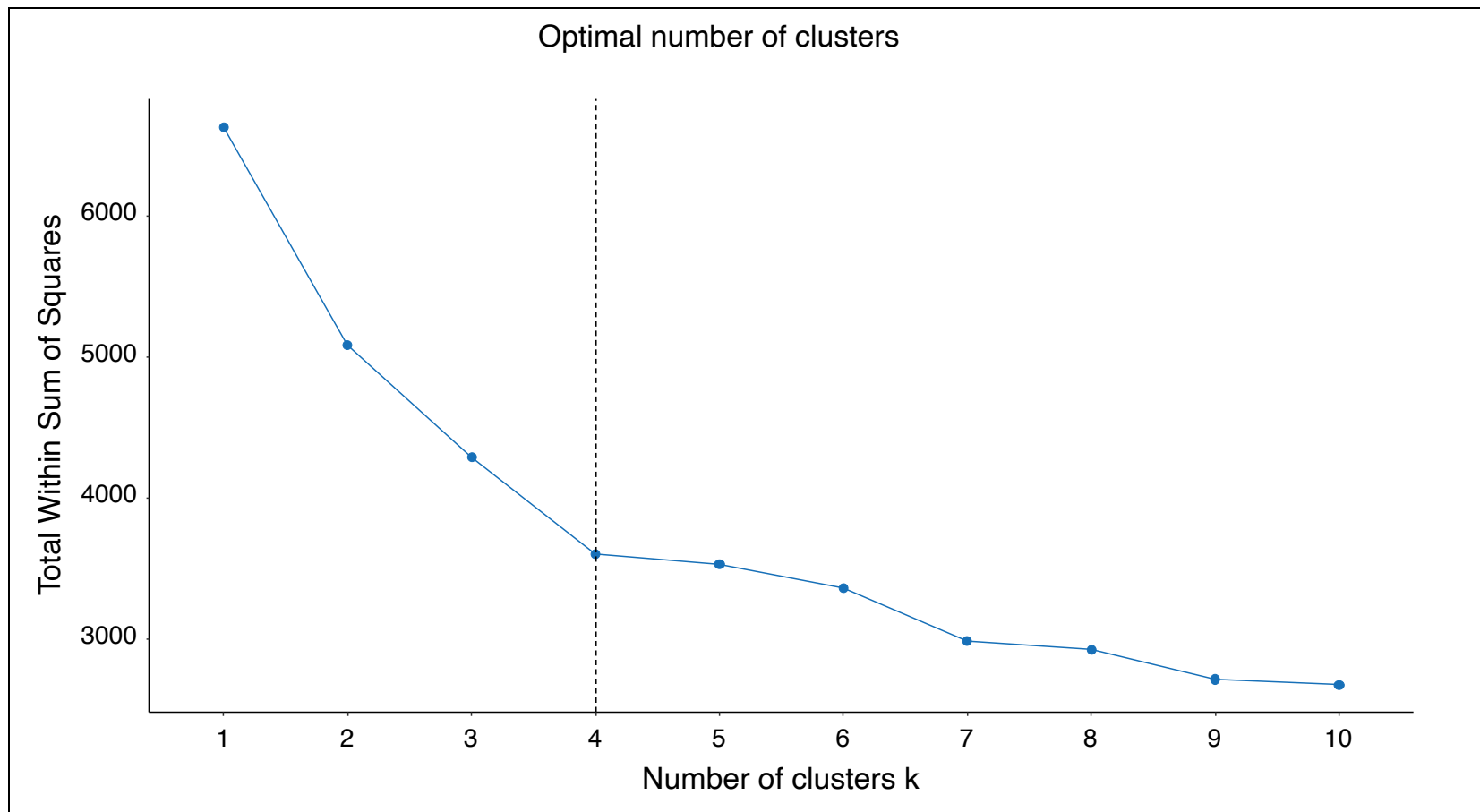


Additional File 1

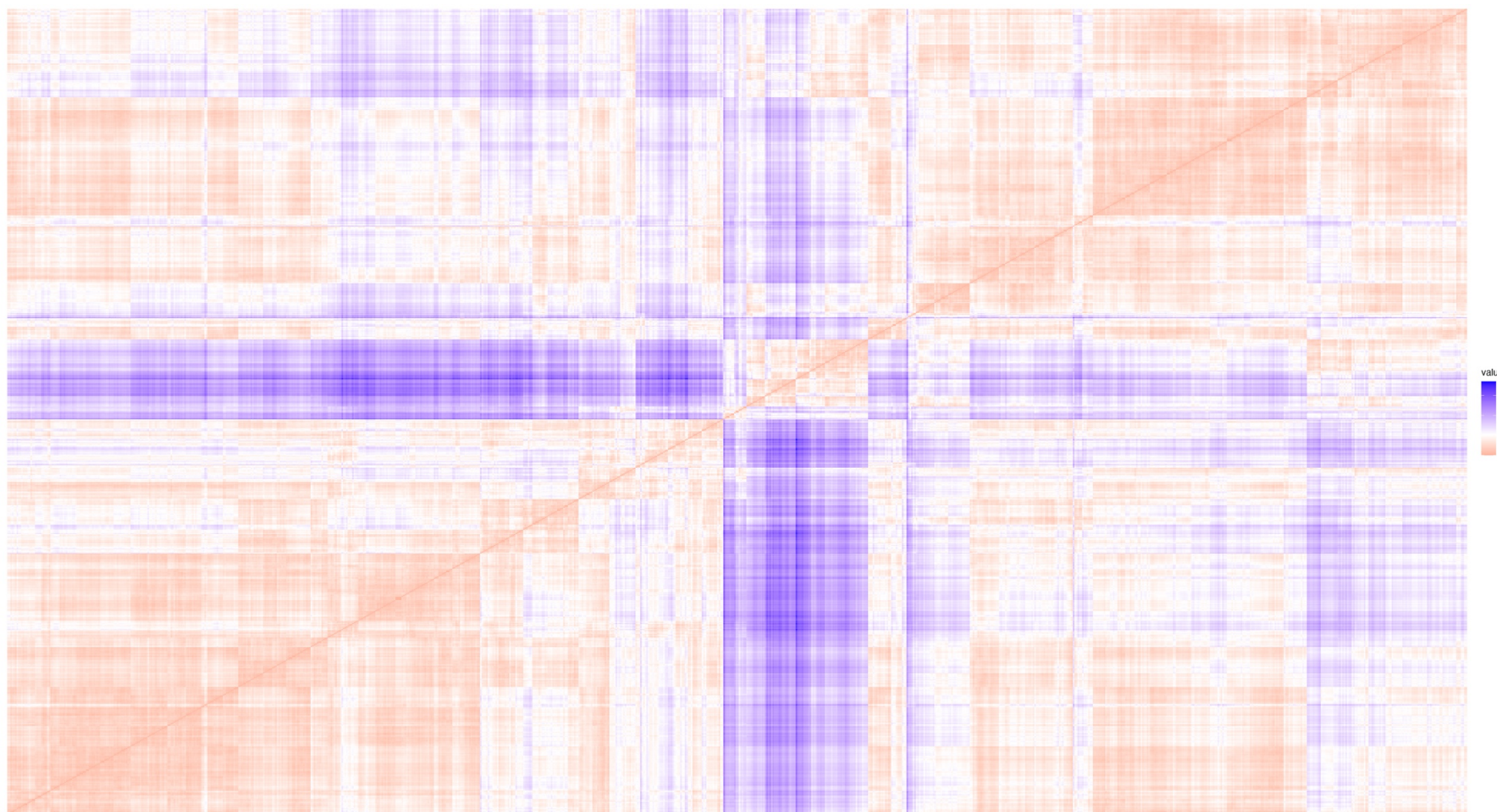
“Clustering of critically ill patients using an individualized learning approach enables dose optimisation of mobilization in the ICU”

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Additional File Figure S1: Elbow method for determination of clusters.



Additional File Figure S2: Euclidian distance plot.

Heatmap showing Euclidean distances between samples clustered using complete linkage. Factors used for Cluster Analysis are visualized as column annotations.

Additional File – Tables

Additional File Table S1: Patient Characteristics.

	Discharge home	
	no, N = 648	yes, N = 300
Female sex	378 (58.3)	176 (58.7)
Body Mass Index (kg/m ²)	25.4 [23.1 – 27.7]	25.7 [23.1 – 28.5]
Body Mass Index (kg/m²)		
<i>underweight</i>	23 (3.5)	24 (8.0)
<i>normal</i>	281 (43.4)	108 (36.0)
<i>overweight</i>	264 (40.7)	113 (37.7)
<i>obese</i>	80 (12.3)	55 (18.3)
Age (years)	70 [59 – 78]	62 [53 – 72]
Age (years)		
≤50	88 (13.6)	66 (22.0)
51-65	173 (26.7)	106 (35.3)
66-80	264 (40.7)	109 (36.3)
>80	123 (19.0)	19 (6.3)
Department		
<i>Neuro</i>	346 (53.4)	88 (29.3)
<i>Surgical</i>	249 (38.4)	179 (59.7)
<i>Medical</i>	40 (6.2)	17 (5.7)
<i>Other admission reasons</i>	13 (2.0)	16 (5.3)
Admission		
<i>from home</i>	383 (59.1)	230 (76.7)
<i>from hospital</i>	245 (37.8)	68 (22.7)
<i>from nursing home</i>	17 (2.6)	1 (0.3)
<i>unknown</i>	3 (0.5)	1 (0.3)
Ventilated during the ICU stay	425 (65.6)	125 (41.7)
Scoring		
Frailty	207 (31.9)	39 (13.0)
Glasgow Coma Scale	13 [6 – 15]	15 [13 – 15]
APACHE 2	16 [11 – 20]	12 [8 – 15]
SOFA	7 [5 – 9]	5 [3 – 7]
Charlson Comorbidity Index	2 [0 – 3]	1 [0 – 2]
Admission reason		
<i>Sepsis</i>	107 (16.5)	30 (10.0)
<i>Polytrauma</i>	24 (3.7)	11 (3.7)
<i>Traumatic brain Injury</i>	86 (13.3)	23 (7.7)
<i>Postoperative Care</i>	88 (13.6)	102 (34.0)
<i>Cardiac Failure</i>	41 (6.3)	13 (4.3)
<i>Respiratory Failure</i>	208 (32.1)	81 (27.0)
<i>Other admission reasons</i>	92 (14.2)	61 (20.3)
Pre-morbid functional status		
MTB at hospital admission	30 [30 – 30]	30 [30 – 30]
MTB at hospital admission		
0	7 (1.1)	2 (0.7)
5	17 (2.6)	2 (0.7)
10	19 (2.9)	2 (0.7)
15	30 (4.6)	7 (2.3)
20	34 (5.2)	11 (3.7)
25	40 (6.2)	20 (6.7)
30	501 (77.3)	256 (85.3)

Numbers are presented as n (%) or median [IQR]. "Frail" is defined as Clinical Frailty Scale 5-9. ICU Intensive Care Unit, IQR Interquartile Range, APACHE II Acute Physiology and Chronic Health Evaluation Score, SOFA Sepsis-related Organ Failure Assessment Score, MTB Mobility-Transfer-Barthel

Additional File Table S2: Post-hoc Analyses of patient characteristics in the four clusters.

	Cluster				Post-hoc Analyses					
	Severely ill & Frail, (N = 188)	Middle-aged, (N = 331)	Young Trauma, (N = 108)	Old non-frail, (N = 321)	Severely ill & Frail vs. Middle-aged	Severely ill & Frail vs. Young Trauma	Severely ill & Frail vs. Old non-frail	Middle-aged vs. Young Trauma	Middle-aged vs. Old non-frail	Young Trauma vs. Old non-frail
Female sex	107 (56.9)	202 (61.0)	60 (55.6)	185 (57.6)						
Body mass index (kg/m ²)	25.4 [23.5 – 27.7]	25.7 [23.1 – 28.1]	24.2 [21.1 – 26.7]	25.4 [23.3 – 28.1]	>0.9	0.009	0.010	>0.9	>0.9	0.019
Body mass index (kg/m²)										
<i>underweight</i>	5 (2.7)	21 (6.3)	7 (6.5)	14 (4.4)						
<i>normal</i>	74 (39.4)	123 (37.2)	60 (55.6)	132 (41.1)						
<i>overweight</i>	67 (35.6)	127 (38.4)	29 (26.9)	114 (35.5)						
<i>obese</i>	27 (14.4)	52 (15.7)	11 (10.2)	45 (14.0)						
Age (years)	78 [73 – 82]	59 [54 – 63]	34 [27 – 40]	75 [71 – 80]	<0.001	<0.001	0.2	<0.001	<0.001	<0.001
Age (years)					0.003	0.003	0.003	0.003	0.003	0.003
≤50	0 (0.0)	46 (13.9)	108 (100.0)	0 (0.0)						
51-65	11 (5.9)	268 (81.0)	0 (0.0)	0 (0.0)						
66-80	115 (61.2)	17 (5.1)	0 (0.0)	241 (75.1)						
>80	62 (33.0)	0 (0.0)	0 (0.0)	80 (24.9)						
Department					0.5	>0.9	0.003	0.6	0.3	0.057
<i>Neuro</i>	92 (48.9)	145 (43.8)	61 (56.5)	136 (42.4)						
<i>Surgical</i>	72 (38.3)	152 (45.9)	40 (37.0)	164 (51.1)						
<i>Medical</i>	21 (11.2)	22 (6.6)	6 (5.6)	8 (2.5)						
<i>Other admission reasons</i>	3 (1.6)	12 (3.6)	1 (0.9)	13 (4.0)						
<i>Neurocritical</i>	92 (48.9)	145 (43.8)	61 (56.5)	136 (42.4)						
Admission					0.003	0.063	0.033	>0.9	>0.9	>0.9
<i>from home</i>	110 (58.5)	216 (65.3)	76 (70.4)	211 (65.7)						
<i>from hospital</i>	65 (34.6)	113 (34.1)	31 (28.7)	104 (32.4)						
<i>from nursing home</i>	12 (6.4)	2 (0.6)	0 (0.0)	4 (1.2)						
<i>unknown</i>	1 (0.5)	0 (0.0)	1 (0.9)	2 (0.6)						
Scorings										
Frailty	101 (53.7)	44 (13.3)	13 (12.0)	88 (27.4)	<0.001	<0.001	<0.001	>0.9	<0.001	0.006
Glasgow Coma Scale	6 [3 – 10]	14 [7 – 15]	14 [7 – 15]	15 [14 – 15]	<0.001	<0.001	<0.001	>0.9	<0.001	<0.001
APACHE 2	24 [20 – 28]	14 [9 – 17]	9 [4 – 14]	13 [10 – 15]	<0.001	<0.001	<0.001	<0.001	>0.9	<0.001
SOFA	10 [7 – 12]	6 [4 – 8]	5 [3 – 8]	6 [4 – 7]	<0.001	<0.001	<0.001	0.082	0.070	>0.9
Charlson Comorbidity Index	2 [1 – 4]	1 [0 – 2]	0 [0 – 1]	2 [1 – 3]	<0.001	<0.001	0.8	<0.001	<0.001	<0.001
ICU Admission Reasons										
<i>Sepsis</i>	48 (25.5)	39 (11.8)	11 (10.2)	39 (12.1)	<0.001	0.008	<0.001	>0.9	>0.9	>0.9
<i>Polytrauma</i>	2 (1.1)	8 (2.4)	18 (16.7)	7 (2.2)	>0.9	<0.001	>0.9	<0.001	>0.9	<0.001
<i>Traumatic brain injury</i>	22 (11.7)	28 (8.5)	25 (23.1)	34 (10.6)	>0.9	0.077	>0.9	<0.001	>0.9	0.011
<i>Non-traumatic brain injury</i>	46 (24.5)	90 (27.2)	28 (25.9)	52 (16.2)	>0.9	>0.9	0.2	>0.9	0.005	0.2
<i>Postoperative Care</i>	19 (10.1)	68 (20.5)	19 (17.6)	84 (26.2)	0.013	0.4	<0.001	>0.9	0.6	0.5
<i>Cardiac Failure</i>	18 (9.6)	16 (4.8)	2 (1.9)	18 (5.6)	0.3	0.084	0.6	>0.9	>0.9	>0.9
<i>Respiratory Failure</i>	62 (33.0)	90 (27.2)	20 (18.5)	117 (36.4)	>0.9	0.043	>0.9	0.4	0.070	0.003
<i>Other admission reasons</i>	18 (9.6)	63 (19.0)	9 (8.3)	63 (19.6)	0.023	>0.9	0.015	0.062	>0.9	0.042
Pre-morbid functional Status										
MTB at hospital admission	30 [15 – 30]	30 [30 – 30]	30 [30 – 30]	30 [30 – 30]	<0.001	<0.001	<0.001	>0.9	0.074	>0.9

Numbers are presented as n (%) or median [IQR]. “Frail” is defined as Clinical Frailty Scale 5-9.
APACHE Acute Physiology and Chronic Health Evaluation Score, SOFA Sepsis-related Organ Failure Assessment Score, MTB Mobility-Transfer-Barthel

Additional File Table S3: Post-hoc Analyses of mobilization characteristics in the four clusters.

	Cluster					Post-hoc Analyses					
	Severely ill & Frail, (N = 188)	Middle-aged, (N = 331)	Young Trauma, (N = 108)	Old non-frail, (N = 321)	p value	Severely ill & Frail vs. Middle-aged	Severely ill & Frail vs. Young Trauma	Severely ill & Frail vs. Old non-frail	Middle-aged vs. Young Trauma	Middle-aged vs. Old non-frail	Young Trauma vs. Old non-frail
Frequency of mobilization session per day	1.1 [1.0 - 1.2]	1.2 [1.0 - 1.4]	1.2 [1.0 - 1.5]	1.2 [1.0 - 1.4]	<0.001	<0.001	<0.001	>0.9	<0.001	>0.9	>0.9
Mean duration per day (minutes)	6 [2 - 27]	13 [5 - 39]	20 [7 - 51]	28 [9 - 67]	<0.001	<0.001	<0.001	0.4	<0.001	<0.001	0.5
Average SOMS level	1.5 [1.0 - 2.0]	1.9 [1.2 - 2.5]	2.0 [1.7 - 2.8]	2.0 [1.5 - 2.5]	<0.001	<0.001	<0.001	0.004	<0.001	0.2	0.3
First day of mobilization	4.0 [3.0 - 7.0]	3.0 [2.0 - 7.0]	3.0 [2.0 - 7.0]	2.0 [2.0 - 4.0]	<0.001	0.10	0.7	>0.9	<0.001	<0.001	0.005
Early mobilization	79 (42.0)	187 (56.5)	62 (57.4)	233 (72.6)	<0.001	0.012	0.058	>0.9	<0.001	<0.001	0.031
Maximum SOMS level reached	2 [1 - 3]	3 [2 - 3]	3 [2 - 4]	3 [2 - 3]	<0.001	<0.001	<0.001	0.012	<0.001	>0.9	0.10
Maximum SOMS level reached					<0.001	0.003	0.003	0.12	0.003	0.033	0.3
0	7 (3.7)	9 (2.7)	0 (0.0)	4 (1.2)							
1	67 (35.6)	67 (20.2)	10 (9.3)	35 (10.9)							
2	61 (32.4)	82 (24.8)	26 (24.1)	91 (28.3)							
3	34 (18.1)	89 (26.9)	35 (32.4)	126 (39.3)							
4	19 (10.1)	84 (25.4)	37 (34.3)	65 (20.2)							

Early mobilization is defined as mobilization within 72h of ICU admission. Numbers are presented as n (%) or median [IQR].
IQR Interquartile Range *SOMS* Surgical Intensive Care Unit Optimal Mobilization Score

Additional File Table S4: Stepwise Regression Models.

Cluster “Severely ill & Frail”		
	OR (95% CI)	p value
Frequency of mobilization session per day	1.32 [0.43 - 3.91]	0.62
Mean duration per day (minutes)	0.99 [0.98 - 1.01]	0.49
Early mobilization	2.34 [0.90 - 6.43]	0.09
Maximum SOMS level reached		0.001
2	16.0 [2.80 - 304]	0.010
3	17.2 [2.39 - 355]	0.014
4	56.9 [5.96 – 1.346]	0.002
Postoperative Care	5.73 [1.64 - 20.8]	0.006
Frailty	0.36 [0.12 - 0.97]	0.044
Cluster “Middle-aged”		
	OR [95% CI]	p value
Frequency of mobilization session per day	1.59 [0.78 - 3.26]	0.20
Mean duration per day (minutes)	0.99 [0.98 - 1.00]	0.06
Early mobilization	2.97 [1.51 - 5.99]	0.002
Maximum SOMS level reached		<0.001
2	3.32 [1.19 - 10.1]	0.027
3	12.6 [4.53 - 39.2]	<0.001
4	23.9 [7.40 - 86.1]	<0.001
APACHE II	1.04 [0.97 - 1.12]	0.30
Frailty	0.34 [0.12 - 0.92]	0.038
Postoperative Care	6.72 [2.85 - 16.8]	<0.001
SOFA	0.81 [0.70 - 0.93]	0.002
Body Mass Index		0.002
<i>Underweight</i>	—	
<i>Normal</i>	0.39 [0.11 - 1.30]	0.13
<i>Overweight</i>	0.90 [0.28 - 2.84]	0.86
<i>Obese</i>	2.23 [0.61 - 8.27]	0.22
Charlson Comorbidity Score	0.85 [0.72 - 0.98]	0.025
Admission Category “Other”	2.77 [1.23 - 6.34]	0.015
Non- traumatic brain injury	2.33 [0.99 - 5.69]	0.06
Admission From		0.09
<i>From home</i>	—	
<i>From hospital</i>	0.49 [0.25 - 0.95]	0.036
<i>From nursing home</i>	0.00 [NA - 1.2e57]	0.99
Cluster “Young Trauma”		
	OR [95% CI]	p value
Frequency of mobilization session per day	0.72 [0.16 - 3.24]	0.67
Mean duration per day (minutes)	0.99 [0.98 - 1.01]	0.53
Early mobilization	9.98 [2.79 - 43.8]	<0.001
Maximum SOMS level reached		0.39
2	6.90 [0.67 – 129]	0.14
3	4.53 [0.32 – 99.7]	0.30
4	2.94 [0.23 – 56.2]	0.43
Non-traumatic brain injury	0.30 [0.06 – 1.43]	0.14
Admission From		0.002
<i>From home</i>	—	
<i>From hospital</i>	0.30 [0.07 – 1.20]	0.10
ICU Admission Category “Cardiac Failure”	730,481,516 [0.00 – NA]	>0.99
SOFA	0.78 [0.61 – 0.97]	0.022
Body Mass Index		0.011
<i>Underweight</i>	—	
<i>Normal</i>	0.12 [0.00 – 2.13]	0.20
<i>Overweight</i>	0.08 [0.00 – 1.57]	0.14
<i>Obese</i>	1.83 [0.03 – 74.0]	0.75
Department		0.036
<i>Neuro</i>	—	
<i>Surgical</i>	2.54 [0.61 – 11.6]	0.21
<i>Medical</i>	1.15 [0.07 – 33.2]	0.92
<i>Other admission reasons</i>	1,306,641,486 [0.00 – NA]	>0.99
Gender Male	3.44 [1.01 – 13.3]	0.06
Frailty	0.19 [0.02 – 1.20]	0.09

Cluster "Old non-frail"		
	OR [95% CI]	p value
Frequency of mobilization session per day	1.96 [0.96 – 4.08]	0.07
Mean duration per day (minutes)	1.00 [0.99 – 1.01]	0.71
Early mobilization	1.83 [0.92 – 3.77]	0.09
Maximum SOMS level reached		0.034
2	2.82 [0.77 - 13.3]	0.15
3	4.71 [1.24 - 23.2]	0.035
4	8.10 [1.82 - 45.8]	0.010
APACHE II	0.83 [0.76 - 0.91]	<0.001
Department		0.011
<i>Neuro</i>	—	
<i>Surgical</i>	1.83 [0.96 - 3.54]	0.07
<i>Medical</i>	12.2 [1.94 - 71.9]	0.005
<i>Other admission reasons</i>	4.30 [1.08 - 17.9]	0.039
Age		0.06
66-80	—	
>80	0.50 [0.23 - 1.04]	0.07
Frailty	0.40 [0.19 - 0.82]	0.014
Mobility-Transfer-Barthel at hospital admission	0.91 [0.84 - 0.97]	0.006
Admission From		0.08
<i>From home</i>	—	
<i>From hospital</i>	0.54 [0.28 - 1.04]	0.07
<i>From nursing home</i>	0.00 [NA - 3.1e25]	0.98
<i>Unknown</i>	2.04 [0.05 - 78.2]	0.68
Postoperative Care	1.64 [0.88 - 3.07]	0.12

"Frailty" is defined as Clinical Frailty Scale 5-9. Early mobilization is defined as mobilization within 72h of ICU admission.
OR Odds Ratio, CI Confidence interval, ICU Intensive Care Unit, IQR Interquartile Range, APACHE II Acute Physiology and Chronic Health Evaluation Score, SOFA Sepsis-related Organ Failure Assessment Score, SOMS Surgical Intensive Care Unit Optimal Mobilization Score

Additional File Table S5: Logistic regression models of survivors of hospital stay.

Cluster “Severely ill & Frail”					
	Only mobilization multivariate		Multivariate adjusted^a		
	OR [95% CI]	p-value	OR [95% CI]	p-value	
Frequency of mobilization session per day	1.11 [0.36 - 3.25]	0.85	1.31 [0.38 - 4.44]	0.67	
Mean duration per day (minutes)	0.99 [0.97 - 1.00]	0.13	0.99 [0.97 - 1.01]	0.45	
Early mobilization	1.97 [0.74 - 5.58]	0.18	2.51 [0.80 - 8.37]	0.12	
Maximum SOMS level reached		0.11		0.25	
2	5.03 [0.79 - 98.8]	0.15	3.71 [0.52 - 76.3]	0.26	
3	5.38 [0.69 - 115]	0.16	2.39 [0.23 - 57.4]	0.50	
4	15.3 [1.61 - 362]	0.033	7.65 [0.66 - 199]	0.13	
Cluster “Middle-aged”					
	Only mobilization multivariate		Multivariate adjusted^b		
	OR [95% CI]	p-value	OR [95% CI]	p-value	
Frequency of mobilization session per day	1.58 [0.83 - 3.06]	0.17	1.59 [0.77 - 3.35]	0.22	
Mean duration per day (minutes)	0.99 [0.99 - 1.00]	0.21	0.99 [0.98 - 1.00]	0.066	
Early mobilization	2.91 [1.67 - 5.16]	<0.001	2.69 [1.34 - 5.47]	0.006	
Maximum SOMS level reached		<0.001		<0.001	
2	2.70 [1.04 - 7.70]	0.049	2.34 [0.82 - 7.29]	0.12	
3	8.22 [3.23 - 23.4]	<0.001	7.92 [2.80 - 24.9]	<0.001	
4	16.7 [5.92 - 52.4]	<0.001	16.5 [4.97 - 60.9]	<0.001	
Cluster “Young Trauma”					
	Only mobilization multivariate		Multivariate adjusted^c		
	OR [95% CI]	p-value	OR [95% CI]	p-value	
Frequency of mobilization session per day	1.22 [0.38 - 4.05]	0.74	0.62 [0.16 - 2.34]	0.48	
Mean duration per day (minutes)	0.99 [0.98 - 1.01]	0.37	0.99 [0.98 - 1.01]	0.29	
Early mobilization	6.08 [2.42 - 16.5]	<0.001	5.31 [1.88 - 16.5]	0.002	
Maximum SOMS level reached		0.87		0.81	
2	1.30 [0.19 - 11.8]	0.79	1.00 [0.11 - 13.7]	>0.99	
3	1.05 [0.13 - 10.1]	0.96	0.47 [0.04 - 7.21]	0.57	
4	1.59 [0.21 - 14.9]	0.66	0.59 [0.05 - 8.44]	0.68	
Cluster “Old non-frail”					
	Only mobilization multivariate		Multivariate adjusted^d		
	OR [95% CI]	p-value	OR [95% CI]	p-value	
Frequency of mobilization session per day	1.43 [0.72 - 2.82]	0.30	1.67 [0.79 - 3.55]	0.18	
Mean duration per day (minutes)	1.00 [0.99 - 1.01]	0.68	1.00 [0.99 - 1.01]	0.78	
Early mobilization	2.27 [1.22 - 4.38]	0.011	2.10 [1.03 - 4.44]	0.046	
Maximum SOMS level reached		0.13		0.40	
2	1.36 [0.40 - 5.53]	0.64	1.65 [0.35 - 9.92]	0.55	
3	2.26 [0.67 - 9.08]	0.21	2.09 [0.43 - 13.0]	0.39	
4	3.49 [0.91 - 15.6]	0.08	3.47 [0.61 - 24.9]	0.18	
Early mobilization is defined as mobilization within 72h of ICU admission.					
OR Odds Ratio, CI Confidence interval, SOMS Surgical Intensive Care Unit Optimal Mobilization Score					
a Model was corrected for postoperative care, frailty, department					
b Model was corrected for Sepsis-related Organ Failure Assessment Score, body mass index (categories), postoperative, frailty, other admission reasons, admission, and non-traumatic brain injury					
c Model was corrected for department and Glasgow Coma Scale					
d Model was corrected for APACHE II, department, admission, Mobility-Transfer-Barthel Score at hospital admission and age (categories)					

Additional File Table S6: Sensitivity Analysis with the ICU Mobility Scale.

	Severely ill & Frail		Middle-aged		Young Trauma		Old non-frail	
	OR [95% CI]	p value	OR [95% CI]	p value	OR [95% CI]	p value	OR [95% CI]	p value
Frequency of mobilization session per day	3.64 [0.96 - 15.7]	0.07	1.80 [0.91 - 3.66]	0.10	0.86 [0.20 - 3.60]	0.84	1.86 [0.93 - 3.82]	0.08
Mean duration per day (minutes)	1.03 [0.95 - 1.12]	0.45	1.00 [0.97 - 1.04]	0.84	0.98 [0.92 - 1.04]	0.54	1.04 [1.01 - 1.09]	0.025
Early mobilization	2.49 [0.92 - 7.11]	0.08	3.12 [1.77 - 5.61]	<0.001	6.68 [2.43 - 20.5]	<0.001	1.85 [1.00 - 3.55]	0.06
Maximum IMS level reached		0.008		<0.001		0.030		0.037
1	0.00 [NA - 4e36]	>0.99	1.36 [0.29 - 7.32]	0.70	45267791 [0.00 - 7e246]	>0.99	9.95 [1.23 - 213]	0.06
2	0.00 [0.00 - 3e76]	>0.99	0.00 [0.00 - 24209]	0.98	4.85 [0.00 - 7e73]	>0.99	3.93 [0.34 - 90.7]	0.29
3	10.3 [1.80 - 196]	0.031	3.58 [1.08 - 16.4]	0.06	81539612 [0.00 - NA]	>0.99	6.63 [1.24 - 123]	0.07
4	0.00 [NA - Inf]	>0.99	3.99 [0.42 - 32.5]	0.19	31236587 [0.00 - 2e262]	>0.99	15.2 [1.56 - 349]	0.031
5	18.9 [2.86 - 377]	0.009	14.7 [4.32 - 68.4]	<0.001	45418685 [0.00 - NA]	>0.99	12.2 [2.28 - 228]	0.018
6	71.8 [1.83 - 3881]	0.016	6.20 [1.01 - 41.8]	0.049	3e15 [0.00 - Inf]	>0.99	16.7 [2.18 - 353]	0.018
7	49.4 [3.35 - 1376]	0.006	38.1 [5.12 - 412]	<0.001	19150009 [0.00 - 2e236]	>0.99	10.6 [1.24 - 231]	0.053
8	0.00 [NA - Inf]	>0.99	13.0 [2.01 - 107]	0.010	2e15 [0.00 - NA]	0.99	49.8 [3.84 - 1452]	0.006
9	21.4 [1.64 - 558]	0.026	18.5 [5.00 - 91.9]	<0.001	55199593 [0.00 - NA]	>0.99	24.2 [3.84 - 478]	0.004
10	2.5e+10 [0.00 - NA]	>0.99	12.8 [2.13 - 93.6]	0.007	189210174 [0.00 - NA]	>0.99	10.0 [0.29 - 373]	0.17

Early mobilization is defined as mobilization within 72h of ICU admission.
OR Odds Ratio, CI Confidence interval. *IQR* Interquartile Range, *IMS* ICU Mobility Scale.

Additional File Table S7: Secondary Endpoints.

	Cluster				p value	Post-hoc Analyses					
	Severely ill & Frail (N = 188)	Middle-aged (N = 331)	Young Trauma (N = 108)	Old non-frail (N = 321)		Severely ill & Frail vs. Middle-aged	Severely ill & Frail vs. Young Trauma	Severely ill & Frail vs. Old non-frail	Middle-aged vs. Young Trauma	Middle-aged vs. Old non-frail	Young Trauma vs. Old non-frail
Mortality (ICU)	68 (36.2)	26 (7.9)	5 (4.6)	45 (14.0)	<0.001	<0.001	<0.001	<0.001	>0.9	0.07	0.051
Mortality (hospital)	89 (47.3)	38 (11.5)	5 (4.6)	71 (22.1)	<0.001	<0.001	<0.001	<0.001	0.2	0.002	<0.001
ICU length of stay (days)	15 [8 – 23]	10 [5 - 23]	10 [5 - 29]	11 [4 - 22]	0.005	0.007	0.3	0.005	>0.9	>0.9	>0.9
ICU length of stay (days) (survived patients)	15 [8 - 25]	9 [4 - 22]	11 [5 - 28]	9 [4 - 20]	0.013	0.025	>0.9	0.009	>0.9	>0.9	>0.9
Hospital length of stay (days)	27 [18 - 39]	29 [18 - 45]	26 [16 - 40]	28 [19 - 43]	0.37	>0.9	>0.9	>0.9	>0.9	>0.9	0.7
Hospital length of stay (days) (survived patients)	33 [22 - 48]	29 [18 - 45]	26 [16 - 42]	29 [20 - 44]	0.10	0.5	0.14	>0.9	>0.9	>0.9	0.4

Secondary endpoints in dependence of the four clusters. Here, the results of the primary analysis as well as the post-hoc analyses are listed. Numbers are presented as n (%) or median [IQR]. *IQR* Interquartile Range, *ICU* Intensive Care Unit.