

OPP: WORK, LEISURE, & SOCIAL PARTICIPATION

Re-acquisition of leisure activities by motorized braiding machine for the physically challenged and its effects

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Purpose The purpose of this study was to provide new assistive devices to those who find leisure activities fulfilling but have been forced to discontinue them due to physical disability, to help them regain their zest for life. Leisure activities are important for the fulfillment of life in the elderly and have been shown in Japan to be associated with the onset of dementia (Yamashita, et al., 2001; Harada, et al., 2011; Ling, et al., 2020). In this study, a new motorized assistive device was made for a person who had difficulty making braids with the assistive device due to neck pain, in collaboration with the person herself, the rehabilitation staff, and the manufacturer. A survey was conducted before the provision of the device and during the improvement process to inquire about satisfaction with leisure activities and the fulfillment of life, and it was confirmed that the device was developed to enable the patient to resume making braiders satisfactorily. **Method (1). Subject** A woman in her 50s residing in a support facility for people with disabilities who can only move voluntarily from the neck up due to cerebral palsy. She can speak and communicate with people outside the facility via e-mail with the assistance of facility staff. In 2014, at the suggestion of her occupational therapist, she began using an assistive device that allows her to make braided cords using a mouse stick instead of her hands. With the support of the facility's staff, she had been making a lot of misangas and key chains, giving them as gifts to friends and selling them at the facility's festivals, but in 2020 she had to stop due to neck pain and wanted to resume the process. **(2). Composition and fabrication method of motorized braiders** The turntable rotation and yarn raising and lowering, which used to be operated by the neck, are now motorized using a microcomputer and a small motor. To keep the production method as unchanged as possible, three switches are operated by pressing them separately. The direction and amount of rotation of the thread is controlled by pressing the left and right switches to turn the cylinder, and the center switch is used to scoop up and lower the thread. The facility staff's assistance was the same as before in preparing the yarn, cleaning up, and finishing the work, with the addition of placing the controller and preparing the power source due to the motorized system. Figure 1 shows the use of the machine. **(3). Survey of the subject's quality of life** The subject entered the data into Google Forms from a smartphone with the assistance of facility staff immediately before the provision of the first prototype, after the trial, and thereafter after each trial of the improved prototype. The questions consisted of 3 items (Harada, et al., 2011) related to satisfaction with leisure activities and 11 items (Imai, et al., 2012) related to the subject's sense of purpose in life on a daily basis. **Results and Discussion** The questions whose responses did not change over the period showed that the subjects felt motivated by leisure time activities and had a personality trend of high positivity. On the other hand, the answers to the questions about satisfaction with leisure activities and emotional comfort changed as the improvement progressed. Satisfaction with leisure time activities was low before the improvement of the braid machine due to a "lack of physical strength (neck pain)," but improved rapidly after the improved braid machine became available. However, it dropped due to the activity limitation caused by the outbreak of covid-19 and then recovered after the completion of the controller for friends, which made it easier for them to make braids. Meanwhile, the main unit was shared with friends, which made it necessary to adjust the schedule, and the words "I feel uneasy with the staff" appeared, although the level of satisfaction was high.

References

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Figure 1. Motorized braiding machine in use