

# Cardiorespiratory fitness response to endurance training in athletes post-COVID-19 compared to unaffected athletes

Supplementary Table 1. Comparison of lung function and CPET between the first test (1) and follow up test (2) in the COVID-19 group.

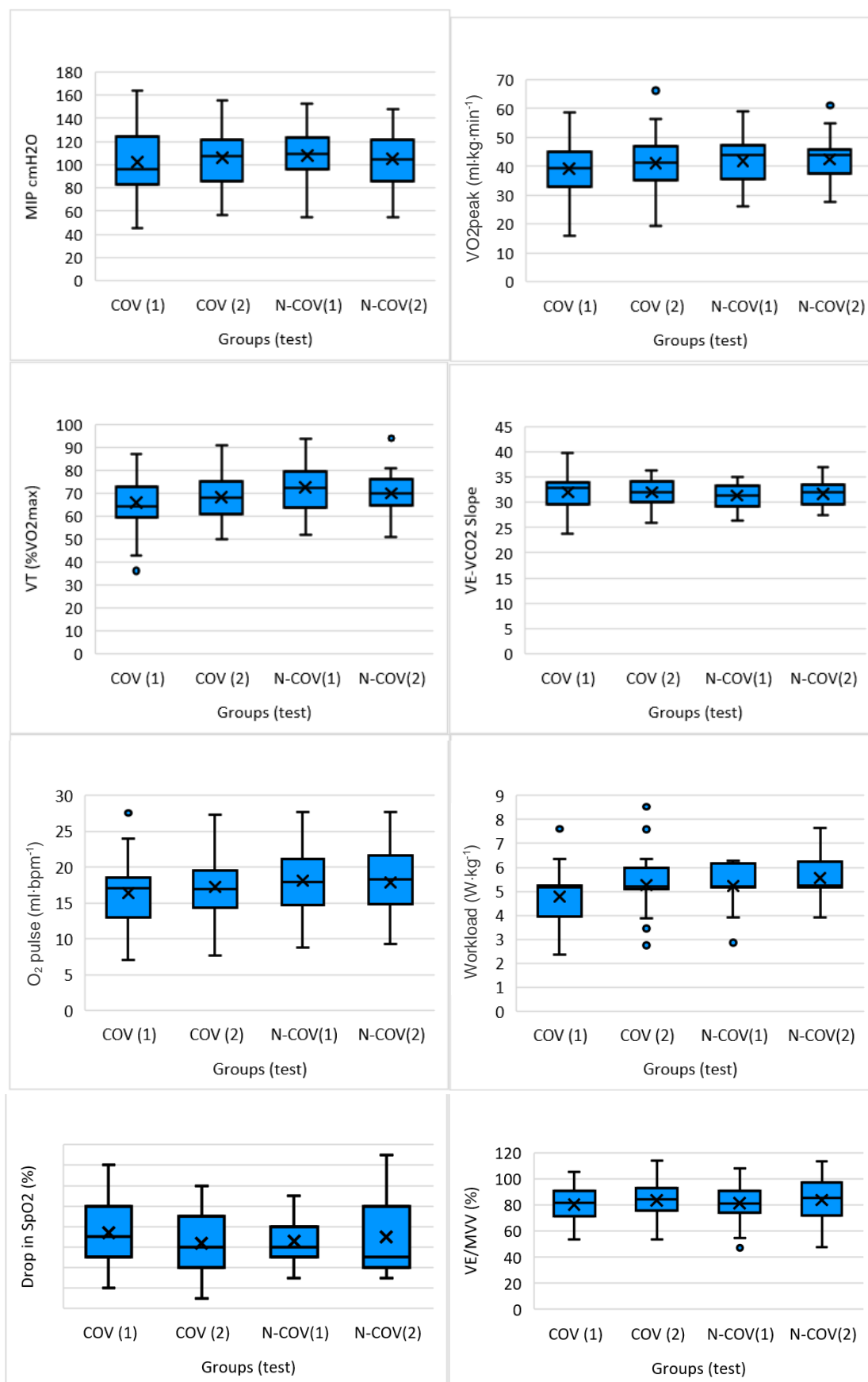
Parameter	COVID-19 (1) (n=57)	COVID-19 (2) (n=52)	p-value	Effect size
<b>Lung function</b>				
FVC (l)	4.8 ± 1.0	4.4 (3.9; 5.7)	0.60	0.29
FEV <sub>1</sub> (l)	3.9 ± 0.8	3.9 ± 0.9	0.73	0.05
FEV <sub>1</sub> /FVC	81.6 ± 5.3	80.7 ± 4.8	0.18	0.19
PEF (l·min <sup>-1</sup> )	8.6 ± 2.5	9.0 ± 2.7	0.11	-0.22
MVV (l·min <sup>-1</sup> )	135.2 ± 27.8	133.4 ± 34.4	0.98	0.22
MIP (cmH <sub>2</sub> O)	102.0 ± 25.9	105.5 ± 24.0	0.04	-0.38
<b>Cardiopulmonary exercise testing (CPET)</b>				
VO <sub>2</sub> peak (ml·kg·min <sup>-1</sup> )	39.1 ± 8.6	41.2 ± 8.5	0.005	-0.41
VO <sub>2</sub> peak % ref (ml·kg·min <sup>-1</sup> )	126.6 ± 33.7	134.0 ± 31.0	0.006	-0.40
VE/VCO <sub>2</sub> slope	32.0 ± 3.1	32.0 ± 2.7	0.61	0.07
y-intercept (l·min <sup>-1</sup> )	1.09 ± 3.5	1.4 ± 2.7	0.15	0.27
RER at max	1.2 ± 0.6	1.2 (1.1; 1.2)	0.42	0.02
VO <sub>2</sub> at VT (ml·min <sup>-1</sup> )	65.7 ± 10.6	68.3 ± 9.3	0.18	-0.19
VE max (l·min <sup>-1</sup> )	108.1 ± 25.5	112.8 ± 28.7	0.14	-0.21
VE/MVV	80.3 ± 12.6	83.9 ± 13.2	0.075	-0.26
HR max (bpm)	172.8 ± 10.3	172.9 ± 7.8	0.96	0.00
O <sub>2</sub> -pulse (ml·bpm <sup>-1</sup> )	16.4 ± 3.9	17.2 ± 4.0	0.029	-0.31
Drop in SpO <sub>2</sub> %	7.3 ± 3.2	5 (4.0; 8.3)	0.07	0.73
RPE	18.8 ± 1.0	19 (19; 19)	0.66	-0.93
Workload (W·kg <sup>-1</sup> )	4.8 ± 1.1	5.2 (5.1; 6.0)	<0.001	-0.50

Data expressed as mean ± standard deviation or (median; interquartile range) as applicable and determined using the T-test for paired samples or Wilcoxon signed rank test. RPE: Rate of perceived; FVC (l), forced vital capacity; FEV<sub>1</sub> (l), forced expiratory volume in one second; PEF, peak expiratory flow; MVV, maximum voluntary ventilation; VO<sub>2</sub>peak, maximum volume of oxygen in millilitres consumed, VE, minute ventilation, HR, heart rate; MIP, maximal inspiratory pressure; RER, respiratory exchange ratio; VT, ventilatory threshold

Supplementary Table 2. Comparison of lung function between the first test (1) and follow-up test (2) in the N-COVID-19 group.

Parameter	N-COVID-19 (1) (n=34)	N-COVID-19 (2) (n=26)	p-value	Effect size
<b>Lung function</b>				
FVC (l)	5.0 ± 1.0	5.0 ± 1.0	0.75	-0.06
FEV <sub>1</sub> (l)	4.1 ± 0.8	4.0 ± 0.8	0.11	0.32
FEV <sub>1</sub> /FVC	81.0 ± 5.3	81.0 (68.2; 78.3)	0.06	-0.009
PEF (l·min <sup>-1</sup> )	9.1 ± 2.1	9.6 ± 2.1	0.33	-0.19
MVV (l·min <sup>-1</sup> )	142.2 ± 27.0	139.7 ± 26.6	0.11	0.32
MIP (cmH <sub>2</sub> O)	107.9 ± 21.8	104.7 ± 23.7	0.19	0.26
<b>CPET</b>				
VO <sub>2</sub> peak (ml·kg·min <sup>-1</sup> )	42.0 ± 7.6	42.4 ± 7.6	0.95	-0.012
VO <sub>2</sub> peak % ref (ml·kg·min <sup>-1</sup> )	128.1 ± 26.3	124.8 (112.3; 132.2)	0.74	0.15
VE/VCO <sub>2</sub> slope – measured	31.4 ± 2.4	31.6 ± 2.6	0.75	-0.06
y-intercept (l·min <sup>-1</sup> )	0.99 ± 2.7	1.3 ± 2.3	0.51	0.21
RER at max	1.1 ± 0.04	1.2 (1.1; 1.2)	0.00	-0.49
VO <sub>2</sub> at VT (ml·min <sup>-1</sup> )	72.6 ± 10.6	70.0 ± 9.1	0.28	0.22
VE max (l·min <sup>-1</sup> )	115.4 ± 26.6	116.2 ± 30.1	0.56	-0.12
VE/MVV	81.5 ± 14.0	83.8 ± 17.8	0.72	-0.28
HR max (bpm)	174.1 ± 9.7	174.3 ± 9.1	0.97	-0.007
O <sub>2</sub> -pulse (ml·bpm <sup>-1</sup> )	18.1 ± 4.6	17.9 ± 4.6	0.89	0.025
Drop in SpO <sub>2</sub> %	6 (5;8)	5 (4;10)	0.92	0.32
RPE	19 (18;20)	19 (19;20)	0.33	0
Workload (W·kg <sup>-1</sup> )	5.2 (5.2;6.1)	5.2 (5.2;6.3)	0.23	-0.034

Data expressed as mean ± standard deviation or (median; interquartile range) as applicable and determined using the T-test for paired samples or Wilcoxon signed rank test. RPE: Rate of perceived; FVC (l), forced vital capacity; FEV<sub>1</sub> (l), forced expiratory volume in one second; PEF, peak expiratory flow; MVV, maximum voluntary ventilation; VO<sub>2</sub>peak, maximum volume of oxygen in millilitres consumed, VE, minute ventilation, HR, heart rate; MIP, maximal inspiratory pressure; RER, respiratory exchange ratio; VT, ventilatory threshold



**Supplementary Figure 1.** Distribution of physiological parameters across the four tests: baseline (1), follow-up (2), COVID-19 group (COV), N-COVID-19 group (N-COV)