**Title: A Muscle Physiology-Based Framework for Quantifying Training Load in Resistance Exercises**

**Running title: Physiology-based framework for training load**

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# Appendix 1

## Tables

Table 1. Configuration of the three-knee extension testing sessions

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Session | Sets | Repetitions | Intensity (% MVC) | Passive recovery (s) |
| 1 | 1 | 24 | 58 % | N/A |
| 2 | 2 | 9 | 77 % | 180 |
| 3 | 5 | 3 | 93 % | 240 |

Table 2. Parameters inference regarding then normalised averaged torque produced at exercise.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Effect | Parameter |  | Std.error | t | p.value |  |  |
| Fixed | Intercept | 27.762 | 2.590 | 10.719 | < 0.001 | 22.547 | 32.978 |
| Fixed | C2 | 10.862 | 0.883 | 12.297 | < 0.001 | 9.134 | 12.590 |
| Fixed | C3 | 17.865 | 0.933 | 19.144 | < 0.001 | 16.039 | 19.690 |
| Fixed  Fixed  Fixed  Random  Random | Intercept (sd)  Observation (sd) | -0.301  0.361  0.515  9.779  5.219 | 0.040  0.073  0.090 | -7.442  4.913  5.723 | < 0.001  < 0.001  < 0.001 | -0.377  0.217  0.339  6.843  4.962 | -0.220  0.504  0.691  14.199  5.465 |

Table 3. Parameters inference regarding the distributions of summated EMG signals at exercise. denotes standardised regression coefficients.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Effect | Parameter |  | Std.error | t | p.value |  |  |
| Fixed | Intercept | 376.969 | 13.272 | 28.402 | < 0.001 | 351.232 | 404.090 |
| Fixed | N | 8.730 | 2.068 | 4.221 | < 0.001 | 4.690 | 12.778 |
| Fixed | C2 | 4.528 | 13.171 | 0.344 | 0.732 | -22.175 | 31.302 |
| Fixed | C3 | -50.893 | 59.541 | -0.855 | 0.395 | -172.570 | 70.940 |
| Fixed | Velocity | 43.982 | 7.960 | 5.525 | < 0.001 | 27.879 | 60.129 |
| Fixed | C2:velocity | -51.639 | 11.390 | -4.534 | < 0.001 | -74.226 | -28.284 |
| Fixed | C3:velocity | -48.122 | 47.279 | -1.018 | 0.311 | -143.725 | 48.820 |
| Random | Intercept (sd) | 38.178 |  |  |  | 24.999 | 56.029 |
| Random | Observation (sd) | 52.809 |  |  |  | 49.996 | 55.462 |

Table 4. Parameters inference regarding changes in blood lactate concentrations () in response to exercise.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Effect | Parameter |  | Std.error | t | p.value |  |  |
| Fixed | Intercept | 3.273 | 0.519 | 6.306 | < 0.001 | 2.287 | 4.240 |
| Fixed | C2 | -1.932 | 0.599 | -3.224 | 0.003 | -3.053 | -0.803 |
| Fixed | C3 | -9.412 | 2.364 | -3.982 | < 0.001 | -13.820 | -4.853 |
| Fixed | Velocity | -0.652 | 0.370 | -1.762 | 0.086 | -1.343 | 0.051 |
| Fixed | C2:velocity | -1.641 | 0.729 | -2.252 | 0.031 | -3.006 | -0.282 |
| Fixed | C3:velocity | -7.814 | 2.400 | -3.256 | 0.002 | -12.303 | -3.285 |
| Random | Intercept (sd) | 0.762 |  |  |  | 0.257 | 1.251 |
| Random | Observation (sd) | 1.025 |  |  |  | 0.752 | 1.255 |

## Figures

Une image contenant texte, diagramme, Plan, ligne

Description générée automatiquement

Figure 1. Distribution of regression slopes for changes in (a) and (b) across repetitions of knee extensions.

Une image contenant diagramme, texte, ligne, capture d’écran

Description générée automatiquement

Figure 2. Distribution of regression slopes for changes in median frequencies from power spectrum () across repetitions of isokinetic knee extensions.

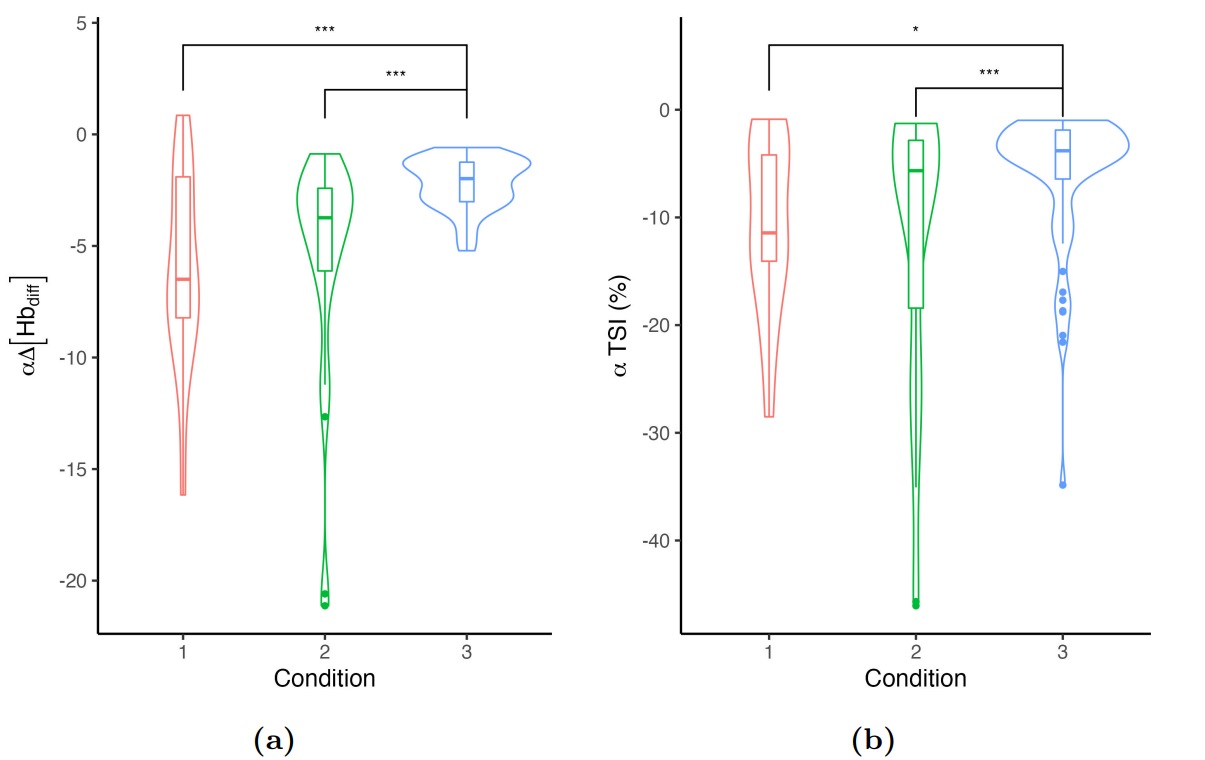


Figure 3. Distribution of (a) rate decay of and (b) rate decay of TSI at exercise.