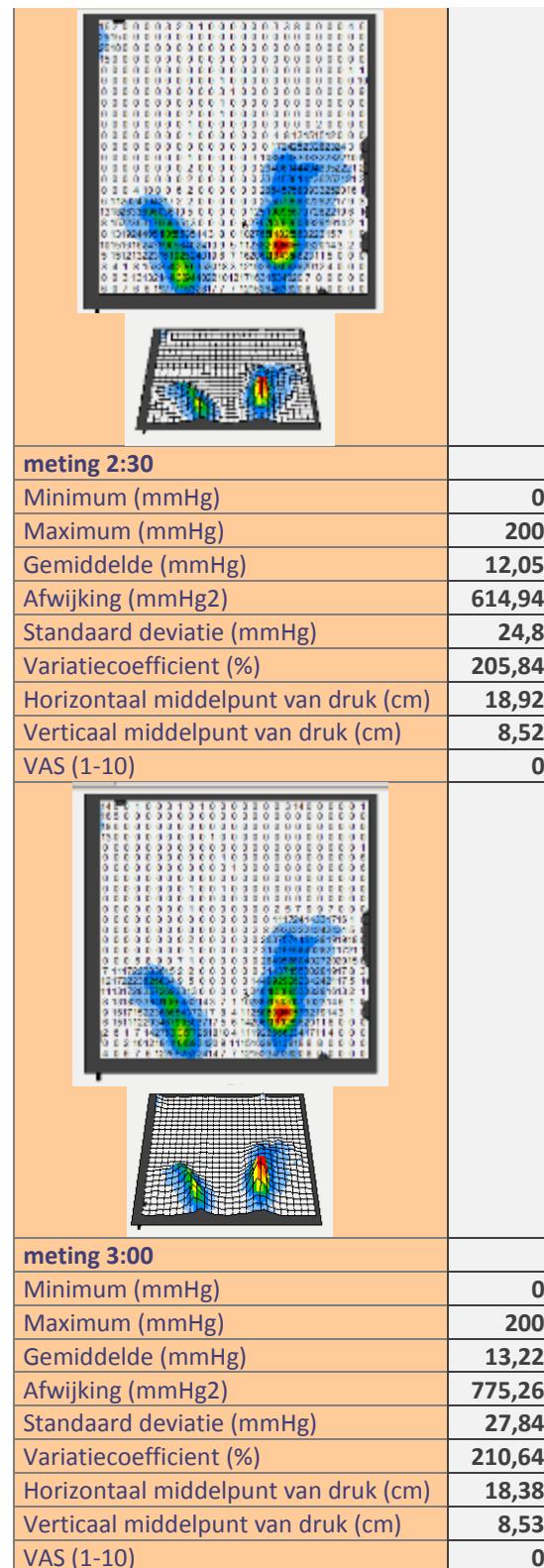
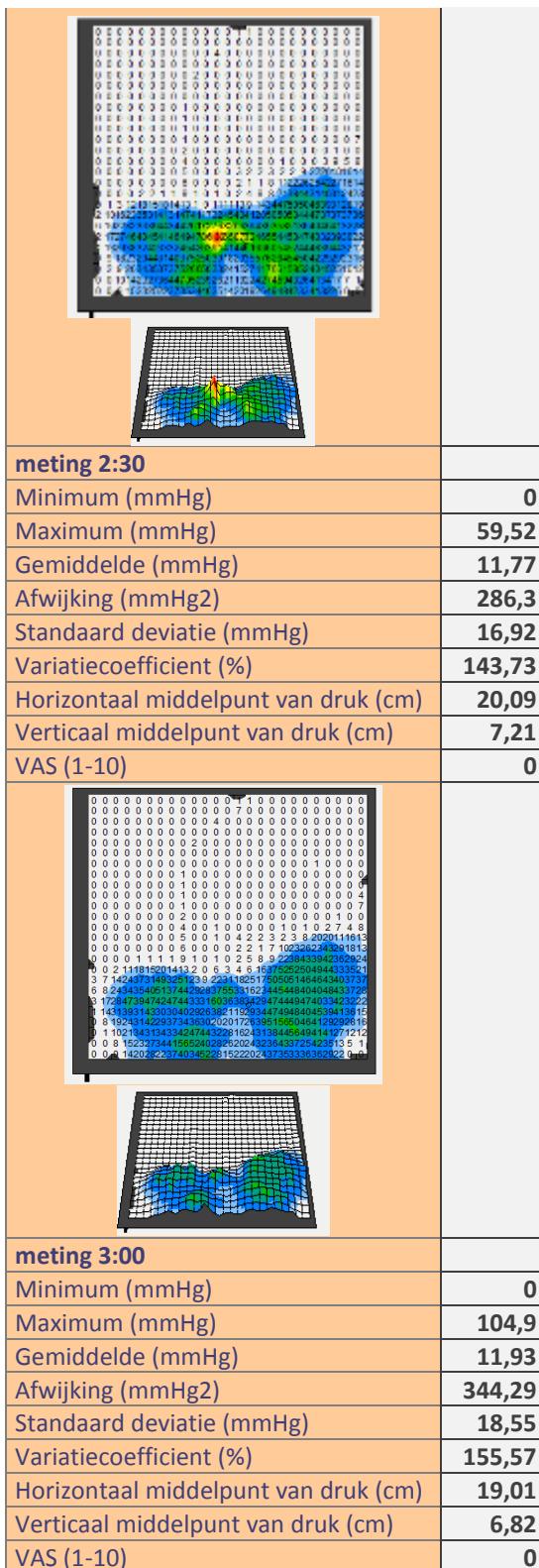
Appendix VIII Test results

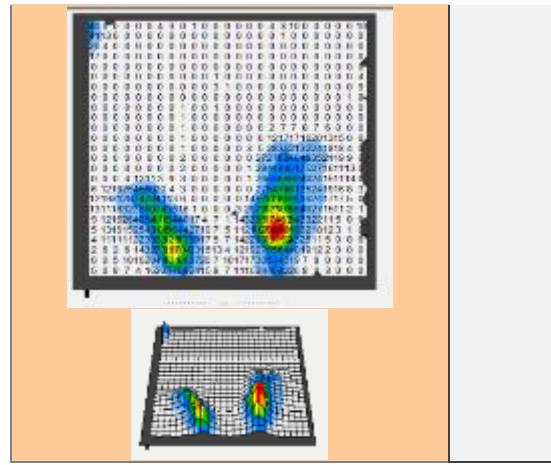
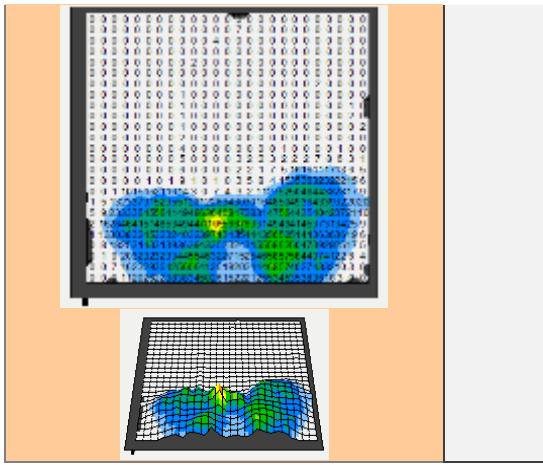
Subject 1

Current post	Redesigned post
meting 0:00	meting 0:00
Minimum (mmHg)	0
Maximum (mmHg)	76,58
Gemiddelde (mmHg)	10,69
Afwijking (mmHg2)	256,51
Standaard deviatie (mmHg)	16,02
Variatiecoefficient (%)	149,75
Horizontaal middelpunt van druk (cm)	20,34
Verticaal middelpunt van druk (cm)	7,17
VAS (1-10)	0
	
	
meting 0:30	meting 0:30
Minimum (mmHg)	0
Maximum (mmHg)	66,7
Gemiddelde (mmHg)	10,73
Afwijking (mmHg2)	255,17
Standaard deviatie (mmHg)	15,97
Variatiecoefficient (%)	148,91
Horizontaal middelpunt van druk (cm)	20,5
Verticaal middelpunt van druk (cm)	7,22
VAS (1-10)	0
	
	
meting 1:00	meting 1:00
Minimum (mmHg)	0
Maximum (mmHg)	51,14
Gemiddelde (mmHg)	9,31

Afwijking (mmHg2)	194,51
Standaard deviatie (mmHg)	13,95
Variatiecoefficient (%)	149,82
Horizontaal middelpunt van druk (cm)	19,77
Verticaal middelpunt van druk (cm)	7,04
VAS (1-10)	0
	
	
meting 1:30	
Minimum (mmHg)	0
Maximum (mmHg)	68,51
Gemiddelde (mmHg)	10,55
Afwijking (mmHg2)	250,09
Standaard deviatie (mmHg)	15,81
Variatiecoefficient (%)	149,84
Horizontaal middelpunt van druk (cm)	19,73
Verticaal middelpunt van druk (cm)	6,79
VAS (1-10)	0
	
	
meting 2:00	
Minimum (mmHg)	0
Maximum (mmHg)	132,29
Gemiddelde (mmHg)	13,56
Afwijking (mmHg2)	422,52
Standaard deviatie (mmHg)	20,56
Variatiecoefficient (%)	151,58
Horizontaal middelpunt van druk (cm)	19,79
Verticaal middelpunt van druk (cm)	7,09
VAS (1-10)	0

Afwijking (mmHg2)	651,69
Standaard deviatie (mmHg)	25,53
Variatiecoefficient (%)	195
Horizontaal middelpunt van druk (cm)	19,53
Verticaal middelpunt van druk (cm)	8,89
VAS (1-10)	0
	
	
meting 1:30	
Minimum (mmHg)	0.00
Maximum (mmHg)	200,00
Gemiddelde (mmHg)	12,45
Afwijking (mmHg2)	680,65
Standaard deviatie (mmHg)	26,09
Variatiecoefficient (%)	209,6
Horizontaal middelpunt van druk (cm)	18,36
Verticaal middelpunt van druk (cm)	8,55
VAS (1-10)	0
	
	
meting 2:00	
Minimum (mmHg)	0.00
Maximum (mmHg)	200,00
Gemiddelde (mmHg)	12,96
Afwijking (mmHg2)	654,97
Standaard deviatie (mmHg)	25,59
Variatiecoefficient (%)	197,29
Horizontaal middelpunt van druk (cm)	18,97
Verticaal middelpunt van druk (cm)	8,76
VAS (1-10)	0



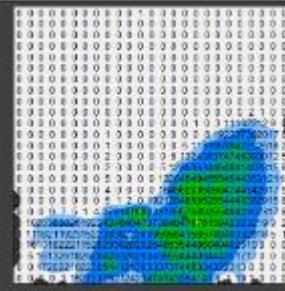
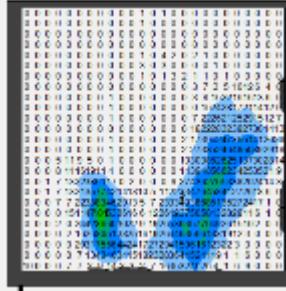


Preference: Redesign

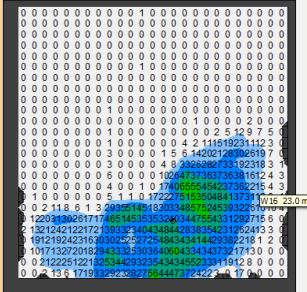
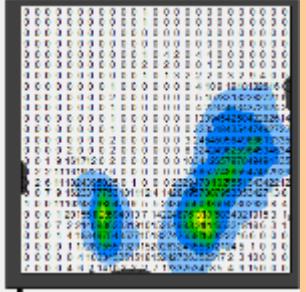
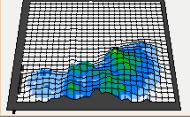
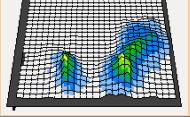
Subject 2

Current post	
meting 0:00	
Minimum (mmHg)	0
Maximum (mmHg)	55,43
Gemiddelde (mmHg)	7,66
Afwijking (mmHg2)	155,52
Standaard deviatie (mmHg)	12,47
Variatiecoefficient (%)	162,89
Horizontaal middelpunt van druk (cm)	21,46
Verticaal middelpunt van druk (cm)	7,74
VAS (1-10)	0
meting 0:30	
Minimum (mmHg)	0
Maximum (mmHg)	48,94
Gemiddelde (mmHg)	6,74
Afwijking (mmHg2)	128,55
Standaard deviatie (mmHg)	11,34
Variatiecoefficient (%)	168,24
Horizontaal middelpunt van druk (cm)	21,98
Verticaal middelpunt van druk (cm)	8,15
VAS (1-10)	0

Redesigned post	
meting 0:00	
Minimum (mmHg)	0
Maximum (mmHg)	112,16
Gemiddelde (mmHg)	12,89
Afwijking (mmHg2)	453,4
Standaard deviatie (mmHg)	21,29
Variatiecoefficient (%)	165,17
Horizontaal middelpunt van druk (cm)	22,01
Verticaal middelpunt van druk (cm)	10,54
VAS (1-10)	0
meting 0:30	
Minimum (mmHg)	0
Maximum (mmHg)	109,11
Gemiddelde (mmHg)	12,6
Afwijking (mmHg2)	454,25
Standaard deviatie (mmHg)	21,31
Variatiecoefficient (%)	169,18
Horizontaal middelpunt van druk (cm)	21,47
Verticaal middelpunt van druk (cm)	9,93
VAS (1-10)	0

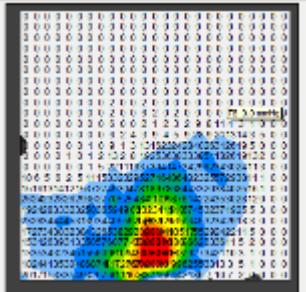
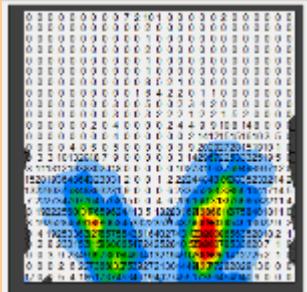
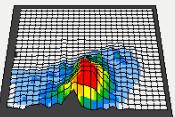
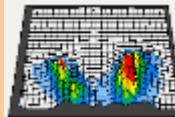
	
meting 1:00	meting 1:00
Minimum (mmHg)	0
Maximum (mmHg)	68,41
Gemiddelde (mmHg)	11,36
Afwijking (mmHg2)	308,08
Standaard deviatie (mmHg)	17,55
Variatiecoefficient (%)	154,51
Horizontaal middelpunt van druk (cm)	21,45
Verticaal middelpunt van druk (cm)	8,36
VAS (1-10)	0
	
meting 1:30	meting 1:30
Minimum (mmHg)	0
Maximum (mmHg)	56,26
Gemiddelde (mmHg)	8,92
Afwijking (mmHg2)	194,35
Standaard deviatie (mmHg)	13,94
Variatiecoefficient (%)	156,31
Horizontaal middelpunt van druk (cm)	20,93
Verticaal middelpunt van druk (cm)	7,77
VAS (1-10)	0
	

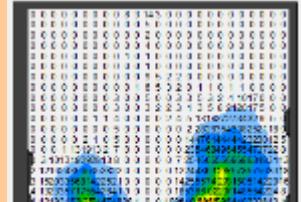
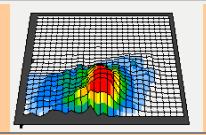
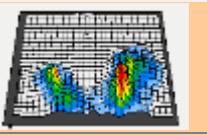
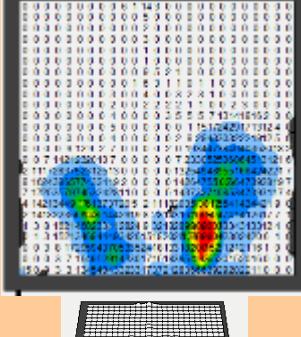
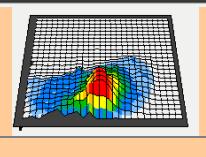
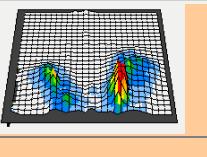
meting 2:00	meting 2:00
Minimum (mmHg)	0
Maximum (mmHg)	67,26
Gemiddelde (mmHg)	10,77
Afwijking (mmHg2)	299,76
Standaard deviatie (mmHg)	17,31
Variatiecoefficient (%)	160,7
Horizontaal middelpunt van druk (cm)	20,34
Verticaal middelpunt van druk (cm)	7,44
VAS (1-10)	0
meting 2:30	meting 2:30
Minimum (mmHg)	0
Maximum (mmHg)	65,53
Gemiddelde (mmHg)	8,66
Afwijking (mmHg2)	203,05
Standaard deviatie (mmHg)	14,25
Variatiecoefficient (%)	164,63
Horizontaal middelpunt van druk (cm)	19,88
Verticaal middelpunt van druk (cm)	7,5
VAS (1-10)	0
meting 3:00	meting 3:00
Minimum (mmHg)	0
Maximum (mmHg)	65,38
Gemiddelde (mmHg)	9,45
Afwijking (mmHg2)	233,38

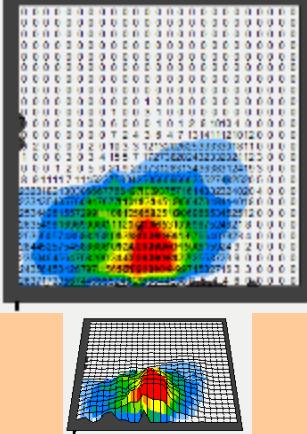
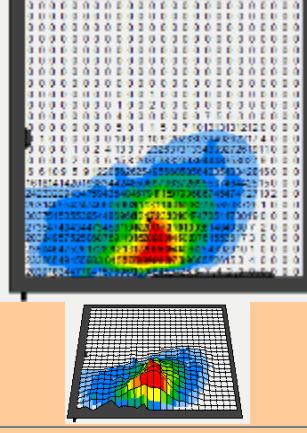
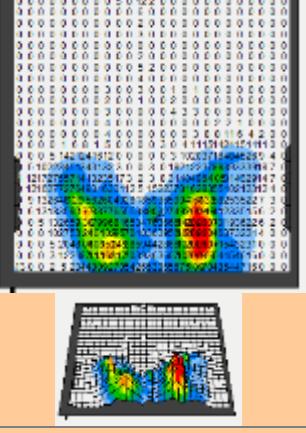
Standaard deviatie (mmHg)	15,28	Standaard deviatie (mmHg)	23,3
Variatiecoefficient (%)	161,64	Variatiecoefficient (%)	162,2
Horizontaal middelpunt van druk (cm)	20,01	Horizontaal middelpunt van druk (cm)	22,28
Verticaal middelpunt van druk (cm)	7,4	Verticaal middelpunt van druk (cm)	10,97
VAS (1-10)	0	VAS (1-10)	0
			
			

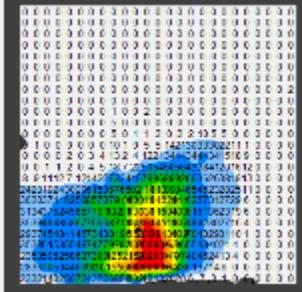
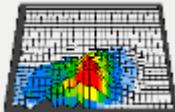
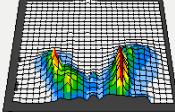
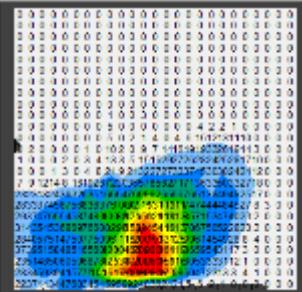
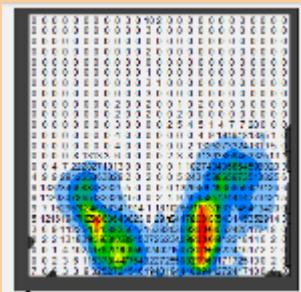
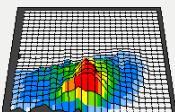
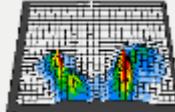
Preference: Redesign

Subject 3

Current post		Redesigned post	
meting 0:00		meting 0:00	
Minimum (mmHg)	0	Minimum (mmHg)	0
Maximum (mmHg)	200	Maximum (mmHg)	200
Gemiddelde (mmHg)	21,15	Gemiddelde (mmHg)	19,96
Afwijsing (mmHg2)	1491,4	Afwijsing (mmHg2)	1271,1
Standaard deviatie (mmHg)	38,62	Standaard deviatie (mmHg)	35,65
Variatiecoefficient (%)	182,55	Variatiecoefficient (%)	178,58
Horizontaal middelpunt van druk (cm)	16,46	Horizontaal middelpunt van druk (cm)	18,73
Verticaal middelpunt van druk (cm)	7,26	Verticaal middelpunt van druk (cm)	7,92
VAS (1-10)	3	VAS (1-10)	0
			
			
meting 0:30		meting 0:30	
Minimum (mmHg)	0	Minimum (mmHg)	0
Maximum (mmHg)	200	Maximum (mmHg)	200
Gemiddelde (mmHg)	23,52	Gemiddelde (mmHg)	19,36

Afwijking (mmHg2)	1731,6	Afwijking (mmHg2)	1078,8
Standaard deviatie (mmHg)	2	Standaard deviatie (mmHg)	6
Variatiecoefficient (%)	176,9	Variatiecoefficient (%)	170,38
Horizontaal middelpunt van druk (cm)	15,41	Horizontaal middelpunt van druk (cm)	20,12
Verticaal middelpunt van druk (cm)	7,25	Verticaal middelpunt van druk (cm)	8,89
VAS (1-10)	3	VAS (1-10)	0
			
			
meting 1:00		meting 1:00	
Minimum (mmHg)	0	Minimum (mmHg)	0
Maximum (mmHg)	200	Maximum (mmHg)	200
Gemiddelde (mmHg)	21,8	Gemiddelde (mmHg)	15,95
Afwijking (mmHg2)	1509,3	Afwijking (mmHg2)	911,66
Standaard deviatie (mmHg)	38,85	Standaard deviatie (mmHg)	30,19
Variatiecoefficient (%)	178,25	Variatiecoefficient (%)	189,25
Horizontaal middelpunt van druk (cm)	15,65	Horizontaal middelpunt van druk (cm)	19,51
Verticaal middelpunt van druk (cm)	7,25	Verticaal middelpunt van druk (cm)	8,41
VAS (1-10)	4	VAS (1-10)	0
			
			
meting 1:30		meting 1:30	
Minimum (mmHg)	0	Minimum (mmHg)	0
Maximum (mmHg)	200	Maximum (mmHg)	200
Gemiddelde (mmHg)	25,49	Gemiddelde (mmHg)	16,34
Afwijking (mmHg2)	2014,2	Afwijking (mmHg2)	1074,5
Standaard deviatie (mmHg)	44,88	Standaard deviatie (mmHg)	32,78

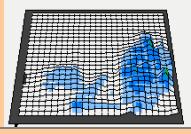
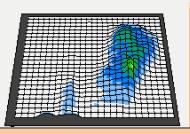
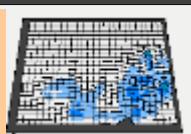
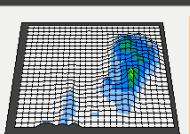
Variatiecoefficient (%)	176,06	Variatiecoefficient (%)	200,64
Horizontaal middelpunt van druk (cm)	15,19	Horizontaal middelpunt van druk (cm)	18,3
Verticaal middelpunt van druk (cm)	7,21	Verticaal middelpunt van druk (cm)	7,05
VAS (1-10)	4	VAS (1-10)	0
			
meting 2:00		meting 2:00	
Minimum (mmHg)	0	Minimum (mmHg)	0
Maximum (mmHg)	200	Maximum (mmHg)	200
Gemiddelde (mmHg)	22,71	Gemiddelde (mmHg)	19,49
Afwijsing (mmHg2)	1537,3	Afwijsing (mmHg2)	1419,3
5		5	
Standaard deviatie (mmHg)	39,21	Standaard deviatie (mmHg)	37,67
Variatiecoefficient (%)	172,66	Variatiecoefficient (%)	193,29
Horizontaal middelpunt van druk (cm)	15,79	Horizontaal middelpunt van druk (cm)	18,05
Verticaal middelpunt van druk (cm)	7,21	Verticaal middelpunt van druk (cm)	6,72
VAS (1-10)	4	VAS (1-10)	0
			
meting 2:30		meting 2:30	
Minimum (mmHg)	0	Minimum (mmHg)	0
Maximum (mmHg)	200	Maximum (mmHg)	200
Gemiddelde (mmHg)	22,94	Gemiddelde (mmHg)	18,22
Afwijsing (mmHg2)	1713,6	Afwijsing (mmHg2)	1157,2
5		5	
Standaard deviatie (mmHg)	41,4	Standaard deviatie (mmHg)	34,02
Variatiecoefficient (%)	180,48	Variatiecoefficient (%)	186,75
Horizontaal middelpunt van druk (cm)	14,82	Horizontaal middelpunt van druk (cm)	18,48

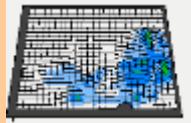
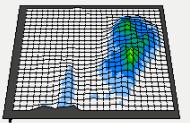
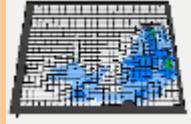
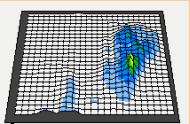
Verticaal middelpunt van druk (cm)	7,32	Verticaal middelpunt van druk (cm)	7,49
VAS (1-10)	4	VAS (1-10)	0
			
			
meting 3:00		meting 3:00	
Minimum (mmHg)	0	Minimum (mmHg)	0
Maximum (mmHg)	200	Maximum (mmHg)	200
Gemiddelde (mmHg)	24,26	Gemiddelde (mmHg)	17,82
Afwijsing (mmHg2)	1760,7	Afwijsing (mmHg2)	1123,4
Standaard deviatie (mmHg)	41,96	Standaard deviatie (mmHg)	33,52
Variatiecoefficient (%)	172,99	Variatiecoefficient (%)	188,04
Horizontaal middelpunt van druk (cm)	15,45	Horizontaal middelpunt van druk (cm)	18,81
Verticaal middelpunt van druk (cm)	7,33	Verticaal middelpunt van druk (cm)	7,85
VAS (1-10)	4	VAS (1-10)	0
			
			

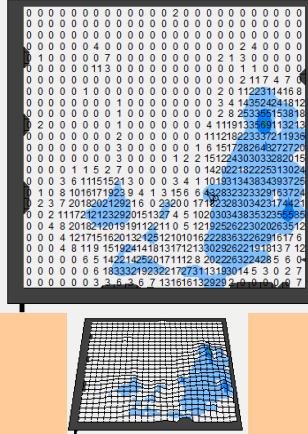
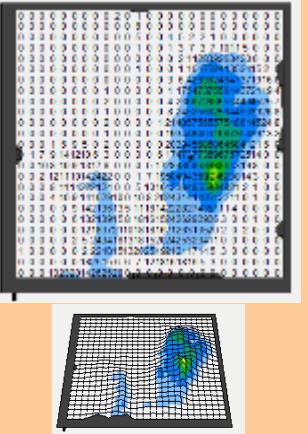
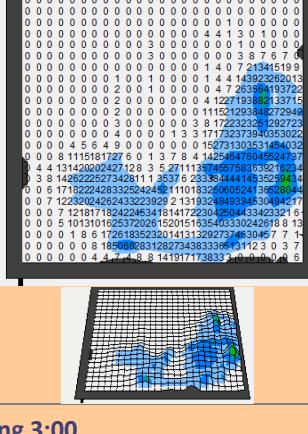
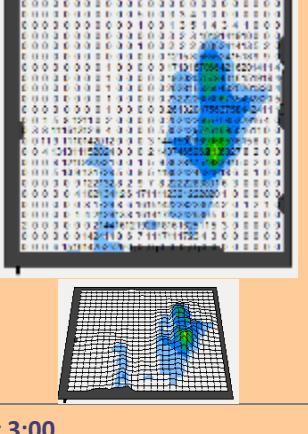
Preference: Redesign

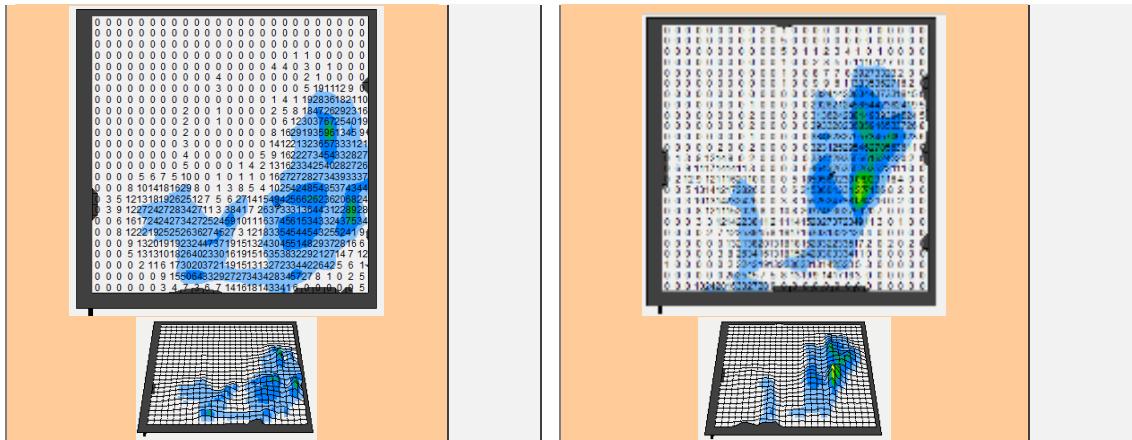
Subjects 4

Current post		Redesigned post	
meting 0:00		meting 0:00	
Minimum (mmHg)	0	Minimum (mmHg)	0
Maximum (mmHg)	93,39	Maximum (mmHg)	111,93
Gemiddelde (mmHg)	10,94	Gemiddelde (mmHg)	12,14
Afwijsing (mmHg2)	240,31	Afwijsing (mmHg2)	427,02

Standaard deviatie (mmHg)	15,5	Standaard deviatie (mmHg)	20,66
Variatiecoefficient (%)	141,64	Variatiecoefficient (%)	170,23
Horizontaal middelpunt van druk (cm)	23,64	Horizontaal middelpunt van druk (cm)	23,89
Verticaal middelpunt van druk (cm)	11,61	Verticaal middelpunt van druk (cm)	16,5
VAS (1-10)	0	VAS (1-10)	0
			
			
meting 0:30		meting 0:30	
Minimum (mmHg)	0	Minimum (mmHg)	0
Maximum (mmHg)	72,09	Maximum (mmHg)	111,14
Gemiddelde (mmHg)	9,53	Gemiddelde (mmHg)	11,35
Afwijking (mmHg2)	186,63	Afwijking (mmHg2)	340,84
Standaard deviatie (mmHg)	13,66	Standaard deviatie (mmHg)	18,46
Variatiecoefficient (%)	143,34	Variatiecoefficient (%)	162,61
Horizontaal middelpunt van druk (cm)	22,88	Horizontaal middelpunt van druk (cm)	23,93
Verticaal middelpunt van druk (cm)	9,97	Verticaal middelpunt van druk (cm)	16,53
VAS (1-10)	0	VAS (1-10)	0
			
			
meting 1:00		meting 1:00	
Minimum (mmHg)	0	Minimum (mmHg)	0
Maximum (mmHg)	103,95	Maximum (mmHg)	116,71
Gemiddelde (mmHg)	12,69	Gemiddelde (mmHg)	13,09
Afwijking (mmHg2)	322,18	Afwijking (mmHg2)	444,95
Standaard deviatie (mmHg)	17,95	Standaard deviatie (mmHg)	21,09
Variatiecoefficient (%)	141,42	Variatiecoefficient (%)	161,18
Horizontaal middelpunt van druk (cm)	23,99	Horizontaal middelpunt van druk (cm)	23,93
Verticaal middelpunt van druk (cm)	11,13	Verticaal middelpunt van druk (cm)	16,57

VAS (1-10)	0	VAS (1-10)	0
			
			
meting 1:30		meting 1:30	
Minimum (mmHg)	0	Minimum (mmHg)	0
Maximum (mmHg)	99,36	Maximum (mmHg)	130,08
Gemiddelde (mmHg)	11,83	Gemiddelde (mmHg)	10,18
Afwijking (mmHg2)	278,45	Afwijking (mmHg2)	303,12
Standaard deviatie (mmHg)	16,69	Standaard deviatie (mmHg)	17,41
Variatiecoefficient (%)	141,03	Variatiecoefficient (%)	170,98
Horizontaal middelpunt van druk (cm)	23,9	Horizontaal middelpunt van druk (cm)	23,59
Verticaal middelpunt van druk (cm)	10,96	Verticaal middelpunt van druk (cm)	15,66
VAS (1-10)	0	VAS (1-10)	0
			
			
meting 2:00		meting 2:00	
Minimum (mmHg)	0	Minimum (mmHg)	0
Maximum (mmHg)	68,93	Maximum (mmHg)	124,14
Gemiddelde (mmHg)	6,44	Gemiddelde (mmHg)	12,21
Afwijking (mmHg2)	138,35	Afwijking (mmHg2)	380,22
Standaard deviatie (mmHg)	11,76	Standaard deviatie (mmHg)	19,5
Variatiecoefficient (%)	139,94	Variatiecoefficient (%)	159,73
Horizontaal middelpunt van druk (cm)	23,79	Horizontaal middelpunt van druk (cm)	22,98
Verticaal middelpunt van druk (cm)	11,19	Verticaal middelpunt van druk (cm)	15,78
VAS (1-10)	0	VAS (1-10)	0

	
meting 2:30	
Minimum (mmHg)	0
Maximum (mmHg)	93,75
Gemiddelde (mmHg)	11,54
Afwijking (mmHg2)	267,94
Standaard deviatie (mmHg)	16,37
Variatiecoefficient (%)	141,84
Horizontaal middelpunt van druk (cm)	23,73
Verticaal middelpunt van druk (cm)	10,68
VAS (1-10)	0
	
meting 3:00	
Minimum (mmHg)	0
Maximum (mmHg)	95,98
Gemiddelde (mmHg)	11,59
Afwijking (mmHg2)	268,06
Standaard deviatie (mmHg)	16,37
Variatiecoefficient (%)	141,32
Horizontaal middelpunt van druk (cm)	23,55
Verticaal middelpunt van druk (cm)	10,93
VAS (1-10)	0

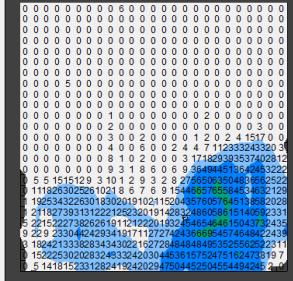
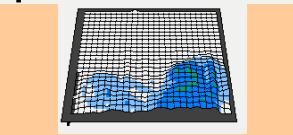
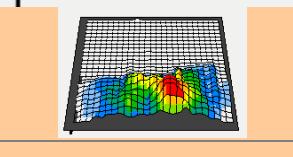


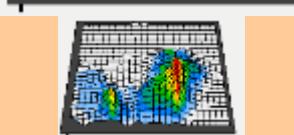
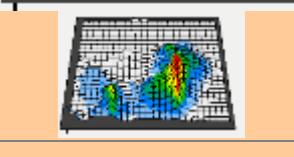
Preference: No preference

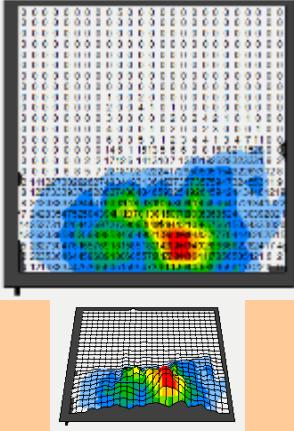
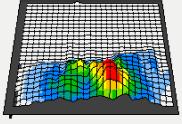
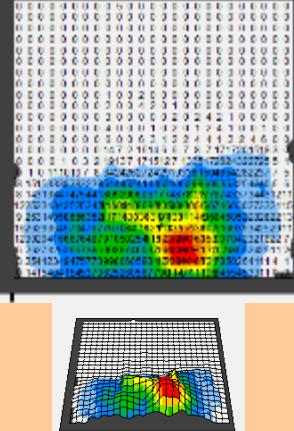
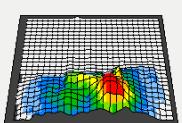
Subject 5

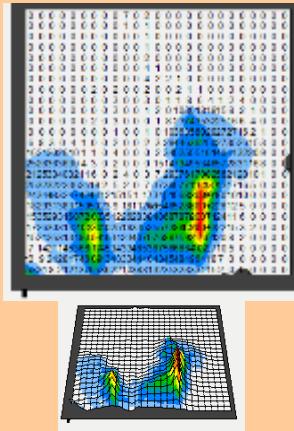
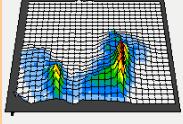
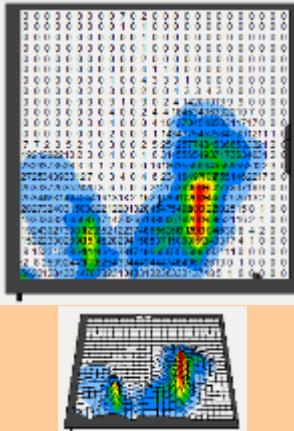
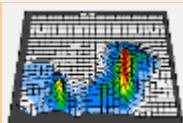
Current post	
meting 0:00	
Minimum (mmHg)	0
Maximum (mmHg)	74,14
Gemiddelde (mmHg)	10,57
Afwijking (mmHg2)	298,31
Standaard deviatie (mmHg)	17,27
Variatiecoefficient (%)	163,35
Horizontaal middelpunt van druk (cm)	21,58
Verticaal middelpunt van druk (cm)	6,67
VAS (1-10)	0
meting 0:30	
Minimum (mmHg)	0
Maximum (mmHg)	72,63
Gemiddelde (mmHg)	12,58
Afwijking (mmHg2)	344,75
Standaard deviatie (mmHg)	18,57
Variatiecoefficient (%)	147,58
Horizontaal middelpunt van druk (cm)	21,53

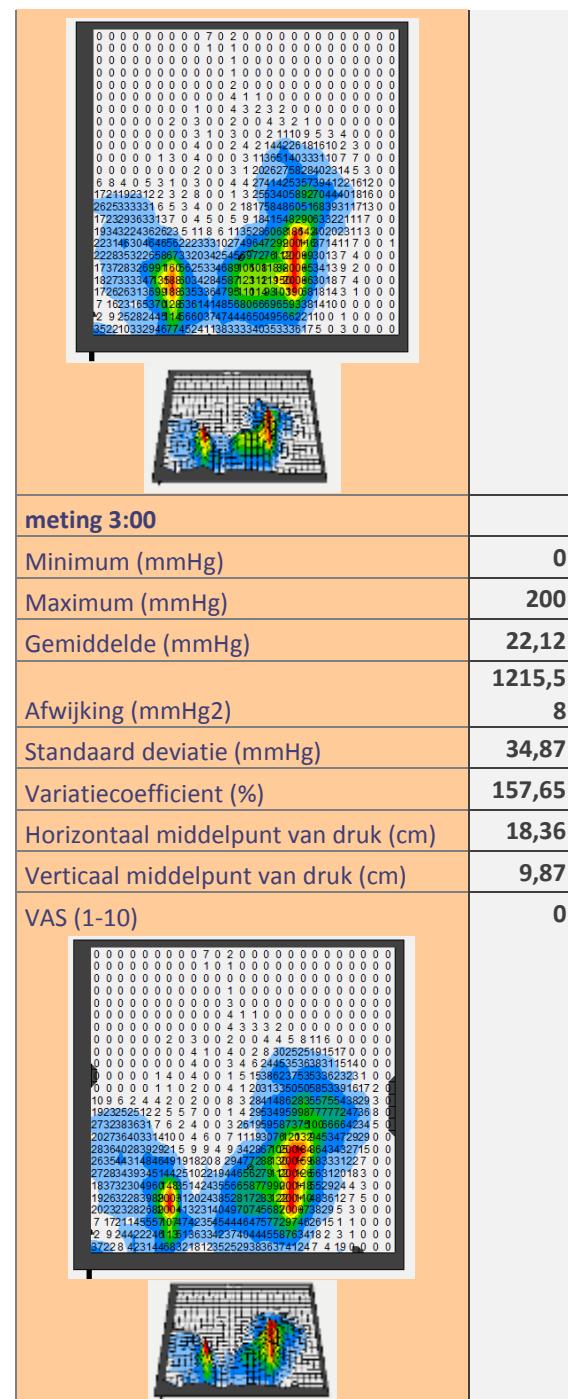
Redesigned post	
meting 0:00	
Minimum (mmHg)	0
Maximum (mmHg)	200
Gemiddelde (mmHg)	19,02
Afwijking (mmHg2)	917,42
Standaard deviatie (mmHg)	30,29
Variatiecoefficient (%)	159,24
Horizontaal middelpunt van druk (cm)	19,16
Verticaal middelpunt van druk (cm)	11,01
VAS (1-10)	0
meting 0:30	
Minimum (mmHg)	0
Maximum (mmHg)	200
Gemiddelde (mmHg)	22,57
Afwijking (mmHg2)	1228,7
Standaard deviatie (mmHg)	35,05
Variatiecoefficient (%)	155,34
Horizontaal middelpunt van druk (cm)	18,24

Verticaal middelpunt van druk (cm)	7,01
VAS (1-10)	0
	
	
meting 1:00	
Minimum (mmHg)	0
Maximum (mmHg)	200
Gemiddelde (mmHg)	27,97
Afwijking (mmHg2)	1826,15
Standaard deviatie (mmHg)	42,73
Variatiecoefficient (%)	152,79
Horizontaal middelpunt van druk (cm)	18,99
Verticaal middelpunt van druk (cm)	6,81
VAS (1-10)	0
	
	
meting 1:30	
Minimum (mmHg)	0
Maximum (mmHg)	200
Gemiddelde (mmHg)	23,14
Afwijking (mmHg2)	1409,46
Standaard deviatie (mmHg)	37,54
Variatiecoefficient (%)	162,25
Horizontaal middelpunt van druk (cm)	18,76
Verticaal middelpunt van druk (cm)	6,47
VAS (1-10)	0

Verticaal middelpunt van druk (cm)	10,14
VAS (1-10)	0
	
	
meting 1:00	
Minimum (mmHg)	0
Maximum (mmHg)	200
Gemiddelde (mmHg)	21,71
Afwijking (mmHg2)	1132,9
Standaard deviatie (mmHg)	33,66
Variatiecoefficient (%)	155,03
Horizontaal middelpunt van druk (cm)	18,89
Verticaal middelpunt van druk (cm)	10,42
VAS (1-10)	0
	
	
meting 1:30	
Minimum (mmHg)	0
Maximum (mmHg)	200
Gemiddelde (mmHg)	17,33
Afwijking (mmHg2)	898,41
Standaard deviatie (mmHg)	29,97
Variatiecoefficient (%)	172,97
Horizontaal middelpunt van druk (cm)	16,85
Verticaal middelpunt van druk (cm)	9
VAS (1-10)	0

	
meting 2:00	
Minimum (mmHg)	0
Maximum (mmHg)	200
Gemiddelde (mmHg)	24,99
Afwijking (mmHg2)	1658,31
Standaard deviatie (mmHg)	40,72
Variatiecoefficient (%)	162,93
Horizontaal middelpunt van druk (cm)	18,37
Verticaal middelpunt van druk (cm)	6,59
VAS (1-10)	0
	
meting 2:30	
Minimum (mmHg)	0
Maximum (mmHg)	200
Gemiddelde (mmHg)	23,6
Afwijking (mmHg2)	1503,72
Standaard deviatie (mmHg)	38,78
Variatiecoefficient (%)	164,32
Horizontaal middelpunt van druk (cm)	18,47
Verticaal middelpunt van druk (cm)	6,5
VAS (1-10)	0

	
meting 2:00	
Minimum (mmHg)	0
Maximum (mmHg)	200
Gemiddelde (mmHg)	20,01
Afwijking (mmHg2)	1023,2
Standaard deviatie (mmHg)	31,99
Variatiecoefficient (%)	159,88
Horizontaal middelpunt van druk (cm)	18,09
Verticaal middelpunt van druk (cm)	9,7
VAS (1-10)	0
	
meting 2:30	
Minimum (mmHg)	0
Maximum (mmHg)	200
Gemiddelde (mmHg)	20,39
Afwijking (mmHg2)	1191,3
Standaard deviatie (mmHg)	34,52
Variatiecoefficient (%)	169,26
Horizontaal middelpunt van druk (cm)	16,91
Verticaal middelpunt van druk (cm)	8,85
VAS (1-10)	0

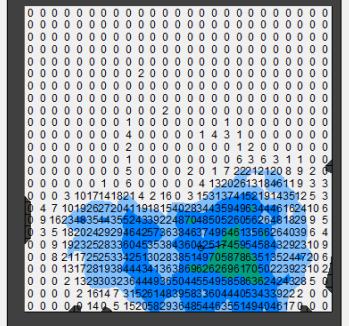
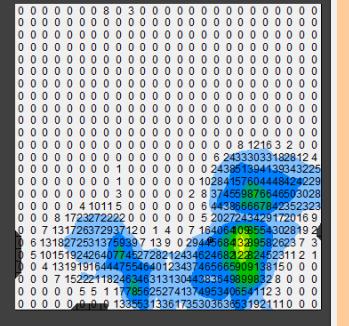
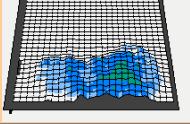
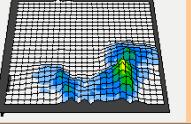
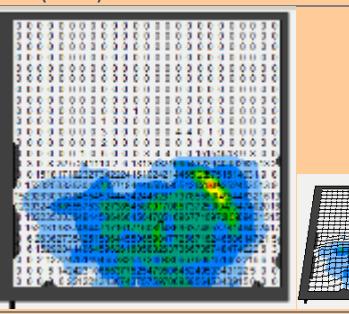
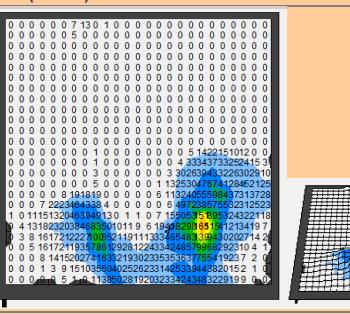
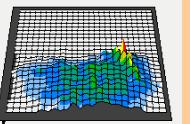
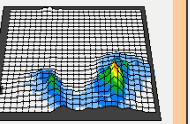


Preference: No preference

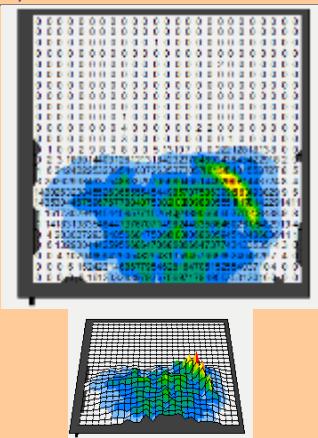
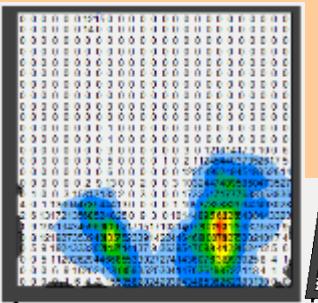
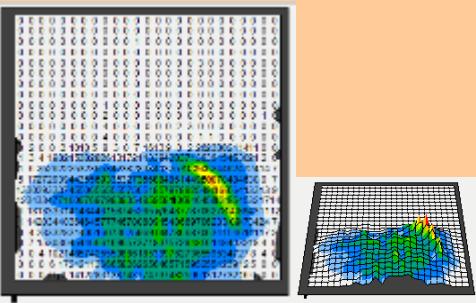
Subject 6

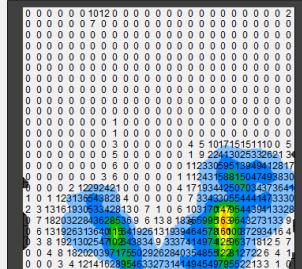
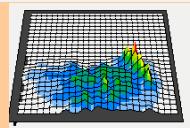
Current post	
meting 0:00	
Minimum (mmHg)	0
Maximum (mmHg)	78,11
Gemiddelde (mmHg)	12,38
Afwijking (mmHg2)	380,8

Redesigned post	
meting 0:00	
Minimum (mmHg)	0
Maximum (mmHg)	132,4
Gemiddelde (mmHg)	11,18
Afwijking (mmHg2)	435,5

	5		2
Standaard deviatie (mmHg)	19,52	Standaard deviatie (mmHg)	20,97
Variatiecoefficient (%)	157,7	Variatiecoefficient (%)	186,6
Horizontaal middelpunt van druk (cm)	20,09	Horizontaal middelpunt van druk (cm)	22,3
Verticaal middelpunt van druk (cm)	7,25	Verticaal middelpunt van druk (cm)	7,99
VAS (1-10)	0	VAS (1-10)	0
			
			
meting 0:30		meting 0:30	
Minimum (mmHg)	0	Minimum (mmHg)	0
Maximum (mmHg)	200	Maximum (mmHg)	164,8
Gemiddelde (mmHg)	19,86	Gemiddelde (mmHg)	11,06
Afwijking (mmHg2)	775,6	Afwijking (mmHg2)	454,9
Standaard deviatie (mmHg)	27,85	Standaard deviatie (mmHg)	21,33
Variatiecoefficient (%)	2	Variatiecoefficient (%)	192,9
Horizontaal middelpunt van druk (cm)	19,2	Horizontaal middelpunt van druk (cm)	21,84
Verticaal middelpunt van druk (cm)	8,43	Verticaal middelpunt van druk (cm)	7,64
VAS (1-10)	1	VAS (1-10)	0
			
			
meting 1:00		meting 1:00	
Minimum (mmHg)	0	Minimum (mmHg)	0
Maximum (mmHg)	200	Maximum (mmHg)	137,8
Gemiddelde (mmHg)	19,91	Gemiddelde (mmHg)	9,88
Afwijking (mmHg2)	831,1	Afwijking (mmHg2)	354,1
Standaard deviatie (mmHg)	28,83	Standaard deviatie (mmHg)	18,82

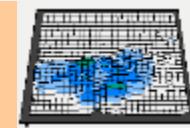
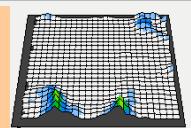
Variatiecoefficient (%)	144,8	Variatiecoefficient (%)	190,5
Horizontaal middelpunt van druk (cm)	18,94	Horizontaal middelpunt van druk (cm)	21,9
Verticaal middelpunt van druk (cm)	8,42	Verticaal middelpunt van druk (cm)	7,08
VAS (1-10)	1	VAS (1-10)	0
meting 1:30		meting 1:30	
Minimum (mmHg)	0	Minimum (mmHg)	0
Maximum (mmHg)	200	Maximum (mmHg)	188,4
Gemiddelde (mmHg)	15,64	Gemiddelde (mmHg)	14,14
Afwiкиng (mmHg2)	496,7	Afwiкиng (mmHg2)	765,9
Standaard deviatie (mmHg)	22,29	Standaard deviatie (mmHg)	27,68
Variatiecoefficient (%)	142,4	Variatiecoefficient (%)	7,28
Horizontaal middelpunt van druk (cm)	19,02	Horizontaal middelpunt van druk (cm)	195,6
Verticaal middelpunt van druk (cm)	8,49	Verticaal middelpunt van druk (cm)	6
VAS (1-10)	1	VAS (1-10)	7,28
meting 2:00		meting 2:00	
Minimum (mmHg)	0	Minimum (mmHg)	0
Maximum (mmHg)	200	Maximum (mmHg)	192,3
Gemiddelde (mmHg)	20,94	Gemiddelde (mmHg)	15,14
Afwiкиng (mmHg2)	882,4	Afwiкиng (mmHg2)	788
	7		

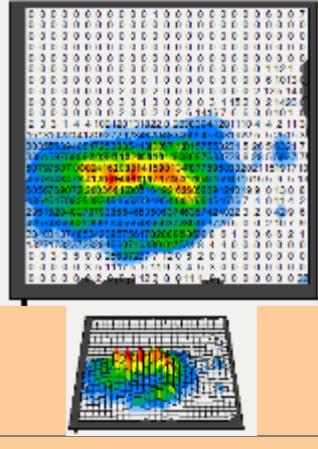
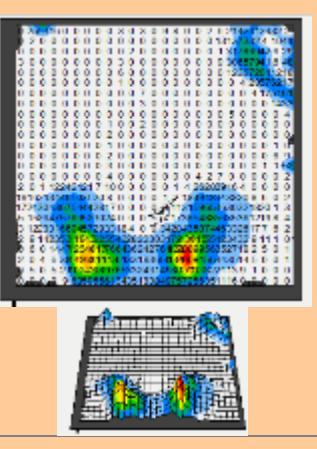
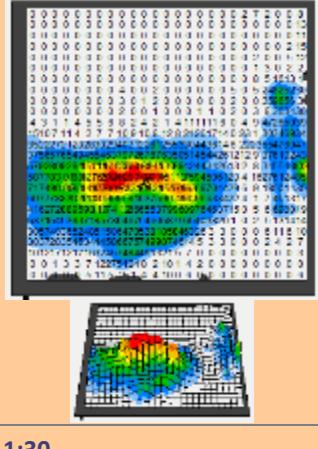
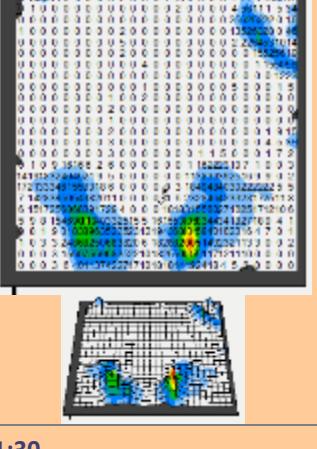
Standaard deviatie (mmHg)	29,71	Standaard deviatie (mmHg)	28,07
Variatiecoefficient (%)	141,8	Variatiecoefficient (%)	185,4
Horizontaal middelpunt van druk (cm)	18,73	Horizontaal middelpunt van druk (cm)	21,43
Verticaal middelpunt van druk (cm)	8,78	Verticaal middelpunt van druk (cm)	7,47
VAS (1-10)	1	VAS (1-10)	0
			0
meting 2:30		meting 2:30	
Minimum (mmHg)	0	Minimum (mmHg)	0
Maximum (mmHg)	200	Maximum (mmHg)	192,3
Gemiddelde (mmHg)	22,19	Gemiddelde (mmHg)	15,14
Afwijsing (mmHg2)	961,8	Afwijsing (mmHg2)	788
Standaard deviatie (mmHg)	31,01	Standaard deviatie (mmHg)	28,07
Variatiecoefficient (%)	139,7	Variatiecoefficient (%)	185,4
Horizontaal middelpunt van druk (cm)	18,92	Horizontaal middelpunt van druk (cm)	21,43
Verticaal middelpunt van druk (cm)	8,8	Verticaal middelpunt van druk (cm)	7,47
VAS (1-10)	1	VAS (1-10)	0
			
meting 3:00		meting 3:00	
Minimum (mmHg)	0	Minimum (mmHg)	0
Maximum (mmHg)	200	Maximum (mmHg)	163,2
Gemiddelde (mmHg)	17,14	Gemiddelde (mmHg)	12,6
Afwijsing (mmHg2)	729,8	Afwijsing (mmHg2)	552,1

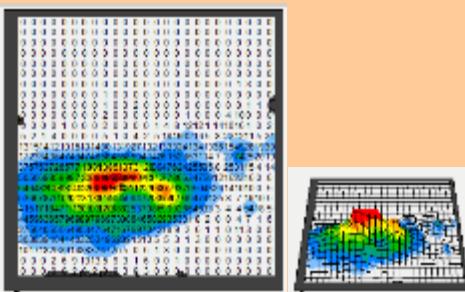
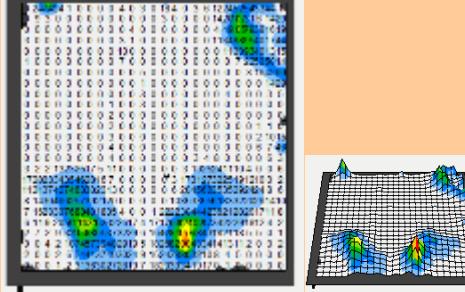
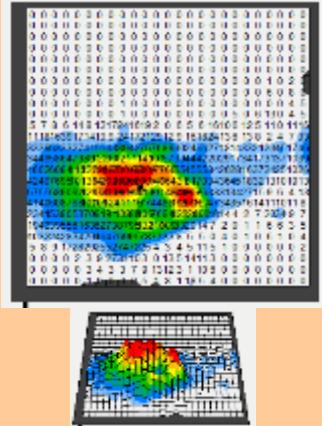
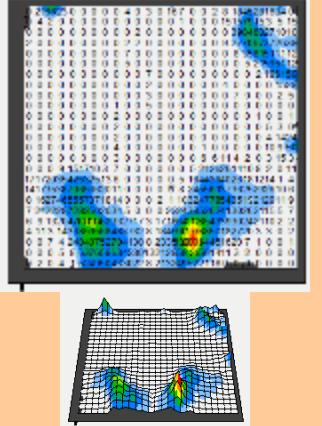
Standaard deviatie (mmHg)	27,02	Standaard deviatie (mmHg)	23,5
Variatiecoefficient (%)	157,6	Variatiecoefficient (%)	186,4
Horizontaal middelpunt van druk (cm)	18,46	Horizontaal middelpunt van druk (cm)	21,61
Verticaal middelpunt van druk (cm)	8,29	Verticaal middelpunt van druk (cm)	7,46
VAS (1-10)	1	VAS (1-10)	0
			
			

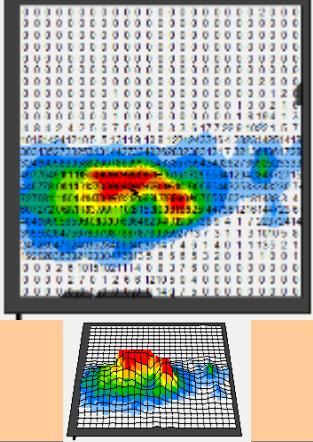
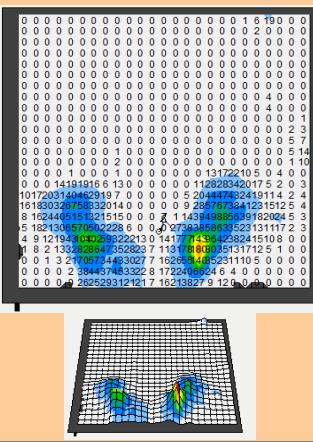
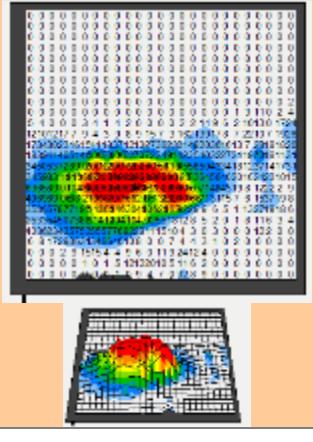
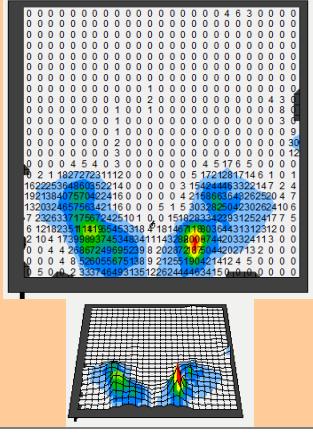
Preference: Redesign

Subject 7

Current post		Redesigned post	
meting 0:00		meting 0:00	
Minimum (mmHg)	0	Minimum (mmHg)	0
Maximum (mmHg)	72,68	Maximum (mmHg)	120
Gemiddelde (mmHg)	11,55	Gemiddelde (mmHg)	6,32
Afwijking (mmHg2)	311,09	Afwijking (mmHg2)	221,8
Standaard deviatie (mmHg)	17,64	Standaard deviatie (mmHg)	14,9
Variatiecoefficient (%)	152,65	Variatiecoefficient (%)	235,5
Horizontaal middelpunt van druk (cm)	15,44	Horizontaal middelpunt van druk (cm)	17,2
Verticaal middelpunt van druk (cm)	11,13	Verticaal middelpunt van druk (cm)	9,43
VAS (1-10)	0	VAS (1-10)	0
			
			
meting 0:30		meting 0:30	

Minimum (mmHg)	0	Minimum (mmHg)	0
Maximum (mmHg)	200	Maximum (mmHg)	200
Gemiddelde (mmHg)	25,34	Gemiddelde (mmHg)	16,08
Afwijsing (mmHg2)	1524,4	Afwijsing (mmHg2)	910,7
Standaard deviatie (mmHg)	39,04	Standaard deviatie (mmHg)	30,18
Variatiecoefficient (%)	154,08	Variatiecoefficient (%)	187,7
Horizontaal middelpunt van druk (cm)	14,45	Horizontaal middelpunt van druk (cm)	18,25
Verticaal middelpunt van druk (cm)	12,56	Verticaal middelpunt van druk (cm)	9,79
VAS (1-10)	0	VAS (1-10)	0
			
meting 1:00		meting 1:00	
Minimum (mmHg)	0	Minimum (mmHg)	0
Maximum (mmHg)	200	Maximum (mmHg)	200
Gemiddelde (mmHg)	27,23	Gemiddelde (mmHg)	11,26
Afwijsing (mmHg2)	1716,9	Afwijsing (mmHg2)	458,3
Standaard deviatie (mmHg)	41,44	Standaard deviatie (mmHg)	21,41
Variatiecoefficient (%)	152,15	Variatiecoefficient (%)	190,0
Horizontaal middelpunt van druk (cm)	15,16	Horizontaal middelpunt van druk (cm)	18,66
Verticaal middelpunt van druk (cm)	12,15	Verticaal middelpunt van druk (cm)	10,22
VAS (1-10)	1	VAS (1-10)	0
			
meting 1:30		meting 1:30	
Minimum (mmHg)	0	Minimum (mmHg)	0

Maximum (mmHg)	200	Maximum (mmHg)	200
Gemiddelde (mmHg)	22,62	Gemiddelde (mmHg)	12,54
Afwijking (mmHg2)	1538,7	Afwijking (mmHg2)	532,2
Standaard deviatie (mmHg)	39,23	Standaard deviatie (mmHg)	23,07
Variatiecoefficient (%)	173,41	Variatiecoefficient (%)	184,0
Horizontaal middelpunt van druk (cm)	14,02	Horizontaal middelpunt van druk (cm)	19,17
Verticaal middelpunt van druk (cm)	11,48	Verticaal middelpunt van druk (cm)	12,39
VAS (1-10)	2	VAS (1-10)	0
			
meting 2:00		meting 2:00	
Minimum (mmHg)	0	Minimum (mmHg)	0
Maximum (mmHg)	200	Maximum (mmHg)	200
Gemiddelde (mmHg)	24,66	Gemiddelde (mmHg)	13,16
Afwijking (mmHg2)	1904,4	Afwijking (mmHg2)	572,1
Standaard deviatie (mmHg)	43,64	Standaard deviatie (mmHg)	23,92
Variatiecoefficient (%)	177	Variatiecoefficient (%)	181,7
Horizontaal middelpunt van druk (cm)	14,02	Horizontaal middelpunt van druk (cm)	18,9
Verticaal middelpunt van druk (cm)	12,37	Verticaal middelpunt van druk (cm)	10,96
VAS (1-10)	2	VAS (1-10)	0
			
meting 2:30		meting 2:30	
Minimum (mmHg)	0	Minimum (mmHg)	0
Maximum (mmHg)	200	Maximum (mmHg)	180,3
Gemiddelde (mmHg)	24,83	Gemiddelde (mmHg)	9,16
Afwijking (mmHg2)	1864,6	Afwijking (mmHg2)	395,5
Standaard deviatie (mmHg)	43,18	Standaard deviatie (mmHg)	19,89

Variatiecoefficient (%)	173,92	Variatiecoefficient (%)	217,2
Horizontaal middelpunt van druk (cm)	14,36	Horizontaal middelpunt van druk (cm)	16,78
Verticaal middelpunt van druk (cm)	12,28	Verticaal middelpunt van druk (cm)	7,2
VAS (1-10)	2	VAS (1-10)	0
			
meting 3:00		meting 3:00	
Minimum (mmHg)	0	Minimum (mmHg)	0
Maximum (mmHg)	200	Maximum (mmHg)	200
Gemiddelde (mmHg)	25,69	Gemiddelde (mmHg)	10,83
Afwijking (mmHg2)	2399,5	Afwijking (mmHg2)	508,7
Standaard deviatie (mmHg)	48,98	Standaard deviatie (mmHg)	22,55
Variatiecoefficient (%)	190,66	Variatiecoefficient (%)	9
Horizontaal middelpunt van druk (cm)	14,05	Horizontaal middelpunt van druk (cm)	16,31
Verticaal middelpunt van druk (cm)	11,92	Verticaal middelpunt van druk (cm)	6,72
VAS (1-10)	2	VAS (1-10)	0
			

Preference: Redesign