**MEDICAL INSTRUMENTATION LAB**

**EMG I-II EXPERIMENT TABLES**

**ELECTROMYOGRAPHY I**

**Table 1.1 EMG Measurements**

|  |  |  |
| --- | --- | --- |
| **Clench #** | ***Dominant arm*** | ***Nondominant arm*** |
|  |  |
| 1 |  |  |
| 2 |  |  |
| 3 |  |  |
| 4 |  |  |

**Use the mean measurement from the table above to compute the percentage increase** in EMG activity recorded between the weakest clench and the strongest clench of Dominant arm.

Calculation: Answer: %

**Table 1.2 Tonus Measurements**

|  |  |  |
| --- | --- | --- |
| **Between Clenches #** | ***Dominant arm*** | ***Nondominant arm*** |
|  |  |
| 1-2 |  |  |
| 2-3 |  |  |
| 3-4 |  |  |

**ELECTROMYOGRAPHY II**

**Table 2.1 Increasing Clench Force Data**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Peak #** | **Assigned**  **Force Increment**  SS25L/LA = Kg  SS56L = kgf/m^2 | ***(Dominant arm)*** | | ***(Nondominant arm)*** | | |
| **EMG** | **Integrated EMG**  (mV) | **EMG** | | **Integrated EMG**  (mV) |
|  |  |
| **1** |  |  |  |  |  | |
| **2** |  |  |  |  |  | |
| **3** |  |  |  |  |  | |
| **4** |  |  |  |  |  | |

**Table 2.2 Maximum Clench Force Data**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ***(Dominant arm)*** | | | ***(Nondominant arm)*** | | |
| **Maximum Clench Force** | **50% of Max Clench Force** | **Time to Fatigue** | **Maximum Clench Force** | **50% of Max Clench force** | **Time to fatigue** |
|  | ***calculate*** |  |  | ***calculate*** |  |
|  |  |  |  |  |  |

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**EMG I-II EXPERIMENT QUESTIONS**

**Questions**

1. Compare the mean measurement for the right and left maximum clench EMG data. Are they they same or different? Which one suggests the greater clench strength?Explain.
2. Is there a difference in the absolute values of force generated by males and females in your class? What might explain any difference
3. What factors in addition to sex contribute to observed differences in clench strength?
4. Does there appear to be any difference in tonus between the two forearm clench muscles? Would you expect to see a difference? Does Subject’s gender influence your expectations? Explain.
5. Explain the source of signals detected by the EMG electrodes.
6. Define “motor unit”,“motor unit recruitment”, “skeletal muscle tonus”, “fatigue”, “dynamometry”, “electromyography”terms
7. When holding an object, does the number of motor units remain the same? Are the same motor units used for the duration of holding the object?

**8**. As you fatigue, the force exerted by your muscles decreases. What physiological processes explain the decline in strength?