Conclusion and Recommendation

5.1 Conclusions

The designed microcontroller based wireless FES device has been successfully applied and tested on protuse simulation and give the desired value of electrical pulse . The wireless FES device has been solved the cable complexity and foot sensors wire discomfort with the design of wireless system.

The stimulator power consumption is very low because of the special design. While the patient is waiting in the stand case, and also raising the patients foot while setting or off shoe without closure device the processor shuts off system and system enters the low current sleep mode with practically no current consumption also . As soon as an activity has been detected, the FES automatically wakes up and stimulation starts again with detection of the foot-rise, thus reducing patient interaction. The cost of the overall system is very low. Because of during the designing process the standard microcontroller development systems and electric equipment's also standard wireless components were used which are easily found in the market.

Although the designed FES working satisfactorily, during the future developments simulator will provide more effective results. New technological FES designs are all based on microcontrollers where the technology evolves the size is getting smaller than before every time. Also these developments can lead cost reductions in the future .

5.2 Recommendation

Although the designed FES working satisfactorily, during the future developments simulator will provide more effective results. New technological FES designs are all based on microcontrollers where the technology evolves the size is getting smaller than before every time. Also these developments can lead cost reductions in the future. Today's designs are based on the current technology, by using different type of intelligent sensors with wireless communication systems between different parts of the device, such as using tilt, gyroscopes or accelerometers with RF and Bluetooth communication systems.

In European countries implanted stimulators one of the new development in recent years. In implantable applications electrodes are surgically implanted to the leg therefore patients no need to find the right place as surface electrodes. Electrodes are fixed to the nerve and skin is not stimulated so that less skin and sensation problems occurs . Always the risk of infection is an important problem in implanted designs. In the future expected that new biocompatible materials, will overcome these challenges.

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