**Supplemental Table 1.** **Summary of main (condition, time) and interaction ANOVA effects for neuromuscular fatigue responses recorded at baseline, 6 min of work, and task failure for three HIIT protocols (HIIT**1min, **HIIT**3min**, CL).**

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| --- | --- | --- | --- | --- |
| Outcome Variable | ANOVA Effects | F value | P value | Partial eta squared |
| Work completed | Condition | F2,22 = 25.50 | <0.0001 | 0.700 |
| MVC | Time | F2,22 = 33.31 | <0.0001 | 0.752 |
| Condition | F2,22 = 0.54 | 0.5403 | 0.045 |
| Interaction | F4,44 = 6.82 | 0.0002 | 0.382 |
| Single twitch | Time | F2,22 = 41.16 | <0.0001 | 0.789 |
| Condition | F2,22 = 5.795 | 0.0095 | 0.344 |
| Interaction | F4,44 = 7.224 | 0.0001 | 0.396 |
| Db10:100 | Time | F2,22 = 92.61 | 0.0001 | 0.894 |
| Condition | F2,22 = 3.197 | 0.0604 | 0.225 |
| Interaction | F4,44 = 12.52 | <0.0001 | 0.532 |
| VA | Time | F1.26,13.9 = 10.79 | 0.0036 | 0.494 |
| Condition | F1.73,19.0 = 7.093 | 0.0066 | 0.392 |
| Interaction | F1.34,14.76 = 5.217 | 0.0293 | 0.321 |
| RMS·Mmax-1 | Time | F2,22 = 8.365 | 0.0020 | 0.432 |
| Condition | F2,22 = 1.807 | 0.1877 | 0.017 |
| Interaction | F4,44 = 1.627 | 0.1844 | 0.129 |

Note: Maximal voluntary isometric force (MVC); vastus lateralis root mean square normalized to muscle compound action potential (RMS·Mmax-1); voluntary activation (VA); and Db10:100 (the ratio representing low frequency fatigue, LFF). Experimental conditions included high intensity interval training (HIIT) protocol consisting of a 1-min on-phase and a 1-min rest phase (HIIT1min), HIIT protocol consisting of a 3-min on-phase and a 3-min rest phase (HIIT3min), and constant-load cycling trial (CL). Statistical significance was defined as when P < 0.05.

**Supplemental Table 2.** **Summary of main (condition, time) and interaction ANOVA effects for cardiorespiratory responses recorded at Time60s and HIITfinal for three HIIT protocols (HIIT**1min, **HIIT3min, CL). Additionally, the summary of ANOVA effects for metabolic measures ([Lac-]b) for three timepoints (baseline, 6 min of work, task failure) and three HIIT protocols is presented.**

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| --- | --- | --- | --- | --- |
| Outcome Variable | ANOVA Effects | F value | P value | Partial eta squared |
| V̇O2 | Time | F1,11 = 60.38 | <0.0001 | 0.846 |
| Condition | F2,22 = 12.97 | 0.0002 | 0.541 |
| Interaction | F2,22 = 15.03 | <0.0001 | 0.577 |
| VE | Time | F1,11 = 98.60 | <0.0001 | 0.900 |
| Condition | F2,22 = 13.82 | 0.0001 | 0.557 |
| Interaction | F2,22 = 18.93 | <0.0001 | 0.632 |
| HR | Time | F1,11 = 91.36 | <0.0001 | 0.893 |
| Condition | F2,22 = 2.420 | 0.1122 | 0.180 |
| Interaction | F2,22 = 0.3680 | 0.6963 | 0.032 |
| Breathing frequency | Time | F1,11 = 136.1 | <0.0001 | 0.925 |
| Condition | F2,22 = 2.224 | 0.1319 | 0.168 |
| Interaction | F2,22 = 0.9939 | 0.3861 | 0.082 |
| [Lac-]b | Time | F2,22 = 114.1 | <0.0001 | 0.912 |
| Condition | F2,22 = 31.28 | <0.0001 | 0.740 |
| Interaction | F4,44 = 16.58 | <0.0001 | 0.601 |

Note: V̇O2: maximal rate of oxygen consumption (L/min); VE: minute ventilation (L/min); HR: heart rate (bpm); [Lac-]b: blood lactate concentration (mmol/L); HIIT1min: high intensity interval training (HIIT) protocol consisting of a 1-min on-phase and a 1-min rest phase; HIIT3min: HIIT protocol consisting of a 3-min on-phase and a 3-min rest phase’ and CL: constant-load cycling trial. Statistical significance was defined as when P < 0.05.