

Table S-1: Clinical and outcome parameters

Extubation After SBT	YES 67 (49.63%)	NO 68 (50.37%)	Overall 135 (100%)	P value
Respiratory Parameters				
Before SBT				
F _I O ₂ (%)	26 (6)	30 (8)	28 (7)	0.002
PEEP (cm H ₂ O)	5.2 (1.0)	5.2 (1.3)	5.2 (1.1)	0.99
VT (mL/kg)	7.5 (0.7)	7.5 (0.7)	7.5 (0.7)	0.19
P0.1 (cm H ₂ O)	1.7 (1.0)	2.2 (1.6)	2.0 (1.4)	0.11
Respiratory Rate (b/min)	24 (6)	26 (6)	25 (6)	0.02
SpO ₂ (%)	95 (3)	94 (3)	95 (3)	0.002
Heart Rate (b/min)	89 (19)	95 (20)	92 (20)	0.07
SAP (mmHg)	133 (24)	133 (22)	133 (23)	0.94
MAP (mmHg)	88 (14)	87 (14)	88 (14)	0.47
EWSO ₂	17.9 (6.9)	14.1 (5.8)	16.0 (6.6)	0.005
SBT number	2 (3)	2 (2)	2 (2)	0.79
During SBT				
O ₂ flow (L/min)	2.6 (1.4)	3.9 (1.9)	3.2 (1.8)	<0.0001
Heart Rate (b/min)	91 (17)	101 (21)	96 (20)	0.008
Respiratory Rate (b/min)	26 (7)	33 (8)	29 (8)	<0.0001
SpO ₂ (%)	95 (3)	91 (5)	93 (5)	<0.0001
SAP (mmHg)	140 (27)	145 (26)	142 (27)	0.25
MAP (mmHg)	93 (15)	95 (17)	94 (16)	0.25
EWSO ₂	14.8 (5.3)	9.9 (4.4)	12.4 (5.4)	<0.0001
After SBT				
O ₂ flow (L/min)	4.1 (9.5)	NA	NA	NA
Heart Rate (b/min)	94 (21)	NA	NA	NA
Respiratory Rate (b/min)	25 (8)	NA	NA	NA
SpO ₂ (%)	95 (3)	NA	NA	NA
SAP (mmHg)	138 (23)	NA	NA	NA
MAP (mmHg)	91 (16)	NA	NA	NA
EWSO ₂	9.8 (9.5)	NA	NA	NA
Outcomes				
Overall MV duration (days)	7.0 (8.6)	14.2 (13.3)	10.5 (11.7)	0.0004
VFD in ICU (days)	2.8 (3.2)	3.4 (3.7)	3.1 (3.5)	0.29
VFD at Day28 (days)	21.6 (9.3)	14.6 (10.8)	18.1 (10.7)	0.0001
ICU LOS (days)	13.5 (12.4)	24.3 (16.9)	18.8 (15.7)	<0.0001
Hs LOS (days)	38.5 (41.8)	39.8 (35.4)	39.1 (38.6)	0.85
Reintubation ≤ 72hrs (n)	14 (20.9%)	19 (31.1%)	33 (25.8%)	0.26
Reintubation ≤ Day7 (n)	14 (20.9%)	18 (29.5%)	32 (25.0%)	0.36
Never Weaned (n)	0 (0%)	8 (12.1%)	8 (6.0%)	0.002

Results are presented as number (%). A P value equal or below 0.05 was considered statically significant and depicted in black tone.

SBT: Spontaneous Breathing Test ; FIO₂: inspiratory oxygen fraction; PEEP: positive end expiratory pressure ; VT: volume tidal ; P0.1: negative pressure measured 100 ms after the initiation of an inspiratory effort performed against a closed respiratory circuit ; SpO₂ : pulse oximetry ; SAP: systolic arterial pressure ; MAP : mean arterial pressure ; NIV : noninvasive ventilation ; MV : mechanical ventilation ; VFD : ventilatory free day ; LOS : length-of-stay ; Hs : hospital; NA: not applicable.

Table S-2: Mechanical Ventilation and Spontaneous Breathing Test characteristics

Extubation After SBT	YES 67 (49.63%)	NO 68 (50.37%)	Overall 135 (100%)	p
Reason for SBT Failure				
Cardiovascular	NA	39.0 (68.4%)	39 (68.42%)	NA
Respiratory	NA	16.0 (28.1%)	16 (28.07%)	NA
Neurologic	NA	1.00 (1.75%)	1 (1.75%)	NA
Other	NA	1.00 (1.75%)	1 (1.75%)	NA
Interface after Extubation				
AA	14.0 (21.2%)	NA	NA	NA
O₂	36.0 (54.5%)	NA	NA	NA
HFNC	1.00 (1.5%)	NA	NA	NA
NIV	15.0 (22.7%)	NA	NA	NA
Weaning Classification				<0.0001
Easy	37.0 (55.2%)	0 (0%)	37 (27.21%)	/
Prolonged	13.0 (19.4%)	39.0 (57.4%)	52 (38.24%)	/
Difficult	17.0 (25.4%)	29.0 (42.6%)	47 (34.56%)	/

Results are presented as number (%). A P value equal or below 0.05 was considered statically significant and depicted in black tone.

SBT: Spontaneous Breathing Test ; AA : Ambient Air ; HFNC : High Flow Nasal Canula ; NIV : noninvasive ventilation ; NA: not applicable.

Table S-4: ROC Curves Characteristics for Heart-Rate Variability Parameters in Never-Weaned Patients

	SD2/SD1 during SBT	SampEn during SBT	ShanEn during SBT
AUC	0.74 [0.50, 0.97]	0.74 [0.50, 0.99]	0.76 [0.52, 1]
Youden's J	0.52	0.59	0.50
Sensibility	0.86 [0.06, 0.87]	0.86 [0.03, 0.94]	0.71 [0.07, 0.96]
Specificity	0.66 [0.43, 1]	0.73 [0.14, 1]	0.79 [0.29, 1]
Cut-off	1.50	1.63	2.96
PPV	0.14 [0.11, 0.67]	0.17 [0.12, 0.64]	0.18 [0.11, 0.6]
NPV	0.99 [0.96, 1]	0.99 [0.96, 1]	0.98 [0.96, 1]

AUC: Area Under the Curve; PPV: Positive Predictive Value; NPV: Negative Predictive Value; SBT: Spontaneous Breathing Test ; SD1: Poincaré plot standard deviation perpendicular the line of identity; SD2: Poincaré plot standard deviation along the line of identity; SampEn : Sample Entropy; ShanEn : Shannon Entropy; Youden's J : statistic value for performance of a dichotomous diagnostic test; Cut-off: best value for the parameter, determined by ROC Curve analysis;

Table S-3: Independent outcome predictors identified by logistic regression

	P	Cut-off	AUC	Youden's Index	Se	Sp	PPV	NPV
Extubation after SBT								
Weight Balance (kg)	0.01	0.5	0.64	0.28	0.79	0.49	0.61	0.70
SD1 before SBT (ms)	0.03	25.8	0.57	0.18	0.49	0.69	0.62	0.56
SpO ₂ during SBT (%)	0.04	91.5	0.76	0.41	0.56	0.85	0.78	0.67
EWSO ₂ before SBT	0.001	12.8	0.67	0.28	0.47	0.81	0.71	0.60
EWSO ₂ during SBT	0.006	11.1	0.80	0.50	0.75	0.76	0.75	0.76
Extubation Success 72-hrs								
BMI	<0.0001	23.6	0.67	0.33	0.61	0.73	0.44	0.84
P0.1 before SBT (cmH ₂ O)	0.02	3.3	0.53	0.28	0.30	0.98	0.88	0.73
SpO ₂ during SBT (%)	0.007	95.5	0.61	0.24	0.87	0.24	0.31	0.89
MAP during SBT (mmHg)	0.02	104.5	0.72	0.35	0.52	0.83	0.50	0.84
SAP during SBT (mmHg)	0.02	145.5	0.68	0.33	0.69	0.64	0.38	0.86
EWSO ₂ during SBT	0.03	11.9	0.61	0.23	0.74	0.49	0.33	0.85
SD2 prior SBT (ms)	0.01	19.9	0.58	0.22	0.82	0.41	0.33	0.86
Estimated FIO ₂ after extubation (%)	0.03	29.0	0.60	0.27	0.54	0.74	0.33	0.87
EWSO ₂ after extubation	<0.0001	16.2	0.72	0.43	0.91	0.52	0.29	0.96
Extubation Success Day-7								
BMI (kg/m ²)	<0.0001	23.6	0.67	0.36	0.63	0.73	0.44	0.85
MAP before SBT (mmHg)	<0.0001	93.5	0.68	0.29	0.56	0.73	0.42	0.83
SAP before SBT (mmHg)	<0.0001	142.5	0.63	0.33	0.59	0.74	0.44	0.84
EWSO ₂ before SBT	<0.0001	22.3	0.54	0.17	0.94	0.23	0.29	0.92
EWSO ₂ during SBT	<0.0001	12.4	0.61	0.22	0.77	0.45	0.31	0.86
EWSO ₂ after extubation	<0.0001	16.2	0.72	0.43	0.91	0.52	0.29	0.96
LF before SBT (Hz)	0.03	120.0	0.57	0.18	0.78	0.40	0.31	0.84

A P value equal or below 0.05 was considered statistically significant. Parameters with an AUC higher than 0.70 are depicted in black tone.

Cut-off: best value for the parameter, determined by ROC Curve analysis; ROC: Receiver Operating Characteristic; AUC: Area Under the Curve; Se: Sensibility; Sp: Specificity; PPV: Positive Predictive Value; NPV: Negative Predictive Value; SBT: Spontaneous Breathing Test ; SD1: Poincaré plot standard deviation perpendicular the line of identity; SD2: Poincaré plot standard deviation along the line of identity; LF: peak frequency of the low-frequency band of the plethysmography signal (0.04-0.15 Hz); SpO₂: pulse oximetry; EWSO₂: early-warning score oxygen; BMI: body-mass index; P0.1: negative pressure measured 100 ms after the initiation of an inspiratory effort performed against a closed respiratory circuit ; SAP: systolic arterial pressure ; MAP : mean arterial pressure; estimated FIO₂: estimated oxygen inspiratory fraction, derived from the mean oxygen flow rate.