Abstract

Exoskeletons in the Digital Era: A Way to Improve the Level of Physical Activity Among Older Citizens

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Abstract

Background: The COVID-19 pandemic has had a negative impact on the level of physical activity among older citizens.

Objective: The aim of this short paper is to set focus on the potential benefits of assistive walking devices for older citizens.

Methods: In this feasibility study, 24 older citizens aged >65 years participated in the study. The participants answered to the following questionnaires after fulfilling a consent form: Tilburg Frailty Indicator, International Physical Activity Questionnaire, and Quality of Life. Then, physiological and biomechanical assessments were made in a laboratory setting with and without wearing an exoskeleton (aLQ, IMASEN Electrical Industrial Co). The aLQ is a passive-assistive lower-limb walking exoskeleton activated by a cam spring system designed to improve gait. After the tests, the participants were asked to answer the following questions: “Do you feel the exoskeleton is helping you to walk?” and “What is your opinion on the device?”.

Results: The participants were community-dwelling older individuals, aged 72.6 (SD 4.5) years, and were characterized by an overall high level of physical activity of 3069 (SD 2847) metabolic equivalent–minutes per week. Their Tilburg Frailty Indicator indicated an overall frailty score of 3.5 (SD 2.5). The participants reported a Quality of Life score of 6.7 (SD 1.6) and an overall health score of 76.4 (SD 17.1). Moreover, of the 24 participants, 7 (29%) reported that carrying the tested exoskeleton did not induce any noticeable changes, and 3 (10%) reported that they walked better with the device than without.

Conclusions: These findings are of importance in our current digital era where the COVID-19 pandemic forced municipalities and hospitals to cancel or postpone the training and rehabilitation of older citizens, resulting in a degradation of the level of physical activity and health in general. The use of assistive walking devices can be a way to improve or maintain their level of physical activity. Future studies using a prospective design should confirm that.

Conflicts of Interest: None declared.

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KEYWORDS

gait; ageing; walking aid

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