Proprioceptive Treadmill with Sensors for Dogs

Kortz, Isadora (School: Fundacao Escola Tecnica Liberato Salzano Vieira da Cunha)
Farias, Eduarda (School: Fundacao Escola Tecnica Liberato Salzano Vieira da Cunha)

This project consists on the development of a running machine that increases the sensitivity of dog paws who have lost its legs movements as a consequence of Intervertebral Disc Herniation. The beginning of this project was a research with veterinarians who work on physiotherapy field in order to identify the main problems that these professionals face in treatments. When the idea was defined, bibliographic research was initiated concerning possibilities of treatments to the recuperation from an Intervertebral Disc Herniation. Then the choice of the proprioceptive materials, the synthetic grass and coin carpet was done, thus starting the construction of the physical treadmill structure. Incoming to security, a base made of PVC was added to resistors that depend on light, the LDRs, and to a theraband that will sustain and support dogs that cannot stand on all four paws themselves. Two in three of the LDR's have the purpose of controlling the speed, while the third one has the emergency function that will paralyze the treadmill and trigger a buzzer when the treadmill is working. The photoelectric resistors are activated when the lux beam produced by a diodo laser is interrupted, signaling the animal's presence. A 24V truck windshield engine is used to operate, while to control its speed, a Driver PWM and a programing for Arduino Uno were used. There were several electronic tests that presented very satisfactory responses upon the desired behavior of the circuit and final programing. These results provide an indication that the project is economically viable in comparison to the common treadmills for dogs available in the market. The results about proprioception and its efficiency have been proven in books and research papers by veterinarians.

Awards Won: