

Work Those Muscles

Kinesiology Lab Days

Facilitator Instructions

***NOTE:** this document contains the information pertaining to the necessary preparation for this KIN Lab Days workshop and the different delivery methods. Please feel free to adapt it to your class's particular needs.

Purpose

Students will investigate...

- Skeletal muscle anatomy and contraction physiology
- Force production, energy systems and muscle fatigue
- Core exercises and performance

Equipment

- PC or laptop
- A mat or carpet to do planks and core work on
- Stopwatch
- Recording sheets (provided)
- Pens or pencils

Format

There will be three topics discussed and each of the topics will have a similar format:

- Introduction of Concept
- Experiment Instructions
- Expected Results
- Discussion Questions: There are 6 discussion questions in the experiment. The instructor can choose to discuss the concept right after the experiment or use the questions as homework for the students.

Delivery

One PowerPoint presentation will be provided with a script for each slide in the Presenters Notes and the Presenters Notes document to give instructors the ability to present the material to the students.

Setup

This presentation can be done **In-Person** or **Online**.

Activity 1 (A, B, C) – McGill Big 3

- This experiment will require students to perform exercises on the ground, with no additional equipment needed (Mats may make this activity more comfortable).

In-Person: If it is not possible for all students to perform the exercises, students can partner up and take turns performing the exercises if there is not enough space for everyone to try.

Online: The students will have an online class session where they will be instructed to perform the small activity at a specific time in the presentation.

Activity 2- Testing Muscular Endurance

- This activity will require students to perform exercises on the ground, with a stopwatch, pen/pencil and provided Recording Sheet. (Mats may make this activity more comfortable).

In-Person: If it is not possible for all students to perform the exercises, have only a couple of students perform this activity and contribute their answers to represent the entire class. Students can partner up and take turns recording data and performing the planks.

Online: The students will have an online class session where they will be instructed to perform the small activity at a specific time in the presentation.

Resources Provided

Main documents:

- **Facilitator Instructions** – outlines options for how to run the lab depending on your class's preferences and structure (e.g. in-person or online).
- **PowerPoint presentation** – the file you will be presenting or screen-sharing with your students.
- **Presentation notes** – contains all presentation information, experiment instructions, and answers to the discussion questions.
- **Recording sheet** – for students to record their results. In the recording sheet document, there is also a procedure sheet where all experiment instructions are outlined in 2 pages.
- **Excel data collection file** – to be shared as a collaborative file with students during. Or after the presentation; contains tables and graphs that will automatically update as data is inputted.

Additional documents:

- **Blank discussion questions** – provided for if you decide to use the discussion questions as homework for students.

Free Resources & Knowledge

Sliding Filament Theory: https://en.wikipedia.org/wiki/Sliding_filament_theory

Cellular Respiration: https://en.wikipedia.org/wiki/Cellular_respiration

Electromyography (EMG): <https://en.wikipedia.org/wiki/Electromyography>