ElGo – Electronic Goalkeeper: Making Football More Inclusive to People with Motor Impairments

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Objective Game is an essential aspect of a child’s life and is a necessary activity for the creation of a gratifying and pleasant relationship towards life and the surrounding world. In general, playing with friends is an important activity at any age. Among games, an important role is played by sports practiced for recreational purpose, e.g. football, basketball, rugby, but for people with disabilities, a direct participation is often too difficult or impossible. Assistive technology has allowed or made more accessible participation to some games to users with disabilities; for example, videogames, but the gap is still very important for real sports. The idea at the base of ElGo is that a person with disabilities, in particular a child or a teenager, can live the game of football thanks to the possibility of controlling an electro-mechanic device having the role of a goalkeeper in a football match.

Main Content ElGo is composed by a dummy constrained to horizontal linear guide, placed near the goal line, and remotely controlled by the user standing in proximity of the field. The dummy is moved by an electrical motor operated by a motor control device and powered by rechargeable batteries, so that ElGo can be used also where no mains power system is available. The system is controlled by an electronic device, which also manages the user interface. ElGo can be operated in three modes: with only two switches (one for dummy right movement and one for left movement), with four switches (two speed grades for both directions) and with an analogue interface such as a linear potentiometer or proportional joystick.

Results The presented device is currently developed as a prototype at the University of Pisa by a team composed of Professors, Graduates and Students of Electronic and Mechanical Engineering. The electronic subsystem has been almost completely realized, mechanical elements have been almost completely designed and the relevant procurement phase has started.

Conclusion ElGo expands the boundary of game for disabled people towards new experiences together with able-bodied persons; in this way people with disabilities will be able to participate to a very popular game such as football, not only using a videogame console but in a more physical and active way.

Keywords Game, Football, Goalkeeper, Disabled Persons, Disability, Impairments, Participation, Outdoor, Mobility Impairments.

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