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Robotic equipment in upper limb amputations

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Human hand is a very important member in our daily life, it is necessary in any activity. However, the loss of all or part of the arm, as a result of trauma, accident or other cause is a catastrophic event for a patient and a significant challenge to rehabilitation professionals and prosthetic engineers. Upper limb amputation have a detrimental effect on the individual's personal, social, psychological and economic life. The amputated patient is deprived of his hand, and as a result deprived of a large part of his life. We designed and created a robotic device, which served to the patients, who lost upper limb, to have a bionic hand under the vocal or myo-electrical command, and which can reproduce the movements elementals of a biological hand. During the design and manufacture of the equipment, we tried to respect the biomechanical rules of the physiological principle. First, we designed the equipment in a 3D modeling software, and used 3D printing convert all virtual file into a real object. All the printed parts are brought together to form all the equipment. Also, we

installed servo-motors and connect them to a programmable chipset to ensure the movement of wrist and fingers. The device can be connected to the patient and he use vocal or myoelectrical command to move all the elements of this bionic hand. We are also developing a neurological component so the patient can use his brain to command the hand. Patients with upper limb amputation can recovers their basics hand's functions with this equipment and this after rehabilitation. It is reasonable, however, to state that in the majority of cases the provision of a prosthesis can make a valued addition to the life of the patient and should at least be attempted. Evidence exists that attempting prosthetic rehabilitation immediately after amputation increases the chances of long-term success, whereas a 'wait and try later' approach makes successful rehabilitation less likely. Amputation is a big problem; this bionic hand is an ultimate solution for amputated patients and allow them to recover their hand's functions.

Biography

O Fadili, is a Doctor, inventor and young researcher in University Hassan 2 of Casablanca, Morocco. He published several papers in medical and robotic field. He received many awards and rewards at his young age. He was nominated as the Young Researcher of 2018 by winning the award of The International Conference of Orthopedics and Advanced Cares in Dubai at the Young Researcher Forum 2018. He did several internship and externship and established a remarkable bench mark on prosthetic field by designing and modeling bionic hands and prosthetic arms. His field of interest includes medical research, orthopedics and rehabilitation.

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