Analysis Influence Internal Factors on Fuzzy Type 2 Performance of Swing Phase Gait Restoration

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ABSTRACT
We know from [1] that Fuzzy Type 2 controller can solve stability criterion problem better than Ordinary Fuzzy or we called on this paper with Fuzzy Type 1. On [1] shows an experiment results graphics that Fuzzy Type 2 more stable than Fuzzy Type 1. From [2], the experiment results show that Fuzzy controller can be a good controller than PID controller, but it still shows there is an oscillation effect. In [2] conclusion that Fuzzy controller to be an effective to implement the cycle-to-cycle method on human gait control. We do some experiment with several normal subjects to analyze performance Fuzzy Type 2 control implement on Functional Electrical Stimulation for swing phase gait restoration. In this paper, we describe that Fuzzy Type 2 can control swing phase gait restoration with minimum oscillation than Fuzzy Type 1 on [2] experiment. We also describe that there are an internal factors which can disturb control action. They are a muscle fatigue and muscle force potential. We can analyze which one on experiments that an internal factor appears and make Fuzzy Type 2 must be changed their value.

Keywords
Fuzzy Type 2, Swing Phase Gait Restoration, FES, Cycle-to-Cycle, Muscle Fatigue, Muscle Force Potential.