# Loss of alignment

Initial Patients: 372
Selection criteria

```
data_ %<>% .['Posterior Instrumented Fusion' == 'Yes']
data_[, 'Posterior Instrumented Fusion: Upper / Lower Levels'] %>%
  sapply(. %>% strsplit('-') %>% .[[1]] %>% .[2]) ->
  post_intr_fusion

data_ %<>% .[post_intr_fusion == 'Iliac']

non_stable <- readLines('non_stable_degree.txt')
greater_than_10 <- data_[abs(diff_lordosis) >= 10, 'Code of the patient']
greater_than_10 <- greater_than_10 %;in% non_stable
data_ %<>% .[!('Code of the patient' %in% greater_than_10)]

data_ %<>% .[complications_bf_6m=='No']
```

Increment = Future - Baseline

### Estability Increment Quality of Life

```
### ODI - Score (%)
Base Time point 6M. ODI - Score (%)
Time evolution
           Estimate Std. Error
                                     df t value Pr(>|t|)
(Intercept) -1.3771
                        0.7820 329.9325 -1.7609
time_point
             0.6789
                        0.6215 102.1094 1.0923
                                                  0.2773
### SRS22 - SRS Subtotal score
Base Time point 6M. SRS22 - SRS Subtotal score
Time evolution
           Estimate Std. Error
                                     df t value Pr(>|t|)
                        0.0278 356.7124 1.2997
                                                  0.1945
(Intercept) 0.0361
                        0.0224 115.0155 -1.6157
time_point
           -0.0361
                                                  0.1089
### SF36 - PCS
Base Time point 6M. SF36 - PCS
```

#### Time evolution

Estimate Std. Error df t value Pr(>|t|)
(Intercept) 1.0631 0.3988 329.5117 2.6658 0.0081
time\_point -0.1569 0.2777 113.5470 -0.5651 0.5731

### SF36 - MCS

Base Time point 6M. SF36 - MCS

Time evolution

Estimate Std. Error df t value Pr(>|t|)
(Intercept) -0.3543 0.5900 331.5284 -0.6006 0.5485
time\_point -0.6354 0.3783 123.6069 -1.6796 0.0956

### Estability Increment Radiology

### Static Major curve Cobb angle Base Time point 6W. Static Major curve Cobb angle

Time evolution

Estimate Std. Error df t value Pr(>|t|)
(Intercept) -0.8588 0.3519 382.3206 -2.4407 0.0151
time\_point 0.1936 0.2430 116.4670 0.7970 0.4271

Preop & Inc preop variable: Static Major curve Cobb angle Basic Demographics

	Estimate	Std. Error	df	t value	Pr(> t )
(Intercept)	2.1187	1.9774	443.1813	1.0715	0.2845
Age	-0.0472	0.0315	440.6801	-1.5000	0.1343
SiteBOR Op	-0.5632	0.7336	437.9987	-0.7678	0.4430
SiteIST Op	2.0258	1.7707	422.7221	1.1441	0.2532
SiteMAD Op	1.9364	1.1030	434.4176	1.7555	0.0799
SiteZUR Op	2.8200	2.8564	435.2504	0.9873	0.3241
time_point	0.1973	0.2363	117.8320	0.8349	0.4055

	Estimate	Std. Error	df	t value	Pr(> t )
(Intercept)	-1.8747	3.2442	431.8140	-0.5779	0.5636
Age	-0.0357	0.0357	433.4299	-1.0001	0.3178
SiteBOR Op	0.8734	0.9456	426.2702	0.9236	0.3562
SiteIST Op	1.8977	1.8347	414.1204	1.0344	0.3016
SiteMAD Op	1.8080	1.1725	423.8260	1.5419	0.1238
SiteZUR Op	1.2879	2.9599	427.1751	0.4351	0.6637
'Prior Spine Surgery'Yes	1.6601	0.7511	430.5507	2.2101	0.0276
'Osteoporosis / osteopenia'Yes	-0.2346	0.8020	433.9534	-0.2926	0.7700
essg_categoryidiopathic	-1.0206	0.8156	430.5750	-1.2513	0.2115
essg_categoryothers	0.2449	1.2032	433.4895	0.2036	0.8388
Non_instrumented_segments	0.0973	0.0984	427.3070	0.9880	0.3237
inc_preop	-0.1076	0.0341	428.8026	-3.1553	0.0017
preop	-0.0151	0.0251	434.9075	-0.6008	0.5483
time_point	0.2016	0.2335	112.0392	0.8633	0.3898

### Coronal Balance (C7PL to CSVL)
Base Time point 6W. Coronal Balance (C7PL to CSVL)

### Time evolution

Estimate Std. Error df t value Pr(>|t|) (Intercept) -0.2233 0.7002 370.6558 -0.3189 0.7500 time\_point 0.4738 0.6114 107.0222 0.7749 0.4401

Preop & Inc preop variable: Coronal Balance (C7PL to CSVL) Basic Demographics

	Estimate	Std. Error	df	t value	Pr(> t )
(Intercept)	4.9656	4.1382	436.7307	1.1999	0.2308
Age	-0.0761	0.0655	436.9406	-1.1611	0.2462
SiteBOR Op	-0.3018	1.5800	438.0985	-0.1910	0.8486
SiteIST Op	-2.8586	3.2271	437.2158	-0.8858	0.3762
SiteMAD Op	-3.2243	2.5546	438.1188	-1.2622	0.2076
SiteZUR Op	11.1966	4.7011	423.4648	2.3817	0.0177
time_point	0.4894	0.6067	105.8458	0.8066	0.4217

#### Factors

	Estimate	Std. Error	df	t value	Pr(> t )
(Intercept)	3.2304	5.2046	431.9523	0.6207	0.5351
Age	0.0051	0.0696	431.3937	0.0728	0.9420
SiteBOR Op	-1.8618	1.6205	431.9879	-1.1489	0.2513
SiteIST Op	-5.5328	3.3091	431.6837	-1.6720	0.0953
SiteMAD Op	-2.5674	2.6638	432.0000	-0.9638	0.3357
SiteZUR Op	6.3557	4.6828	420.5719	1.3572	0.1754
'Prior Spine Surgery'Yes	-0.4498	1.4018	431.3231	-0.3209	0.7485
'Osteoporosis / osteopenia'Yes	3.8071	1.6073	431.6142	2.3687	0.0183
essg_categoryidiopathic	4.7178	1.6376	431.7692	2.8809	0.0042
essg_categoryothers	1.7215	2.2608	431.7894	0.7614	0.4468
Non_instrumented_segments	-0.1110	0.2075	431.9968	-0.5349	0.5930
inc_preop	-0.2144	0.0425	431.7149	-5.0381	0.0000
preop	-0.1860	0.0461	431.9651	-4.0379	0.0001
time_point	0.5319	0.5608	103.8011	0.9484	0.3451

### Sagittal Balance
Base Time point 6W. Sagittal Balance

### Time evolution

# Preop & Inc preop variable: Sagittal Balance Basic Demographics

Estimate Std. Error df t value Pr(>|t|)
(Intercept) 4.2786 10.1131 432.9873 0.4231 0.6725
Age -0.0149 0.1610 432.9844 -0.0923 0.9265
SiteBOR Op -7.1072 3.8482 432.7491 -1.8469 0.0654
SiteIST Op -23.5882 8.7860 432.6483 -2.6848 0.0075

```
SiteMAD Op -3.0148 5.9753 432.9616 -0.5046 0.6141
SiteZUR Op -12.3254 12.6653 432.5665 -0.9732 0.3310
time_point 5.7697 1.3774 105.3949 4.1888 0.0001
```

### Factors

	Estimate	Std. Error	df	t value	Pr(> t )
(Intercept)	-1.8601	11.8199	425.1814	-0.1574	0.8750
Age	-0.0814	0.1685	425.3309	-0.4830	0.6294
SiteBOR Op	-8.4930	3.8280	423.8667	-2.2186	0.0270
SiteIST Op	-14.9308	8.7310	424.9452	-1.7101	0.0880
SiteMAD Op	1.9609	6.2703	424.4911	0.3127	0.7546
SiteZUR Op	2.0409	12.7829	424.2982	0.1597	0.8732
'Prior Spine Surgery'Yes	-12.9371	3.4192	425.0901	-3.7837	0.0002
'Osteoporosis / osteopenia'Yes	7.6940	3.9503	425.5591	1.9477	0.0521
essg_categoryidiopathic	5.3678	3.7762	425.1162	1.4215	0.1559
essg_categoryothers	4.0063	5.4495	422.6566	0.7352	0.4626
Non_instrumented_segments	1.3211	0.4584	424.6729	2.8819	0.0042
inc_preop	-0.2553	0.0555	425.7014	-4.5985	0.0000
preop	-0.1578	0.0505	425.8091	-3.1263	0.0019
time_point	5.8785	1.2731	108.3603	4.6174	0.0000

### Sagittal T2-T5
Base Time point 6W. Sagittal T2-T5

#### Time evolution

Estimate Std. Error df t value Pr(>|t|) (Intercept) -0.7644 0.3662 350.8441 -2.0870 0.0376 time\_point 0.7374 0.3479 95.9968 2.1194 0.0366

# Preop & Inc preop variable: Sagittal T2-T5 Basic Demographics

	Estimate	Std. Error	df	t value	Pr(> t )
(Intercept)	-3.6307	2.2421	413.6342	-1.6194	0.1061
Age	0.0259	0.0355	414.2300	0.7289	0.4665
SiteBOR Op	1.3179	0.8431	415.2485	1.5631	0.1188
SiteIST Op	-1.2790	2.1604	417.2729	-0.5920	0.5542
SiteMAD Op	2.8549	1.1848	413.1746	2.4097	0.0164
SiteZUR Op	4.9310	2.4419	413.9421	2.0193	0.0441
time_point	0.7639	0.3400	97.5186	2.2467	0.0269

	Estimate	Std. Error	df	t value	Pr(> t )
(Intercept)	8.3804	2.7896	410.8030	3.0041	0.0028
Age	-0.0171	0.0352	410.7897	-0.4868	0.6267
SiteBOR Op	1.0575	0.8165	410.9852	1.2951	0.1960
SiteIST Op	-1.7871	2.1036	409.4364	-0.8496	0.3961
SiteMAD Op	1.3945	1.1881	410.9385	1.1737	0.2412
SiteZUR Op	3.8689	2.3872	407.3838	1.6207	0.1059
'Prior Spine Surgery'Yes	0.9579	0.7243	410.6424	1.3226	0.1867
'Osteoporosis / osteopenia'Yes	-1.1906	0.8348	410.6722	-1.4261	0.1546
essg_categoryidiopathic	-1.2542	0.7802	410.3594	-1.6076	0.1087
essg_categoryothers	-1.1480	1.2178	410.5469	-0.9427	0.3464
Non_instrumented_segments	-0.6077	0.0981	410.7934	-6.1922	0.0000

inc_preop	-0.3389	0.0515 410.8250 -6.5778	0.0000
preop	-0.2529	0.0502 410.9450 -5.0386	0.0000
time point	0.7828	0.2920 99.3429 2.6808	0.0086

0.2192

0.3473

0.0359

### Sagittal T5-T12

Base Time point 6W. Sagittal T5-T12

Time evolution

df t value Pr(>|t|) Estimate Std. Error (Intercept) 0.8373 0.3918 391.1481 2.1373 0.0332 0.3450 111.9778 4.4445 0.0000 time\_point 1.5331

Preop & Inc preop variable: Sagittal T5-T12 Basic Demographics

Estimate Std. Error df t value Pr(>|t|) (Intercept) -2.87392.3358 463.6528 -1.2304 0.0348 0.0370 463.9201 0.9408 Age SiteBOR Op 1.9015 0.9038 464.6813 2.1038

SiteIST Op 1.9901 2.0696 462.2644 0.9616 0.3367 SiteMAD Op 2.7163 1.3142 464.0157 2.0669 0.0393 SiteZUR Op -2.5468 3.0046 455.8547 -0.8476 0.3971 0.3344 109.2831 4.6052 time\_point 1.5400 0.0000

Factors

Estimate Std. Error df t value Pr(>|t|) (Intercept) -0.2552 3.0374 457.4868 -0.0840 0.9331 0.0635 0.0388 456.6862 1.6371 Age 0.1023 SiteBOR Op 1.0850 0.9727 457.7185 1.1154 0.2652 SiteIST Op -0.48152.2405 456.5887 -0.2149 0.8299 SiteMAD Op 0.5208 1.4811 457.0461 0.3516 0.7253 SiteZUR Op -1.3712 3.0675 448.1143 -0.4470 0.6551 'Prior Spine Surgery'Yes 0.8489 457.4779 -0.6429 -0.5457 0.5206 'Osteoporosis / osteopenia'Yes -0.2686 0.9815 457.1052 -0.2736 0.7845 essg\_categoryidiopathic -0.0854 0.8806 456.3975 -0.0969 0.9228 essg\_categoryothers 1.5605 1.3416 457.8516 1.1631 0.2454 Non instrumented segments 0.0173 0.1237 457.3843 0.1398 0.8889 inc\_preop -0.1414 0.0355 457.6077 -3.9878 0.0001 preop -0.0939 0.0308 457.6770 -3.0496 0.0024 0.3294 110.8181 4.6695 time\_point 1.5380 0.0000

### Sagittal T2-T12

Base Time point 6W. Sagittal T2-T12

Time evolution

Estimate Std. Error df t value Pr(>|t|) 0.6912 0.4036 384.1860 1.7127 0.0876 (Intercept) time\_point 1.5504 0.3937 103.6151 3.9384 0.0001

Preop & Inc preop variable: Sagittal T2-T12 Basic Demographics

Estimate Std. Error df t value Pr(>|t|) (Intercept) -4.9114 2.4416 456.9565 -2.0116 0.0449

```
0.0527
                         0.0392 457.4438 1.3445
                                                   0.1795
Age
SiteBOR Op
                         0.9210 457.9911 3.0913
                                                   0.0021
             2.8470
SiteIST Op
            -0.1468
                         2.0689 460.9740 -0.0710
                                                   0.9435
                         1.3369 455.9231 3.3038
SiteMAD Op
             4.4168
                                                   0.0010
                                                   0.1043
SiteZUR Op
             4.5765
                         2.8116 456.8795 1.6277
time_point
             1.5930
                        0.3723 104.2061 4.2790
                                                   0.0000
Factors
                               Estimate Std. Error
                                                         df t value Pr(>|t|)
(Intercept)
                                3.8299
                                            3.2528 450.5130 1.1774
                                                                      0.2396
Age
                                0.0603
                                            0.0402 450.1992 1.5003
                                                                      0.1342
SiteBOR Op
                                2.3464
                                            0.9765 451.2271 2.4028
                                                                      0.0167
SiteIST Op
                                -3.7160
                                            2.2302 454.1063 -1.6662
                                                                      0.0964
SiteMAD Op
                                            1.5292 449.6533 1.7453
                                2.6690
                                                                      0.0816
SiteZUR Op
                                5.1675
                                            2.7894 449.1353 1.8526
                                                                      0.0646
'Prior Spine Surgery'Yes
                                1.0516
                                            0.8550 451.3110 1.2299
                                                                      0.2194
'Osteoporosis / osteopenia'Yes -1.2090
                                           0.9473 451.4985 -1.2763
                                                                      0.2025
essg categorvidiopathic
                               -1.8392
                                            0.8898 447.6309 -2.0670
                                                                      0.0393
essg_categoryothers
                                0.7572
                                            1.3230 454.6811 0.5723
                                                                      0.5674
Non instrumented segments
                                -0.5910
                                            0.1219 450.1457 -4.8472
                                                                      0.0000
                                           0.0407 450.7490 -2.2291
inc_preop
                                -0.0907
                                                                      0.0263
                                -0.0775
                                           0.0306 449.9668 -2.5323
                                                                      0.0117
preop
                                           0.3600 101.6128 4.4837
                                1.6141
                                                                      0.0000
time_point
### Lordosis (top of L1-S1)
Base Time point 6W. Lordosis (top of L1-S1)
Time evolution
            Estimate Std. Error
                                      df t value Pr(>|t|)
(Intercept)
             0.4173
                        0.2903 413.2930 1.4376
                                                   0.1513
time_point
              0.7528
                         0.2607 122.0155 2.8876
                                                   0.0046
Preop & Inc preop variable: Lordosis (top of L1-S1)
Basic Demographics
           Estimate Std. Error
                                      df t value Pr(>|t|)
(Intercept)
            1.1448 1.7193 480.3685 0.6658
                                                  0.5058
            -0.0076
                        0.0274 480.7658 -0.2782
                                                   0.7809
Age
SiteBOR Op
            -0.0388
                        0.6645 481.5828 -0.0584
                                                   0.9534
                                                   0.4143
SiteIST Op
                        1.3912 482.5695 -0.8170
            -1.1366
SiteMAD Op
            -1.4934
                        1.0073 480.5936 -1.4826
                                                   0.1388
SiteZUR Op
            -0.7636
                        1.8674 477.9113 -0.4089
                                                   0.6828
                        0.2592 122.2298 2.8944
                                                   0.0045
time_point
             0.7503
Factors
                               Estimate Std. Error
                                                         df t value Pr(>|t|)
(Intercept)
                               -3.4365
                                            2.4194 473.2215 -1.4204
                                                                      0.1561
                               -0.0251
                                            0.0288 473.5038 -0.8700
Age
                                                                      0.3848
SiteBOR Op
                                -0.3070
                                            0.6862 475.1123 -0.4474
                                                                      0.6548
```

1.4359 475.8791 0.3087

1.1089 475.0522 -0.3125

1.9536 472.6269 0.8621

0.5867 474.3826 -1.6929

0.6961 474.8822 0.5498

0.7577

0.7548

0.3891

0.0911

0.5827

0.4433

-0.3465

1.6842

-0.9933

0.3827

SiteIST Op

SiteMAD Op

SiteZUR Op

'Prior Spine Surgery'Yes

'Osteoporosis / osteopenia'Yes

essg_categoryidiopathic	1.7356	0.6669 473.8758 2.6026	0.0095
essg_categoryothers	-1.0704	0.9629 475.9981 -1.1116	0.2669
Non_instrumented_segments	0.0000	0.0821 473.8442 0.0002	0.9998
inc_preop	-0.1448	0.0283 474.8717 -5.1131	0.0000
preop	-0.0782	0.0234 474.8119 -3.3447	0.0009
time_point	0.7836	0.2483 119.4668 3.1562	0.0020

### Pelvic Incidence

Base Time point 6W. Pelvic Incidence

Time evolution

Preop & Inc preop variable: Pelvic Incidence

Basic Demographics

	Estimate	Std. Error	df	t value	Pr(> t )
(Intercept)	-0.1668	0.7723	463.5873	-0.2160	0.8291
Age	0.0068	0.0123	459.0201	0.5496	0.5829
SiteBOR Op	-0.2812	0.2979	455.7523	-0.9438	0.3458
SiteIST Op	0.8189	0.6083	457.2342	1.3462	0.1789
SiteMAD Op	-0.3162	0.4506	451.8293	-0.7016	0.4833
SiteZUR Op	-0.9542	0.8380	452.5673	-1.1386	0.2555
time_point	0.0435	0.0930	112.7383	0.4677	0.6409

### Factors

	Estimate	Std. Error	df	t value	Pr(> t )
(Intercept)	0.4068	0.9776	402.5057	0.4161	0.6775
Age	0.0036	0.0125	391.4187	0.2849	0.7759
SiteBOR Op	-0.0410	0.2989	392.0924	-0.1370	0.8911
SiteIST Op	0.8793	0.5973	412.1089	1.4720	0.1418
SiteMAD Op	0.6166	0.5044	376.0825	1.2224	0.2223
SiteZUR Op	-0.5300	0.8063	362.6990	-0.6574	0.5114
'Prior Spine Surgery'Yes	-0.3783	0.2572	390.4353	-1.4706	0.1422
'Osteoporosis / osteopenia'Yes	0.1142	0.3254	412.3578	0.3508	0.7259
essg_categoryidiopathic	-0.3027	0.2859	375.5507	-1.0586	0.2905
essg_categoryothers	0.3483	0.4290	437.8958	0.8120	0.4172
Non_instrumented_segments	0.0143	0.0355	388.9124	0.4036	0.6867
inc_preop	-0.1889	0.0372	386.6414	-5.0790	0.0000
preop	-0.0095	0.0096	377.7025	-0.9865	0.3245
time_point	0.0589	0.0801	124.2012	0.7360	0.4631

### Pelvic Tilt

Base Time point 6W. Pelvic Tilt

Time evolution

Estimate Std. Error df t value Pr(>|t|)
(Intercept) 1.2401 0.2556 401.2272 4.8515 0
time\_point 0.9716 0.2275 112.0633 4.2701 0

Preop & Inc preop variable: Pelvic Tilt

# Basic Demographics

	Estimate	Std. Error	df	t value	Pr(> t )
(Intercept)	0.8102	1.4923	474.9158	0.5429	0.5874
Age	-0.0082	0.0238	475.3932	-0.3427	0.7320
SiteBOR Op	1.5374	0.5792	476.3400	2.6541	0.0082
SiteIST Op	0.0812	1.1860	477.9984	0.0685	0.9454
SiteMAD Op	0.4876	0.8749	475.1874	0.5573	0.5776
SiteZUR Op	-0.8820	1.6212	472.1232	-0.5441	0.5867
time point	0.9778	0.2257	110.1532	4.3328	0.0000

# Factors

	Estimate	Std. Error	df	t value	Pr(> t )
(Intercept)	0.6890	1.7169	470.8774	0.4013	0.6884
Age	-0.0038	0.0240	470.9865	-0.1567	0.8756
SiteBOR Op	0.6887	0.5761	470.3340	1.1954	0.2325
SiteIST Op	0.7203	1.1370	468.3297	0.6335	0.5267
SiteMAD Op	1.5431	0.8704	470.3418	1.7729	0.0769
SiteZUR Op	1.2830	1.5303	470.9952	0.8384	0.4022
'Prior Spine Surgery'Yes	-0.0616	0.4991	470.7381	-0.1234	0.9019
'Osteoporosis / osteopenia'Yes	-0.3448	0.5889	470.9144	-0.5855	0.5585
essg_categoryidiopathic	0.0232	0.5426	470.8368	0.0427	0.9659
essg_categoryothers	-0.8564	0.7975	469.6012	-1.0738	0.2835
Non_instrumented_segments	-0.0265	0.0732	470.9709	-0.3623	0.7173
inc_preop	-0.2789	0.0346	470.9977	-8.0621	0.0000
preop	-0.0581	0.0290	470.9924	-2.0013	0.0459
time_point	1.0066	0.1890	114.8242	5.3251	0.0000

### Sacral Slope
Base Time point 6W. Sacral Slope

# Time evolution

	Estimate	Std. Error	df	t	value	Pr(> t )
(Intercept)	-1.2023	0.2742	402.4774	-4	1.3854	0e+00
time point	-0.9527	0.2317	113.3844	-4	1.1117	1e-04

# Preop & Inc preop variable: Sacral Slope Basic Demographics

	Estimate	Std. Error	df	t value	Pr(> t )
(Intercept)	-1.4112	1.5771	478.0159	-0.8949	0.3713
Age	0.0229	0.0252	478.3620	0.9109	0.3628
SiteBOR Op	-2.0081	0.6107	478.8045	-3.2884	0.0011
SiteIST Op	0.8777	1.2505	478.4561	0.7019	0.4831
SiteMAD Op	-0.7106	0.9237	478.4498	-0.7693	0.4421
SiteZUR Op	-0.6172	1.7138	476.8754	-0.3601	0.7189
time_point	-0.9636	0.2288	111.7657	-4.2107	0.0001

ractors					
	Estimate	Std. Error	df	t value	Pr(> t )
(Intercept)	2.6015	1.9328	468.6450	1.3460	0.1790
Age	0.0203	0.0241	467.2255	0.8418	0.4003
SiteBOR Op	-0.7225	0.5956	464.6721	-1.2131	0.2257
SiteIST Op	0.4687	1.1720	462.3148	0.3999	0.6894
SiteMAD Op	-0.6028	0.8834	463.4235	-0.6824	0.4953

SiteZUR Op	-1.9063	1.5737 466.1116 -1.2113 0.2264
'Prior Spine Surgery'Yes	-0.0445	0.5232 465.0570 -0.0851 0.9322
'Osteoporosis / osteopenia'Yes	0.8669	0.5990 467.9156 1.4471 0.1485
essg_categoryidiopathic	-0.2322	0.5591 465.3124 -0.4152 0.6782
essg_categoryothers	1.4901	0.8195 465.9170 1.8182 0.0697
Non_instrumented_segments	0.0620	0.0741 465.5941 0.8361 0.4035
inc_preop	-0.3145	0.0331 467.0816 -9.5145 0.0000
preop	-0.0980	0.0243 465.5787 -4.0337 0.0001
time_point	-0.9769	0.1818 118.2961 -5.3740 0.0000

### ### RLL

Base Time point 6W. RLL

### Time evolution

Estimate Std. Error df t value Pr(>|t|) (Intercept) -0.4857 0.2803 409.4849 -1.7327 0.0839 time\_point -0.7902 0.2570 120.7267 -3.0750 0.0026

# Preop & Inc preop variable: RLL Basic Demographics

	Estimate	Std. Error	df	t value	Pr(> t )
(Intercept)	-0.8791	1.6566	474.6501	-0.5307	0.5959
Age	0.0014	0.0264	475.0600	0.0531	0.9577
SiteBOR Op	0.1622	0.6419	476.0072	0.2527	0.8006
SiteIST Op	0.4093	1.3408	477.2514	0.3052	0.7603
SiteMAD Op	1.5128	0.9705	474.7367	1.5589	0.1197
SiteZUR Op	1.3648	1.7987	471.6750	0.7588	0.4484
time point	-0.7866	0.2550	120.2166	-3.0847	0.0025

### Factors

Estimate	Std. Error	df	t value	Pr(> t )
-0.5697	1.9532	468.9799	-0.2917	0.7706
0.0042	0.0280	467.7053	0.1488	0.8818
0.0047	0.6741	469.6542	0.0069	0.9945
-1.6596	1.4061	470.7658	-1.1803	0.2385
0.0321	1.1034	469.2043	0.0291	0.9768
-0.7560	1.8921	467.1587	-0.3996	0.6897
1.1856	0.5659	468.9138	2.0950	0.0367
-0.7697	0.6760	469.5781	-1.1386	0.2555
-1.4238	0.6444	468.5079	-2.2094	0.0276
0.8599	0.9344	470.9734	0.9203	0.3579
-0.0589	0.0820	467.8339	-0.7177	0.4733
-0.1604	0.0311	468.6318	-5.1557	0.0000
-0.1172	0.0280	468.8869	-4.1886	0.0000
-0.8195	0.2431	118.0427	-3.3705	0.0010
	-0.5697 0.0042 0.0047 -1.6596 0.0321 -0.7560 1.1856 -0.7697 -1.4238 0.8599 -0.0589 -0.1604 -0.1172	0.0042 0.0280 0.0047 0.6741 -1.6596 1.4061 0.0321 1.1034 -0.7560 1.8921 1.1856 0.5659 -0.7697 0.6760 -1.4238 0.6444 0.8599 0.9344 -0.0589 0.0820 -0.1604 0.0311 -0.1172 0.0280	-0.5697       1.9532 468.9799         0.0042       0.0280 467.7053         0.0047       0.6741 469.6542         -1.6596       1.4061 470.7658         0.0321       1.1034 469.2043         -0.7560       1.8921 467.1587         1.1856       0.5659 468.9138         -0.7697       0.6760 469.5781         -1.4238       0.6444 468.5079         0.8599       0.9344 470.9734         -0.0589       0.0820 467.8339         -0.1604       0.0311 468.6318         -0.1172       0.0280 468.8869	-0.5697         1.9532 468.9799 -0.2917           0.0042         0.0280 467.7053 0.1488           0.0047         0.6741 469.6542 0.0069           -1.6596         1.4061 470.7658 -1.1803           0.0321         1.1034 469.2043 0.0291           -0.7560         1.8921 467.1587 -0.3996           1.1856         0.5659 468.9138 2.0950           -0.7697         0.6760 469.5781 -1.1386           -1.4238         0.6444 468.5079 -2.2094           0.8599         0.9344 470.9734 0.9203           -0.0589         0.0820 467.8339 -0.7177           -0.1604         0.0311 468.6318 -5.1557           -0.1172         0.0280 468.8869 -4.1886

### ### Global Tilt

Base Time point 6W. Global Tilt

### Time evolution

Estimate Std. Error df t value Pr(>|t|) (Intercept) 1.1710 0.2682 388.1023 4.3660 0

Preop & Inc preop variable: Global Tilt

	Estimate	Std. Error	df	t value	Pr(> t )
(Intercept)	1.0040	1.6053	449.0508	0.6254	0.5320
Age	-0.0088	0.0253	449.0952	-0.3481	0.7279
SiteBOR Op	1.1790	0.6115	450.2872	1.9281	0.0545
SiteIST Op	-0.2931	1.2490	453.5482	-0.2347	0.8146
SiteMAD Op	0.3266	0.9518	449.0497	0.3431	0.7317
SiteZUR Op	-0.3793	1.8107	446.1510	-0.2095	0.8342
time_point	1.8488	0.2499	115.8327	7.3990	0.0000

### Factors

	Estimate	Std. Error	df	t value	Pr(> t )
(Intercept)	1.4793	1.9339	443.1666	0.7650	0.4447
Age	-0.0327	0.0285	440.0967	-1.1475	0.2518
SiteBOR Op	0.1771	0.6640	444.8914	0.2667	0.7898
SiteIST Op	-0.5985	1.2682	446.7036	-0.4719	0.6372
SiteMAD Op	0.3215	1.0280	443.3638	0.3127	0.7546
SiteZUR Op	0.4483	1.8281	440.3091	0.2452	0.8064
'Prior Spine Surgery'Yes	-1.3593	0.5733	443.2727	-2.3712	0.0182
'Osteoporosis / osteopenia'Yes	-0.8112	0.6619	443.2113	-1.2256	0.2210
essg_categoryidiopathic	1.1830	0.6289	441.9633	1.8811	0.0606
essg_categoryothers	0.1114	0.8899	446.5696	0.1252	0.9004
Non_instrumented_segments	0.0087	0.0807	441.3620	0.1078	0.9142
inc_preop	-0.0512	0.0322	440.8306	-1.5902	0.1125
preop	0.0295	0.0277	439.4493	1.0658	0.2871
time_point	1.8688	0.2427	114.4526	7.6992	0.0000

### T1 Sagittal Tilt Base Time point 6W. T1 Sagittal Tilt

### Time evolution

Estimate Std. Error df t value Pr(>|t|) (Intercept) -0.3843 0.2066 293.6725 -1.8598 0.0639 time\_point 0.3787 0.1806 78.2968 2.0964 0.0393

# Preop & Inc preop variable: T1 Sagittal Tilt Basic Demographics

	-				
	Estimate	Std. Error	df	t value	Pr(> t )
(Intercept)	-1.8825	1.1346	357.0806	-1.6591	0.0980
Age	0.0311	0.0185	357.6923	1.6830	0.0932
SiteBOR Op	-0.7343	0.4661	356.8088	-1.5754	0.1160
SiteIST Op	0.3401	1.0387	359.3388	0.3274	0.7435
SiteMAD Op	-0.0300	0.6947	358.4791	-0.0432	0.9656
SiteZUR Op	-0.5401	1.2493	356.6345	-0.4323	0.6658
time_point	0.3754	0.1775	79.2814	2.1151	0.0376

	Estimate	Sta. Error	aī	t value	Pr(> t )
(Intercept)	-3.9401	1.3493	352.5599	-2.9201	0.0037
Age	0.0112	0.0194	352.6583	0.5744	0.5660

SiteBOR Op	-1.2802	0.4694 351.7257 -2.7273	0.0067
SiteIST Op	-0.1888	1.0406 352.3608 -0.1815	0.8561
SiteMAD Op	0.2667	0.7036 350.4987 0.3790	0.7049
SiteZUR Op	0.3319	1.2081 352.0574 0.2747	0.7837
'Prior Spine Surgery'Yes	-1.3375	0.4115 352.4025 -3.2504	0.0013
'Osteoporosis / osteopenia'Yes	1.2880	0.5029 352.5887 2.5609	0.0109
essg_categoryidiopathic	0.8183	0.4392 351.7948 1.8632	0.0633
essg_categoryothers	1.0053	0.6203 352.2645 1.6206	0.1060
Non_instrumented_segments	0.2326	0.0517 351.5414 4.4984	0.0000
inc_preop	-0.3818	0.0634 350.8491 -6.0213	0.0000
preop	-0.2919	0.0576 351.5121 -5.0690	0.0000
time_point	0.3804	0.1475 84.6947 2.5789	0.0116

### Thoracolumbar L2-T10

Base Time point 6W. Thoracolumbar L2-T10

### Time evolution

	Estimate	Std. Error	df	t value	Pr(> t )
(Intercept)	-0.1696	0.3691	339.1596	-0.4594	0.6462
time_point	0.2337	0.3395	87.8683	0.6883	0.4931

# Preop & Inc preop variable: Thoracolumbar L2-T10 Basic Demographics

	<u>F</u>				
	Estimate	Std. Error	df	t value	Pr(> t )
(Intercept)	-0.0379	2.1021	415.3267	-0.0180	0.9856
Age	0.0093	0.0336	416.3990	0.2777	0.7814
SiteBOR Op	-0.7185	0.8320	417.3045	-0.8636	0.3883
SiteIST Op	-3.9673	1.6655	419.7601	-2.3821	0.0177
SiteMAD Op	-1.0241	1.3255	417.6823	-0.7726	0.4402
SiteZUR Op	0.2494	2.4494	396.9441	0.1018	0.9190
time_point	0.2496	0.3322	86.2605	0.7511	0.4546

### Factors

1 40 001 5					
	Estimate	Std. Error	df	t value	Pr(> t )
(Intercept)	-2.3433	2.5950	409.6703	-0.9030	0.3671
Age	0.0344	0.0349	410.7065	0.9862	0.3246
SiteBOR Op	-0.8557	0.8397	411.9529	-1.0190	0.3088
SiteIST Op	-3.3819	1.6711	412.9957	-2.0238	0.0436
SiteMAD Op	-1.0065	1.3858	412.5423	-0.7262	0.4681
SiteZUR Op	2.3525	2.4303	392.7371	0.9680	0.3337
'Prior Spine Surgery'Yes	-1.7460	0.7686	411.1077	-2.2717	0.0236
'Osteoporosis / osteopenia'Yes	-1.5077	0.8907	411.1485	-1.6927	0.0913
essg_categoryidiopathic	1.4836	0.8291	410.7587	1.7895	0.0743
essg_categoryothers	2.3064	1.2823	412.8717	1.7987	0.0728
Non_instrumented_segments	0.2380	0.1093	410.4087	2.1771	0.0300
inc_preop	-0.2143	0.0431	410.4037	-4.9692	0.0000
preop	-0.1400	0.0375	411.5073	-3.7301	0.0002
time_point	0.2568	0.3137	85.0735	0.8188	0.4152

# ### RSA

Base Time point 6W. RSA

### Time evolution

	Estimate	Std. Er	ror	df	t	value	Pr(>	t )
(Intercept)	1.1198	0.2	2672 387.	7606	4	1.1901		0
time point	1.8368	0.2	459 118.	1716	7	7.4713		0

# Preop & Inc preop variable: Global Tilt Basic Demographics

	1				
	Estimate	Std. Error	df	t value	Pr(> t )
(Intercept)	2.0499	2.1980	363.2668	0.9326	0.3517
Age	-0.0200	0.0343	363.0546	-0.5837	0.5598
SiteBOR Op	1.9467	0.8292	361.6739	2.3478	0.0194
SiteIST Op	-1.1902	1.7384	349.5860	-0.6846	0.4940
SiteMAD Op	0.3914	1.2748	363.0560	0.3070	0.7590
SiteZUR Op	-0.4197	2.5100	362.9118	-0.1672	0.8673
time_point	1.5664	0.2681	139.7357	5.8437	0.0000

### Factors

1400015					
	Estimate	Std. Error	df	t value	Pr(> t )
(Intercept)	2.5289	2.5927	356.0102	0.9754	0.3300
Age	-0.0557	0.0379	357.6244	-1.4697	0.1425
SiteBOR Op	0.3289	0.8819	353.6966	0.3730	0.7094
SiteIST Op	-1.9670	1.7303	343.4098	-1.1368	0.2564
SiteMAD Op	0.4206	1.3553	355.7967	0.3103	0.7565
SiteZUR Op	1.1151	2.5023	355.7760	0.4456	0.6561
'Prior Spine Surgery'Yes	-1.8658	0.7675	355.2534	-2.4311	0.0155
'Osteoporosis / osteopenia'Yes	-1.2043	0.8869	355.7550	-1.3580	0.1753
essg_categoryidiopathic	2.0905	0.8404	356.3574	2.4874	0.0133
essg_categoryothers	-0.2082	1.2081	346.7590	-0.1724	0.8633
Non_instrumented_segments	0.0160	0.1085	356.4673	0.1477	0.8826
inc_preop	-0.0832	0.0430	357.2116	-1.9364	0.0536
preop	0.0446	0.0368	357.8030	1.2133	0.2258
time_point	1.6051	0.2601	134.8549	6.1718	0.0000

# ### RPV

Base Time point 6W. RPV

### Time evolution

	${\tt Estimate}$	Std. Error	df	t value	Pr(> t )
(Intercept)	-1.2569	0.2577	402.9398	-4.8775	0
time point	-0.9682	0.2262	113.2944	-4.2799	0

# Preop & Inc preop variable: Sacral Slope Basic Demographics

J	Estimate	Std. Error	df	t value	Pr(> t )
(Intercept)	-2.2824	2.0215	381.7124	-1.1291	0.2596
Age	0.0295	0.0320	380.3451	0.9211	0.3576
SiteBOR Op	-2.8071	0.7762	377.7830	-3.6162	0.0003
SiteIST Op	0.5130	1.6236	362.7478	0.3160	0.7522
SiteMAD Op	-0.9291	1.1617	380.5950	-0.7998	0.4243
SiteZUR Op	0.0472	2.1462	384.4212	0.0220	0.9825
time_point	-0.6671	0.2424	139.3850	-2.7523	0.0067

	Estimate	Std. Error	df	t value	Pr(> t )
(Intercept)	3.7094	2.2493	363.0573	1.6491	0.1000
Age	0.0242	0.0280	359.6631	0.8651	0.3876
SiteBOR Op	-0.9874	0.6884	355.0881	-1.4343	0.1524
SiteIST Op	-0.3911	1.3856	341.6666	-0.2823	0.7779
SiteMAD Op	-0.7694	1.0133	355.1317	-0.7593	0.4482
SiteZUR Op	-2.1155	1.7984	361.6262	-1.1763	0.2402
'Prior Spine Surgery'Yes	0.2705	0.6067	355.1113	0.4459	0.6560
'Osteoporosis / osteopenia'Yes	1.4604	0.6977	359.9595	2.0931	0.0370
essg_categoryidiopathic	-0.0292	0.6496	355.3696	-0.0450	0.9641
essg_categoryothers	1.5033	0.9681	350.0812	1.5529	0.1214
Non_instrumented_segments	0.0904	0.0865	354.6753	1.0453	0.2966
inc_preop	-0.4623	0.0384	358.8284	-12.0351	0.0000
preop	-0.1477	0.0282	355.9043	-5.2327	0.0000
time_point	-0.7069	0.1883	146.7967	-3.7548	0.0002