



**Department of Mechanical Engineering
Northern Arizona University
Flagstaff, AZ 86011**

To: Dr. David Traves, Brandon Begay

From: ExAct(18F26)

Date: 29/03/19

Re: Final Product Testing proof

The testing proof for our exoskeleton will be on analyzing the series elastic actuator and how did it improve on Dr. Lerner design. Furthermore, we will implement our customer needs that we got from the client. These customer needs were translated to engineering requirements, we worked based on them to improve the design. For the testing of this project we will need certain equipment to do the testing. The tools needed for the testing are DC battery, PCP board, treadmill, 6ft cable. The proses of this testing will have several phases.

Testing Phases:

1. The first phase, we will see if the mechanism of the device is moving. For example, Mechanism of the pulley and the leg bar and the strength of the spring.
2. we will attach the DC battery and the PCP board and see if the motor and the gear box are functioning properly.
3. Third phase, one of us will wear it and test it while walking to see if the spring will have enough stiffness to hold both the weight of the patient and the toque from the pulley.
4. . The fourth phase will be measuring the Torque. On this phase Dr. Lerner will provide us with a certain program to measure the Torque from the Torque sensor to see if it will have the readings which we calculated from our analytical report. 0-21Nm out of pulley and 0-7Nm out of motor

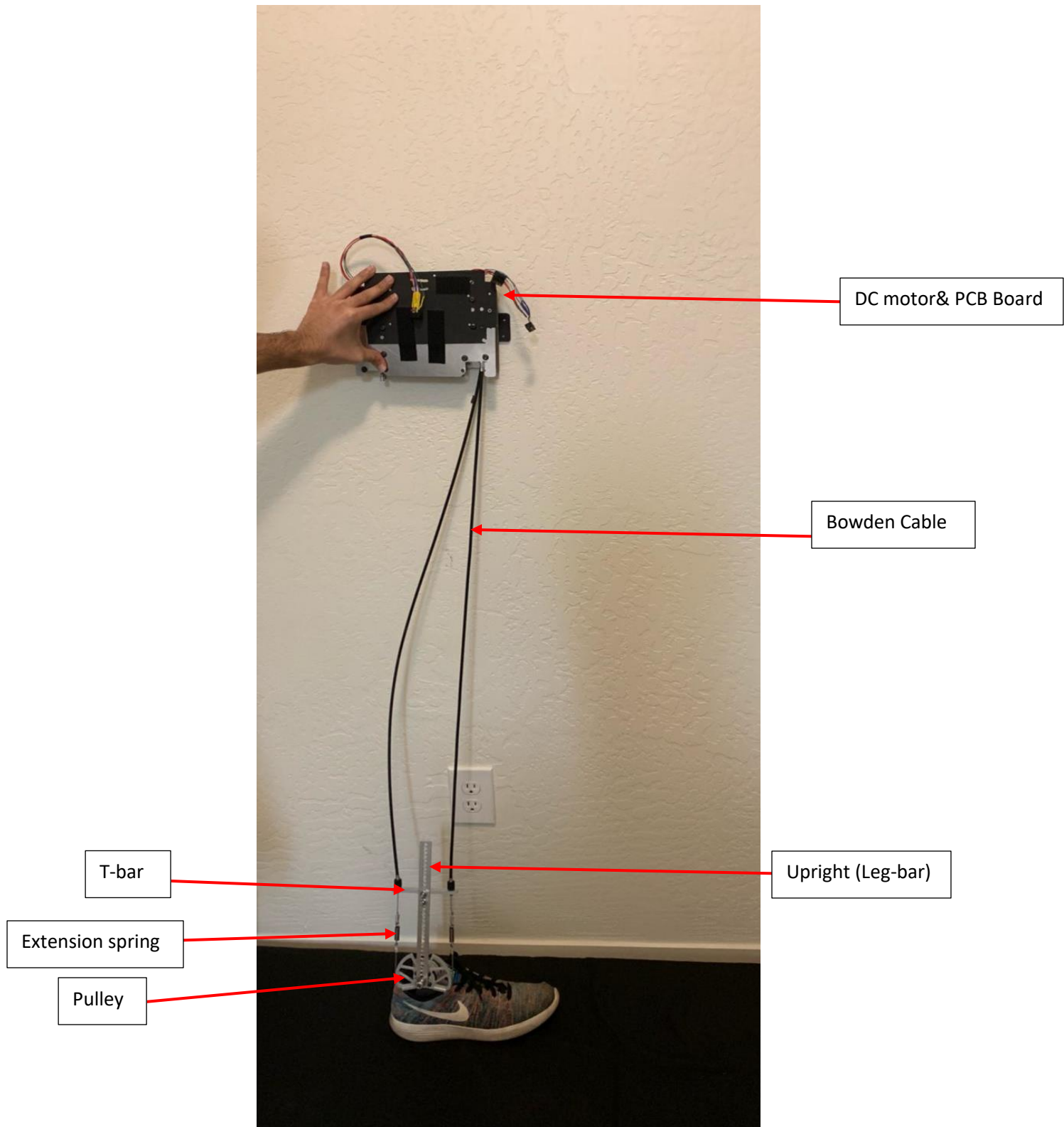


Figure1: Exoskeleton