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기타소속:

강연제목: 신경계 손상 후 증상의 정량적 평가를 토대로 재활기술 탐구하기

(Exploring rehabilitation technology based on quantitative evaluation of neurological impairments)

Abstract: Motor impairments after neurological damages such as stroke limit quality of daily life. Attempts to introduce advancing engineering technologies into rehabilitation medicine are being made actively. Nevertheless, many practices in rehabilitation clinics including patient evaluation, and training for novice clinicians are still conducted qualitatively. The initial step for objective, and quantitative rehabilitation practice is quantitative measurement of the motor impairments caused by the neurological damages. This presentation introduces two research which I conducted for different motor impairments. First, I constructed a database for machine learning by quantitatively measuring spastic response of the elbow flexor muscles of people with brain injuries. Based on machine learning, I inferred connection between the human-rated spasticity grade, and parameters extracted from the quantitative data. This study revealed which characteristics of spasticity are mainly considered for decision of each grade of spasticity. Second, I developed an intermuscular coordination-based training for improving abnormal motor control in stroke-affected upper limbs. From muscle synergy analysis, which is a quantitative form of intermuscular coordination, I guessed that a stroke affects activation profiles of muscle synergies rather than synergy vectors. From this finding, a training to modify the abnormal synergy activation profiles was suggested as an alternative strategy of upper limb rehabilitation after stroke.

Brief Biosketch

Dr. Park received his B.S. from KAIST majored in both mechanical engineering and industrial design in 2014. He got his M.S., and Ph.D. from KAIST majored in mechanical engineering in 2016, and 2022, respectively. He participated in several translational research on technologies for upper limb rehabilitation. Specifically, he investigated quantitative evaluation of abnormal motor control after neurological impairment as well as technologies for novel therapies. Currently, he joins SYM Healthcare Inc., a musculoskeletal healthcare startup to develop a data-based service for musculoskeletal health.