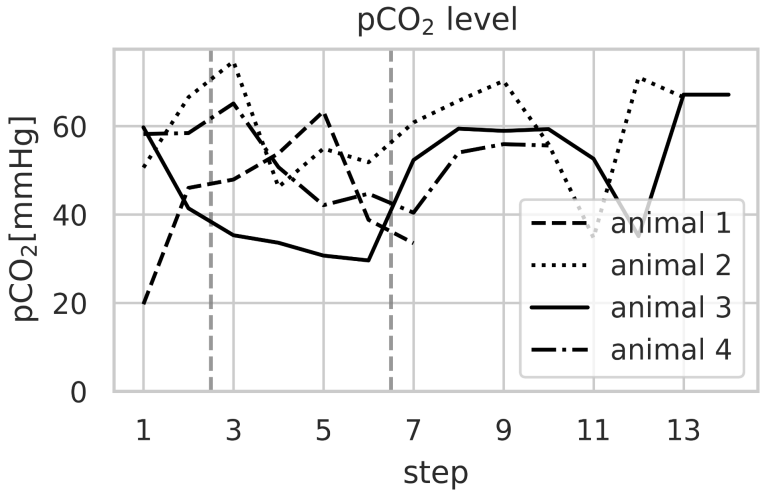
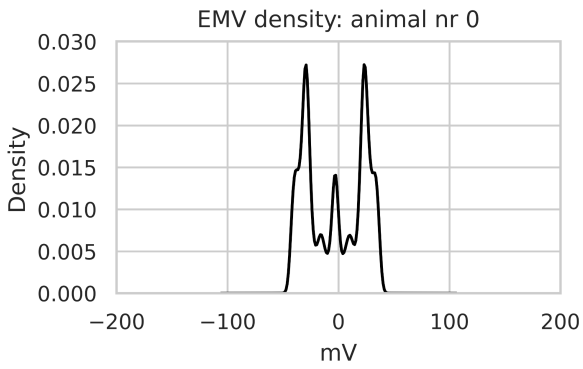
Supplementary Fig. 1. pCO2 levels in blood before, during and after hyperventilation. Total number of points per animal depended on its condition - some experiments were decided to finish earlier. pCO2 levels are normalized against the first measurement.



Supplementary Fig. 2. Distribution of EMG signal per animal.


EMV density: animal nr 0
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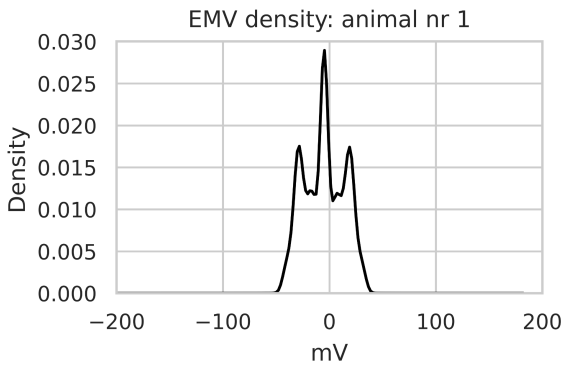
0.020
0.015
0.010
0.005
0.000
−200
−100
0
100
200
mV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Density
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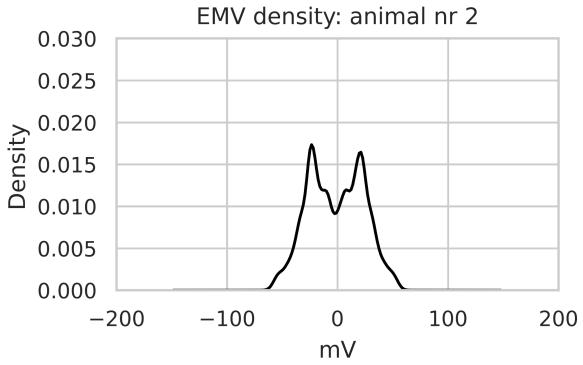
200
mV


EMV density: animal nr 2
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0.000
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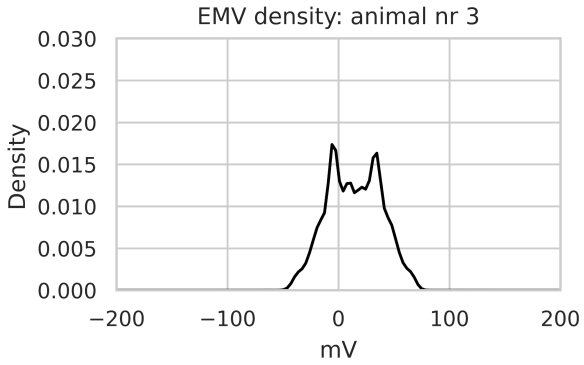
0
100
200
mV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0.000
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−100
0
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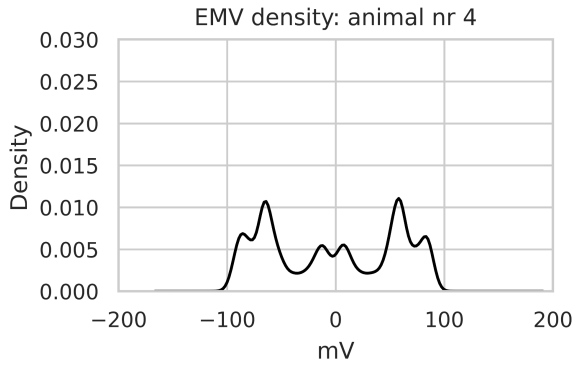
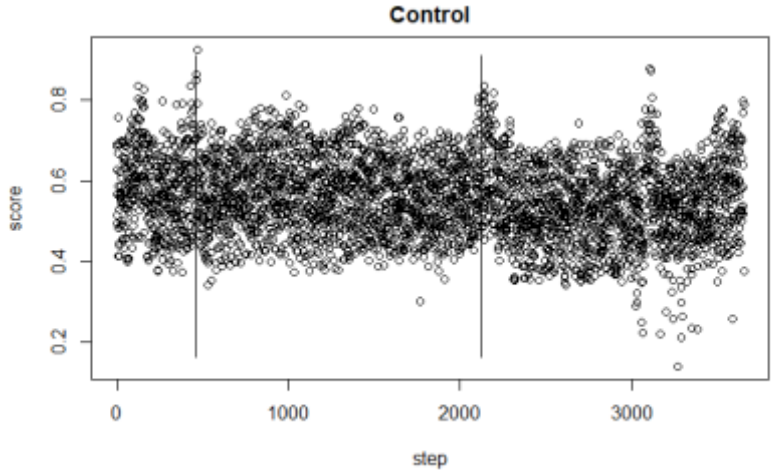
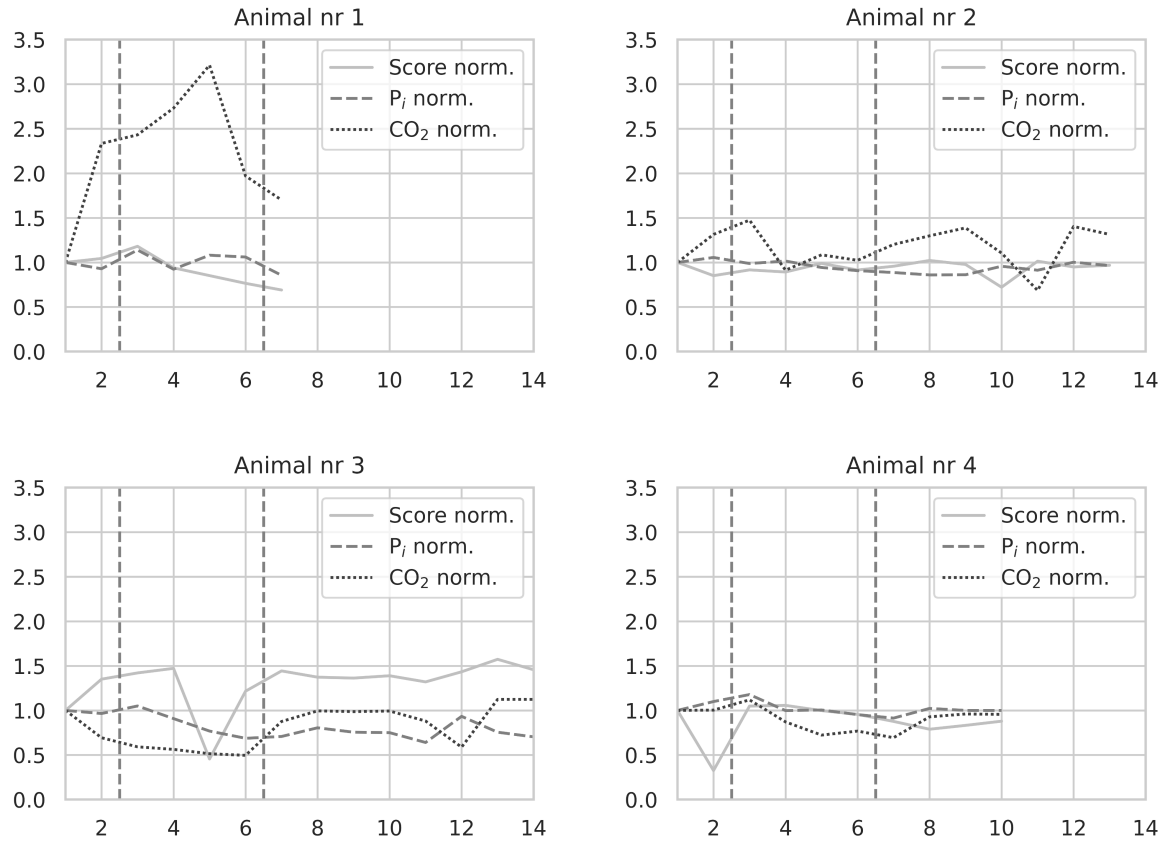
200
mV



Supplemental Fig. 4. Experiment outside of MRI chamber. The start and end of normoventilation is denoted by vertical lines. Dots are the EMG score calculated every 1s.



Supplemental Fig. 3. Normalized values for EMG score, inorganic phosphate levels and pCO_2 for each animal separately. Beginning and end of hyperventilation are marked in vertical lines



Supplemental Table 1. Results of gasometry

pig ID	**nr**	**pH**	**pCO2** *mmHg*	**p02** *mmHg*	**cHCO3-** mmol/L	**BE(ecf)** *mmol/L*	**cSO2** %	**Na+** *mmol /L*	**K+** *mmol /L*	**Ca++** *mmol /L*	**Cl-** *mmol /L*	**cTCO2** *mmol/L*	**Agap** *mmol /L*	**AgapK** *mmol/L*	**Hct** %	**cHgb** *g/dL*	**BE** *mmol /L*	**Glu** *mg/ dL*	**Lac** *mmol /L*	**Crea** *mg/d*L
4	13	7.421	54.8	148.5	35.6	11.2	99.3	147	3.9	1.33	104	37.3	7	11	25	8.5	9.9	202	1.17	1.28
4	12	7.433	45.8	88.3	30.6	6.3	97	149	3.6	1.23	109	32	9	13	23	7.8	5.7	180	1.19	1.12
4	11	7.399	58.6	80.3	36.2	11.4	95.3	146	3.9	1.35	104	38	6	10	27	9	9	218	1.45	1.41
4	10	7.418	53.7	114.9	34.7	10.2	98.5	148	3.7	1.33	105	36.3	8	12	25	8.5	9	208	1.14	1.22
4	9	7.378	55.6	68.9	32.7	7.6	92.6	149	3.5	1.26	106	34.4	10	14	23	7.8	6.7	182	1.18	1.32
4	8	7.419	55.9	139.7	36.2	11.7	99.1	148	4	1.35	103	37.9	9	13	26	8.8	10.3	215	1.13	1.35
4	7	7.432	54	105.8	36	11.7	98.1	145	3.9	1.34	103	37.7	6	10	26	9	10.4	215	1.25	1.44
4	6	7.55	40.4	145.1	35.4	13	99.5	146	4	1.33	104	36.6	7	11	27	9.1	11.9	218	1.24	1.32
4	5	7.493	44.7	90.3	34.3	11	97.6	146	4	1.33	101	35.7	11	15	25	8.7	10	216	1.29	1.39
4	4	7.512	42.1	164.6	33.7	10.7	99.6	146	3.9	1.3	103	35	9	13	25	8.6	9.8	198	1.15	1.2
4	3	7.451	50.7	124.2	35.3	11.4	98.9	145	4	1.33	103	36.9	7	11	25	8.6	10.2	202	1.16	1.26
4	2	7.358	65.1	77.2	36.6	11.1	94.1	146	4	1.35	103	38.6	6	10	26	8.8	9.6	195	1.2	1.35
4	1	7.367	58.4	11.3	33.5	8.2	98	147	3.7	1.3	104	35.3	10	13	23	7.8	7.2	188	1.02	1.18
4	0	7.361	58.2	54.9	32.9	7.5	86	143	3.7	1.44	104	34.7	6	10	29	10	6.3	87	1.87	1.57
3	13	7.366	67.1	55.9	38.5	13.1	86.2	139	4.6	1.25	96	40.5	5	9	27	9.1	11.3	71	1.11	2.06
3	12	7.533	35.1	267.5	29.5	6.8	99.9	112	7.1	1.01	79	30.6	4	11	21	7.1	6.4	66	0.73	1.53
3	11	7.451	52.6	313.3	36.6	12.6	99.9	136	4.7	1.21	95	38.2	4	9	25	8.6	11.3	75	0.86	1.82
3	10	7.423	59.3	413.3	38.7	14.3	100	143	4.4	1.29	99	40.5	5	10	26	8.9	12.6	79	0.85	1.79
3	9	7.428	58.9	393.6	38.9	14.5	100	145	4.3	1.32	99	40.7	7	11	29	9.8	12.7	81	0.9	1.79
3	8	7.41	59.4	423.9	37.6	13	100	145	4.2	1.29	100	39.4	7	12	26	8.7	11.4	84	0.93	2.11
3	7	7.453	52.3	338.7	36.6	12.6	99.9	143	4.2	1.26	100	38.2	6	11	26	8.8	11.3	87	1.06	1.87

3	6	7.687	29.6	388.4	35.5	15.4	100	144	4.1	1.21	103	36.4	6	10	27	9.2	14.6	73	1.29	2.04
3	5	7.674	30.7	424.4	35.8	15.4	100	146	4.6	1.23	104	36.7	6	11	27	9.1	14.5	64	1.25	1.94
3	4	7.63	33.6	412.8	35.3	14.3	100	145	4.2	1.25	103	36.4	7	11	27	9.1	13.3	50	1.04	1.89
3	3	7.632	35.3	394.5	37.2	16.2	100	146	4.3	1.26	103	38.3	6	10	27	9	15	39	0.82	1.86
3	2	7.543	41.4	337.9	35.7	13.2	100	144	4.1	1.25	103	36.9	5	9	26	8.8	12.1	39	0.7	1.93
3	1	7.411	59.7	314.2	38	13.3	99.9	146	4	1.3	103	39.8	5	9	26	8.9	11.7	38	0.62	1.84
2	13	7.36	66.5	458.5	37.6	12.1	100	143	4	1.34	101	39.6	4	8	28	9.5	10.3	151	0.67	1.43
2	12	7.329	71	177.8	37.3	11.3	88.4	142	4.1	1.32	100	39.5	5	9	27	9	9.6	145	0.96	1.66
2	11	7.513	34.7	106	27.9	4.9	98.6	138	3.6	1.16	101	28.9	9	13	23	8	4.6	112	1.46	1.49
2	10	7.404	55.9	218.6	34.9	10.2	99.8	142	3.8	1.28	101	36.6	6	10	27	9.3	8.9	140	0.74	1.61
2	9	7.324	70.2	74.3	36.5	10.4	92.7	143	3.7	1.27	99	38.6	8	11	26	8.8	8.9	129	1.23	1.75
2	8	7.35	65.7	56.9	36.3	10.7	86.4	143	3.7	1.25	101	38.3	6	9	27	9.1	9.1	101	1.46	1.77
2	7	7.377	60.8	53.1	35.7	10.6	85.1	142	3.7	1.27	99	37.6	7	11	28	9.6	9	95	1.36	1.51
2	6	7.459	51.8	47.2	36.8	12.9	84	141	3.8	1.27	98	38.4	6	10	29	9.8	11.5	91	1.34	1.5
2	5	7.419	54.9	51.1	35.5	11	85.4	141	3.7	1.22	98	37.2	8	11	29	9.9	9.6	89	1.34	1.83
2	4	7.438	46.2	58.3	31.2	7.1	90.4	140	3.6	1.21	100	32.7	9	12	28	9.4	6.3	85	1.17	1.59
2	2	7.303	74.6	63	37	10.6	88	140	3.8	1.3	97	39.2	6	10	27	9.1	8.9	86	1.67	1.72
2	1	7.326	66.5	60.4	34.7	8.7	87.6	138	3.8	1.29	100	36.8	3	7	30	10.4	7.1	80	2.05	1.71
2	0	7.387	50.6	87.6	30.4	5.4	96.4	136	4.2	1.35	99	32	7	11	34	11.6	4.5	82	3.3	1.7
1	7	7.371	63.3	33.5	36.7	11.4	60.4	145	3.9	1.35	103	38.6	5	9	33	11.4	9.4	26	3.2	2.08
1	6	7.412	53.8	28.1	34.3	9.7	52.2	145	3.6	1.31	104	36	7	10	32	11	8.3	28	1.74	2.02
1	5	7.472	47.9	34.2	35	11.3	68.8	145	4	1.39	102	36.4	8	12	32	11	10	28	1.54	2.02
1	4	7.473	46	31.9	33.7	10.1	64.9	144	4.2	1.44	103	35.1	7	12	31	10.6	9	27	1.44	1.93
1	3	7.817	19.7	468.8	31.9	13.8	100	145	3.9	1.3	104	32.5	9	13	28	9.4	13.8	24	0.53	1.92