Wheelchair users heavily rely on their arms for mobility. However, the frequent repetitive motions required to push the chair lead to strain in the muscles and joints in the upper body over time. Long-term wheelchair users typically experience pain and injuries in the shoulders as a result. This research aims to determine whether certain wheelchair propulsion patterns favour certain muscles groups in the shoulder and upper arms.

To gather the data necessary to answer the research question, the experiment requires the participants, experienced wheelchair users, to move across surface using one of four wheelchair patterns, while wearing an electromyograph (EMG) to record the muscle activity around the shoulders and arms. The participant should also be recorded during the session to gather kinetic data such as push frequency and push angle. This data is then used to determine the extent each muscle is used during each stage of the cycle.

If this experiment were to be tested, it is predicted that different muscle groups are favoured in each propulsion pattern, but the push frequency and intensity of the muscle activation in the Arc pattern will be the highest, while the Semicircular motion will garner the lowest frequency. Assuming the hypothesis is true, experienced wheelchair users can be instructed to use a variety of wheelchair propulsion patterns in certain ratios to prevent overuse of certain muscle groups, which can prevent injuries linked to the repetitive motion.

Themes:

Check (highlight) the most applicable theme according to the abstract.

| Innovation and Technology | Health and Wellness | Culture and Society | Sustainability and Conservation |

Comments:

Excellently written abstract and an interesting project to look out for! In the second paragraph, in the sentence “The participant should also be recorded during the session”, are they recorded via the EMG? If so, it may be clearer to write “The EMG will gather kinetic data such as push frequency and push angle during the session”. If another device or method is used, it may be helpful to specify which one.