

Supplementary Materials

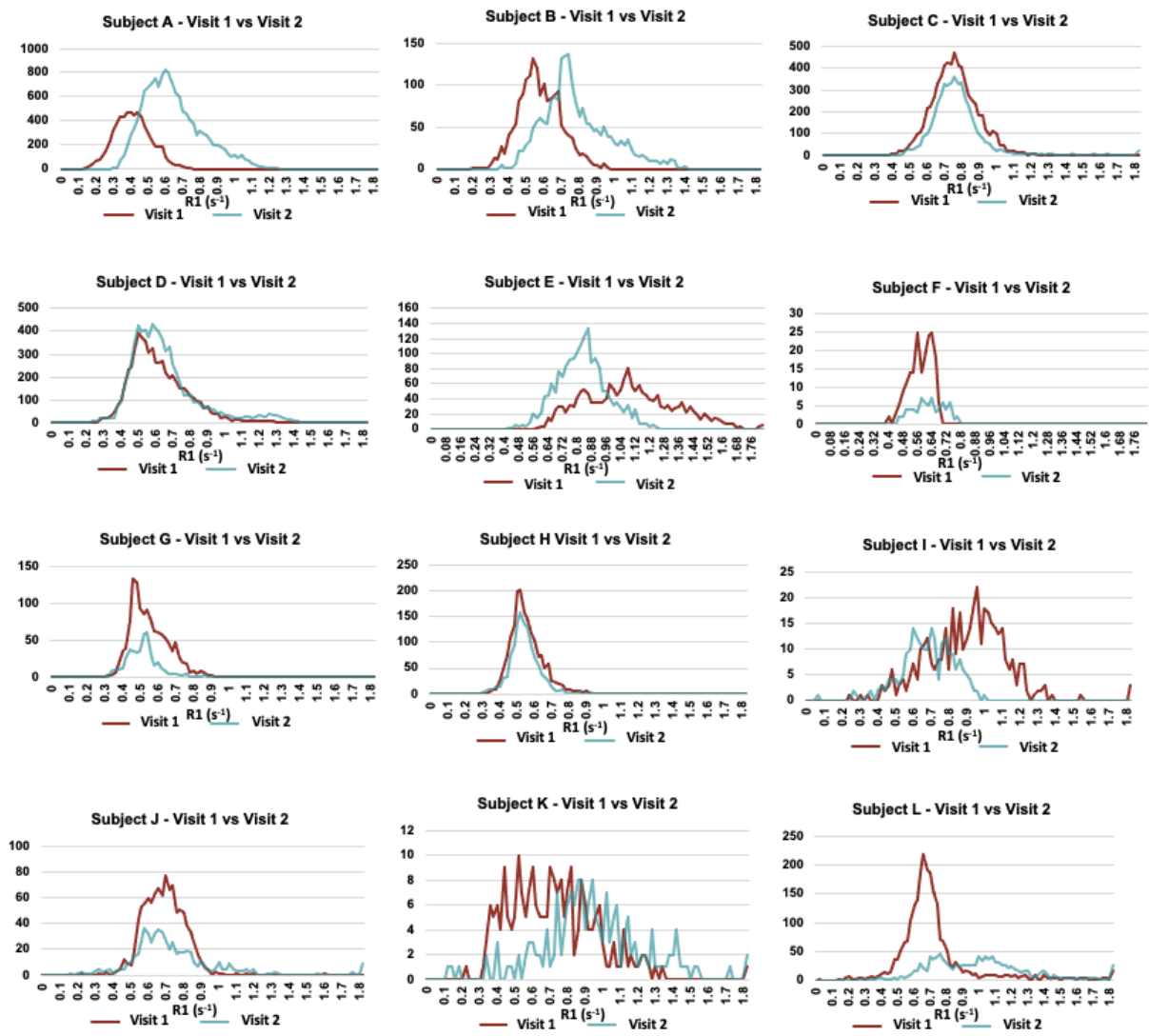
Supplementary Table S1. The resulting image dataset from the study, alongside patient outcome (responders = 1, non-responders = 0).

Patient:	102	103	104	105	106	108	110	111	112	113	114	115
Visit 1 MOLLI	Air	x	x	x	x	x		x	x	x	x	x
	O ₂	x	x	x	x	x		x	x	x	x	
Visit 2 MOLLI	Air	x		x				x	x	x		
	O ₂	x		x								
Visit 1 VFA	Air	x	x	x	x	x	x	x	x	x	x	x
	O ₂	x	x	x	x	x						
Visit 2 VFA	Air	x	x	x	x	x	x	x	x	x	x	x
	O ₂	x	x	x	x	x						
Outcome	1	0	1	1	1	0	0	1	1	1	1	1

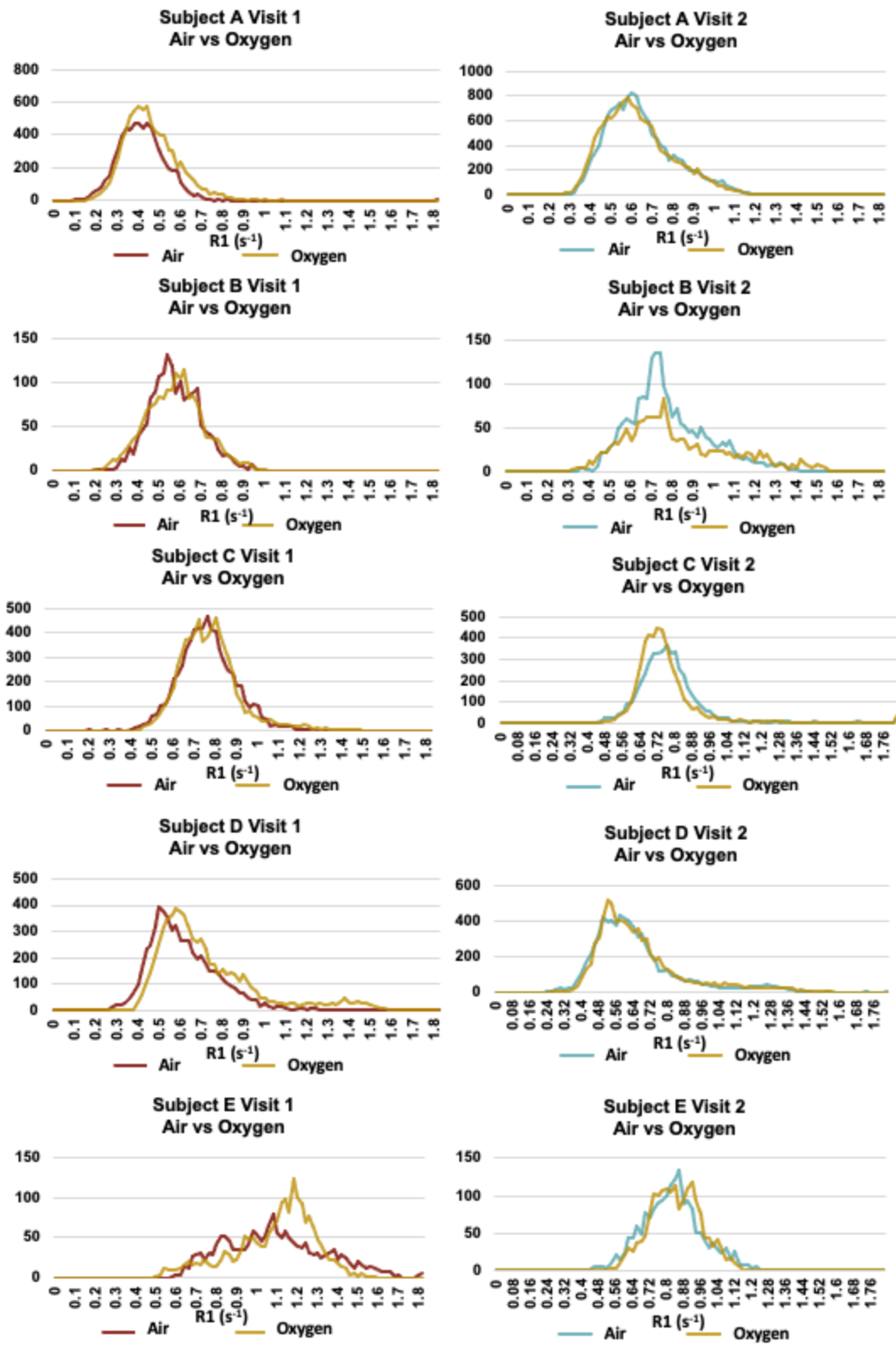
Supplementary Table S2. The descriptive statistics of R1 values in each tumour ROI.

	102 V1 Air	102 V1 Ox	103 V1 Air	103 V1 Ox	104 V1 Air	104 V1 Ox	104 V1st 1 Ox	105 V1 Air	105 V1 Ox	106 V1 Air	106 V1 Ox	106 V1st 1 Ox	108 V1 Air	108 V1 Ox	110 V1 Air	110 V1 Ox	111 V1 Air	111 V1 Ox	112 V1 Air	112 V1 Ox	113 V1 Air	113 V1 Ox	114 V1 Air	114 V1 Ox	115 V1 Air	115 V1 Ox	
Mean	0.405	0.446	0.566	0.566	0.750	0.750	0.758	0.611	0.719	1.079	1.078	1.078	0.568	0.540	0.540	0.542	0.894	0.678	0.707	0.711							
Standard Error	0.001	0.001	0.003	0.003	0.002	0.002	0.002	0.002	0.003	0.006	0.005	0.005	0.005	0.003	0.003	0.002	0.012	0.004	0.017	0.005							
Median	0.398	0.428	0.556	0.567	0.744	0.744	0.746	0.576	0.647	1.065	1.122	1.122	0.575	0.522	0.522	0.525	0.915	0.678	0.690	0.665							
Mode	0.443	0.416	0.570	0.585	0.758	0.758	0.789	0.576	0.598	1.043	1.174	1.174	0.582	0.457	0.457	0.498	1.093	0.704	0.797	0.629							
Standard Deviation	0.116	0.123	0.120	0.135	0.130	0.130	0.140	0.171	0.244	0.248	0.203	0.203	0.063	0.105	0.105	0.092	0.237	0.115	0.253	0.239							
Sample Variance	0.014	0.015	0.014	0.018	0.017	0.017	0.019	0.029	0.060	0.062	0.041	0.041	0.004	0.011	0.011	0.008	0.056	0.013	0.064	0.057							
Kurtosis	18.717	0.662	0.061	-0.072	0.364	0.364	2.398	4.624	1.910	-0.320	0.078	-0.451	0.010	1.203	1.203	7.328	4.123	4.154	8.510	2.438							
Skewness	1.976	0.912	0.757	0.804	1.060	1.060	1.055	1.396	1.482	0.362	-0.679	-0.487	0.658	0.905	0.905	1.092	0.585	1.151	2.438	1.971							
Range	1.747	0.912	0.757	0.804	1.060	1.060	1.045	2.027	1.279	1.445	1.071	0.292	0.619	0.588	0.588	2.292	1.386	1.971	2.278								
Minimum	0.098	0.157	0.196	0.188	0.196	0.196	0.435	0.256	0.371	0.579	0.497	0.381	0.268	0.313	0.313	0.209	0.218	0.016	0.016								
Maximum	1.845	1.070	0.953	0.992	1.256	1.256	1.479	2.283	1.650	2.024	1.567	0.673	0.887	0.901	0.901	2.525	1.595	2.188	2.294								
Sum	2586.464	3530.873	944.509	957.578	4944.553	4944.553	4999.086	3611.505	4859.260	1879.719	2007.647	106.866	676.634	934.913	359.526	693.326	160.591	1673.345									
Count	6387.000	7918.000	1668.000	1692.000	6596.000	6596.000	6596.000	5912.000	6760.000	1742.000	1862.000	188.000	1252.000	1724.000	402.000	1023.000	227.000	2353.000									
Largest(1)	1.845	1.070	0.953	0.992	1.256	1.256	1.479	2.283	1.650	2.024	1.567	0.673	0.887	0.901	0.901	2.525	1.595	2.188	2.294								
Smallest(1)	0.098	0.157	0.196	0.188	0.196	0.196	0.435	0.256	0.371	0.579	0.497	0.381	0.268	0.313	0.313	0.209	0.218	0.016	0.016								
Confidence Level(95.0%)	0.003	0.003	0.006	0.006	0.003	0.003	0.003	0.004	0.006	0.012	0.009	0.009	0.009	0.006	0.006	0.004	0.023	0.007	0.033	0.010							

	102 V2 Air	102 V2 Ox	103 V2 Air	103 V2 Ox	104 V2 Air	104 V2 Ox	104 V2st 1 Ox	105 V2 Air	105 V2 Ox	106 V2 Air	106 V2 Ox	106 V2st 1 Ox	108 V2 Air	108 V2 Ox	110 V2 Air	110 V2 Ox	111 V2 Air	111 V2 Ox	112 V2 Air	112 V2 Ox	113 V2 Air	113 V2 Ox	114 V2 Air	114 V2 Ox	115 V2 Air	115 V2 Ox	
Mean	0.633	0.620	0.776	0.813	0.766	0.766	0.749	0.642	0.658	0.818	0.833	0.833	0.613	0.502	0.502	0.530	0.668	0.725	0.931	0.986							
Standard Error	0.001	0.001	0.004	0.007	0.003	0.003	0.003	0.002	0.002	0.003	0.003	0.003	0.010	0.004	0.004	0.002	0.010	0.011	0.022	0.009							
Median	0.605	0.594	0.737	0.750	0.745	0.745	0.717	0.596	0.604	0.817	0.831	0.831	0.617	0.504	0.504	0.524	0.677	0.664	0.920	0.976							
Mode	0.600	0.671	0.691	0.739	0.783	0.783	0.742	0.575	0.614	0.805	0.890	0.890	0.661	0.517	0.517	0.517	0.630	0.695	1.071	1.014							
Standard Deviation	0.167	0.169	0.191	0.263	0.178	0.178	0.178	0.206	0.207	0.138	0.117	0.117	0.085	0.093	0.093	0.083	0.150	0.272	0.295	0.310							
Sample Variance	0.028	0.028	0.037	0.069	0.032	0.032	0.032	0.043	0.043	0.019	0.014	0.014	0.007	0.007	0.007	0.023	0.074	0.087	0.096	0.096							
Kurtosis	0.342	1.047	0.235	-0.117	30.502	30.502	29.753	3.037	2.314	-0.001	-0.415	-0.415	-0.869	2.648	2.648	2.268	0.924	11.469	1.069	1.946							
Skewness	0.752	0.768	0.710	0.707	3.929	3.929	4.453	1.549	1.522	0.182	0.043	0.043	-0.035	0.831	0.831	0.613	-0.589	2.640	0.227	0.951							
Range	1.367	1.837	1.051	1.292	2.862	2.862	2.286	2.014	1.288	0.806	0.640	0.333	0.724	0.724	0.724	0.674	0.947	2.221	1.853	2.263							
Minimum	0.286	0.251	0.344	0.273	0.385	0.385	0.446	0.223	0.258	0.415	0.496	0.443	0.231	0.231	0.231	0.295	0.046	0.143	0.112	0.153							
Maximum	1.653	2.088	1.395	1.565	3.247	3.247	2.732	2.237	1.546	1.221	1.136	0.776	0.955	0.955	0.955	0.968	0.992	2.364	1.965	2.415							
Sum	9169.244	8875.890	1586.563	1251.199	3493.607	3493.607	3414.067	4675.380	4887.539	1465.434	1448.978	1448.978	42.912	224.799	642.775	143.539	424.189	162.919	1156.148								
Count	14495.000	14326.000	2044.000	1539.000	4559.000	4559.000	4559.000	7280.000	7431.000	1792.000	1739.000	1739.000	70.000	448.000	1212.000	215.000	585.000	175.000	1173.000								
Largest(1)	1.653	2.088	1.395	1.565	3.247	3.247	2.732	2.237	1.546	1.221	1.136	0.776	0.955	0.955	0.955	0.968	0.992	2.364	1.965	2.415							
Smallest(1)	0.286	0.251	0.344	0.273	0.385	0.385	0.446	0.223	0.258	0.415	0.496	0.443	0.231	0.231	0.231	0.295	0.046	0.143	0.112	0.153							
Confidence Level(95.0%)	0.003	0.003	0.008	0.013	0.005	0.005	0.005	0.005	0.005	0.006	0.005	0.005	0.020	0.009	0.009	0.005	0.020	0.022	0.044	0.018							

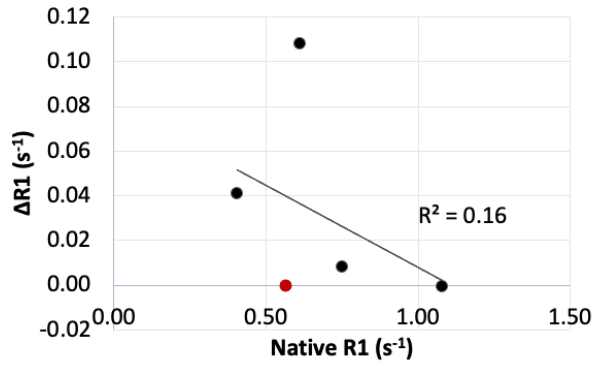


Supplementary Figure S1. Histograms of the R1 of the tumour ROI in all patients, on visit 1 and visit 2. The respective mean R1 values are shown in Figure 4.

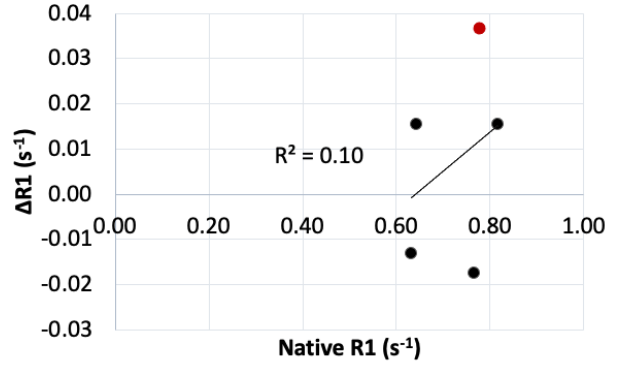


Supplementary Figure S2. Histograms of the R1 of the tumour ROI in all patients, while breathing air vs breathing oxygen. The respective mean R1 values are shown in Figure 3.

A Visit 1 - Native R1 vs $\Delta R1$ (Oxygen-Air)



B Visit 2 - Native R1 vs $\Delta R1$ (Oxygen-Air)



Supplementary Figure S3. Across subjects, the $\Delta R1_{\text{ox-air}}$ did not correlate with native R1 on either visit ($R^2=0.16$ and 0.10 for visit 1 and visit 2, respectively).