

Supplemental Digital Content S2: Multiple t-test comparison of Protocol 1 vs Protocol 2 at healthy state, hyperacute left ventricular cardiogenic shock and after 60 minutes of left ventricular cardiogenic shock. Units of variables as explained in main manuscript.

The analysis revealed no significant between-protocol differences in primary endpoints.

\* indicates  $P < 0.05$

\*\* indicates  $P < 0.01$

PVA=pressure volume area, MPE=total mechanical power expenditure, CO=cardiac output, SW=stroke work, PE=potential energy, CE=cardiac efficiency, Ea=arterial elastance, Ees=end-systolic elastance.

Variable	PEEP	Mean Protocol 1	SD Protocol 1	Mean Protocol 2	SD Protocol 2	$\Delta$ Mean	T Statistics	P value	Significance
<b>Healthy State</b>									
PVA	5	10799.8	3568.59	10250.9	2029.56	548.927	0.457848	0.6523	
MPE	5	673815	217593	644266	168892	29548.8	0.34748	0.733	
CO	5	4305.67	1461.77	4788.57	2304.12	-482.905	-0.508778	0.6241	
SW	5	6509.53	2520.95	6337.86	1610	171.676	0.192666	0.8494	
PE	5	4290.3	2444.02	3913.05	1852.64	377.251	0.400214	0.6945	
CE	5	0.609788	0.147936	0.623155	0.126532	-0.0133674	-0.2184	0.8303	

Variable	PEEP	Mean Protocol 1	SD Protocol 1	Mean Protocol 2	SD Protocol 2	$\Delta$ Mean	T Statistics	P value	Significance
Ea	5	1.71098	0.983409	1.2469	0.448012	0.464076	1.52057	0.144	
Ees	5	1.48733	0.367326	1.22646	0.407741	0.26087	1.44161	0.1779	
PVA	10	9056.4	3317.78	9158.3	2263.3	-101.897	-0.0841684	0.9339	
MPE	10	554587	208325	554054	110480	532.8	0.00782432	0.9938	
CO	10	4054.93	1486.73	4236	1577.82	-181.067	-0.255302	0.8031	
SW	10	5629.33	2611.59	5516.29	1473.41	113.048	0.129265	0.8985	
PE	10	3427.07	1767.55	3642.01	1812.72	-214.945	-0.261099	0.7986	
CE	10	0.620389	0.155889	0.61145	0.121103	0.00893914	0.146657	0.8854	
Ea	10	1.56741	1.07919	1.25246	0.374487	0.314953	1.00774	0.3261	
Ees	10	1.50562	0.350514	1.24771	0.451838	0.257913	1.33442	0.2131	
PVA	15	6754.1	2571.4	7564.1	2848.95	-810.006	-0.640304	0.5354	
MPE	15	416195	152719	469002	170167	-52807.5	-0.699971	0.4989	
CO	15	3886.4	1087.41	4350.43	1531.62	-464.029	-0.721221	0.4892	

Variable	PEEP	Mean Protocol 1	SD Protocol 1	Mean Protocol 2	SD Protocol 2	Δ Mean	T Statistics	P value	Significance
SW	15	4515.53	2139.33	4899.29	1776.48	-383.752	-0.44137	0.6656	
PE	15	2238.56	1035.01	2664.82	1765.73	-426.254	-0.592925	0.5696	
CE	15	0.663212	0.133577	0.660039	0.111434	0.00317322	0.058291	0.9543	
Ea	15	1.28482	0.806527	1.09843	0.389486	0.186383	0.730847	0.4734	
Ees	15	1.59462	0.419712	1.39707	0.51427	0.197553	0.887703	0.3958	
<b>Hyperacute Left Ventricular Cardiogenic Shock</b>									
PVA	5	8218.13	3163.71	6944.9	1984.85	1273.24	1.14801	0.2661	
MPE	5	442355	138254	439544	175327	2811.08	0.0373463	0.971	
CO	5	2934.6	1236.01	2545.29	1485.41	389.314	0.602842	0.56	
SW	5	3854.73	2237.51	2554.29	1075.23	1300.45	1.84109	0.08056	
PE	5	4363.4	1684.23	4390.61	1735.05	-27.2107	-0.0345809	0.973	
CE	5	0.448042	0.140578	0.370196	0.122675	0.0778467	1.32203	0.2082	
Ea	5	1.92655	1.1575	2.17966	0.950911	-0.253113	-0.541493	0.5965	

Variable	PEEP	Mean Protocol 1	SD Protocol 1	Mean Protocol 2	SD Protocol 2	Δ Mean	T Statistics	P value	Significance
Ees	5	0.860388	0.268348	0.770633	0.172246	0.0897551	0.944054	0.3579	
PVA	10	7284.01	2662.44	6329.9	1832.43	954.115	0.977739	0.3422	
MPE	10	394585	118258	430976	161978	-36391.5	-0.531933	0.6075	
CO	10	2919.47	1111.71	2585.96	1471.61	333.51	0.532836	0.6066	
SW	10	3584	1980.37	2280.57	897.962	1303.43	2.12382	0.04635	*
PE	10	3700.01	1322.06	4049.32	1747.6	-349.313	-0.469809	0.6493	
CE	10	0.470481	0.139487	0.366422	0.121725	0.104059	1.78099	0.09751	
Ea	10	1.73412	1.00736	2.22918	1.00452	-0.495066	-1.07572	0.3035	
Ees	10	0.907164	0.298708	0.772363	0.161493	0.134801	1.37053	0.1862	
PVA	15	6136.42	2122.94	5938.82	1749.46	197.598	0.230063	0.8213	
MPE	15	368946	120506	425432	177128	-56485.5	-0.765125	0.4644	
CO	15	2965.4	826.215	2596.91	1486.76	368.486	0.613048	0.5573	
SW	15	3060.13	1519.07	2085.14	787.115	974.99	1.98054	0.06185	

Variable	PEEP	Mean Protocol 1	SD Protocol 1	Mean Protocol 2	SD Protocol 2	Δ Mean	T Statistics	P value	Significance
PE	15	3076.29	966.717	3853.68	1749.21	-777.392	-1.10005	0.3042	
CE	15	0.482615	0.123493	0.360999	0.128782	0.121615	2.09001	0.05986	
Ea	15	1.65062	1.12344	2.36128	1.28199	-0.710653	-1.25838	0.2355	
Ees	15	0.970052	0.392256	0.773896	0.183183	0.196155	1.59887	0.1256	
<b>60 Minutes of Left Ventricular Cardiogenic Shock</b>									
PVA	5	8086.93	2958.76	7176.11	966.863	910.813	1.0106	0.3264	
MPE	5	501740	173214	449572	161218	52168.2	0.608861	0.5604	
CO	5	3784.14	1928.71	2372.8	1654.68	1411.34	1.56497	0.1552	
SW	5	4301.5	2273.05	2624.8	1179.63	1676.7	2.08393	0.05591	
PE	5	3785.43	1391.2	4551.31	594.099	-765.887	-1.67595	0.1131	
CE	5	0.511187	0.12342	0.356874	0.109793	0.154313	2.60876	0.03143	*
Ea	5	1.57828	0.741087	2.67232	1.21789	-1.09404	-1.88774	0.1166	
Ees	5	1.01081	0.233162	0.772892	0.253511	0.237922	1.83908	0.1111	

Variable	PEEP	Mean Protocol 1	SD Protocol 1	Mean Protocol 2	SD Protocol 2	$\Delta$ Mean	T Statistics	P value	Significance
PVA	10	7277.19	2853.65	6278.83	929.342	998.365	1.14944	0.2663	
MPE	10	464594	167189	399047	60332.8	65546.6	1.25574	0.2263	
CO	10	3638.14	1669.35	2081.2	1286.87	1556.94	2.1381	0.06047	
SW	10	3919.21	2034.41	2083.4	499.258	1835.81	3.12332	0.006455	**
PE	10	3357.98	1352.47	4195.43	1267.15	-837.45	-1.24592	0.2501	
CE	10	0.52461	0.110825	0.345439	0.13855	0.179171	2.6089	0.04055	*
Ea	10	1.59145	0.80392	2.7804	1.6075	-1.18895	-1.58459	0.1772	
Ees	10	1.08226	0.330248	0.795746	0.271538	0.286515	1.90854	0.09017	
PVA	15	6558.78	2365.19	5810.13	1251.11	748.651	0.886842	0.3904	
MPE	15	443505	174560	420148	75393	23357	0.405774	0.6903	
CO	15	3637	1569.12	2157.4	1154.29	1479.6	2.22466	0.05104	
SW	15	3554.36	1851.94	1839.2	411.093	1715.16	3.24844	0.005087	**
PE	15	3004.42	922.412	3970.93	1426.59	-966.506	-1.41309	0.2141	

<b>Variable</b>	<b>PEEP</b>	<b>Mean Protocol 1</b>	<b>SD Protocol 1</b>	<b>Mean Protocol 2</b>	<b>SD Protocol 2</b>	<b>Δ Mean</b>	<b>T Statistics</b>	<b>P value</b>	<b>Significance</b>
CE	15	0.523674	0.11412	0.339545	0.157091	0.18413	2.40415	0.05603	
Ea	15	1.59494	0.903941	3.33867	2.63938	-1.74373	-1.44728	0.216	
Ees	15	1.04367	0.251142	0.82709	0.308268	0.216579	1.41248	0.2074	