

Various Approaches to Rehabilitation Science

Susumu Ito

High-Tech Research Centre, Kokushikan University, Tokyo, 154-0017, Japan

Background

Rehabilitation is a field of medical procedures used to facilitate the rapid recovery of a disabled physical state or at least prevent the worsening of the state by means of active or passive physical activity. Rehabilitation is a main method of tertiary prevention of health problems because it is initiated after the occurrence of a physical problem rather than before (primary prevention) or during occurrence (secondary prevention). The most typical and well-known rehabilitation is post-stroke rehabilitation. Early intervention can prevent prolonged bed rest, improve the ability of daily living (ADL) and extend life expectancy. Furthermore, there is sufficient evidence to indicate that this approach is effective in both improving the quality of life (QOL) and prolonging life expectancy. Advances in medicine and the social welfare system have changed lifestyles, and people now want a more comfortable life with a prolonged life expectancy. Consequently, the role of rehabilitation is inevitably being extended to not only treating severely deteriorated health conditions but also treating more minor (i.e. not life threatening) health problems such as metabolic syndrome and senility. This is because the promotion of ADL and QOL, which is the purpose of rehabilitation, is not only valuable for a comfortable happy life but is also quite important for extending life expectancy.

In this special issue, articles that are rather atypical of rehabilitation research were gathered to present various approaches to rehabilitation science.

Dry mouth is a common problem in the elderly. Although this is not directly life threatening, it does represent a nuisance and lowers QOL, particularly for people who do not have sufficient ADL to freely wet their own mouth. Ono and Uchiyama [1] reported a trial study of salivary gland massage, which was simplified such that it could be practical for helpers to perform them for the residents of nursing homes. Their report suggested that this simple massage is comfortable for patients and is significantly effective for increasing salivary secretion.

Surgery is a good method for improving QOL of patients with chronic orthopaedic problems. However, it is at least psychologically quite a burden to choose a surgical solution and avoid or at least postpone it. Jigami et al. [2] showed that rehabilitation is both effective for improving subjective QOL, as measured using a rating scale (SF-36v2), and for postponing the surgery.

Although the concept of evidence-based medicine is regarded as the most important basis of practical medicine and rehabilitation science also needs to be based on specific evidence, the search for the best solution by comparing randomly selected procedures and their results using statistical methods sometimes results in false and biased conclusions. Therefore, the importance of basic research, which seeks to investigate the mechanisms underlying rehabilitation procedures, must be emphasized. Two such studies are included in this issue, one focusing on humans as the subjects and the other on rats.

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Walking is one of the most important activities of humans, and maintaining a walking ability until the end of life ensures high ADL and QOL. However, bipedal walking is actually a much more difficult task than pedaling a bicycle or driving an automobile; furthermore, the neuromuscular control while walking is not yet perfectly understood. Kamimura et al. [3] studied the neural control mechanism underlying walking by comparing the coherency of EMGs and walking performance during a single walking task and a dual task. They showed that the walking performance decreased during the dual task, whereas the coherency of EMGs showed no significant change compared with that previously reported for the elderly, in whom both the coherence and performance were decreased.

Muscle weakness is a symptom of diabetes mellitus and impedes ADL and QOL of afflicted patients. Tamaki et al. [4] used an animal model of type II diabetes and showed that exercise was effective for preventing muscle weakening in rats with type II DM and suggested possible mechanisms that can be applicable to human patients.

Cardiopulmonary arrest is one of the most life-threatening incidents, and its successful social rehabilitation ration is relatively low. Successful rehabilitation depends on the initial situation. One simple difference in terms of situation is whether the incident occurred during the daytime or nighttime. Sato et al. [5] investigated the timing of the occurrence of cardiogenic emergency and the rate of successful social rehabilitation using the All-Japan Utstein Registry, which includes all patients treated by the official ambulance service. They showed that cardiopulmonary arrest occurring during the night had a worse social rehabilitation ratio than that occurring during the daytime and suggested that initial hospital care is important for preventing neurological damage, which can cause poor social rehabilitation. They also suggested that the differences between the available pre-hospital and hospital primary care during the daytime and nighttime may affect successful rehabilitation.

Competing Interests

The author declares that no competing interest exists.

Corresponding Author: Prof. Susumu Ito, High-Tech Research Centre, Kokushikan University, Tokyo, Japan; E-mail: itossm@kokushikan.ac.jp

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References

1. Ono K, Uchiyama K (2017) Evaluation of a new salivary gland massage with oil for elderly nursing home residents. Int J Phys Ther Rehab 3: 129.
2. Jigami H, Sato N, Ito S, Wada T, Komatsu T, et al. (2017) A Longitudinal Study on the Quality of Life of Patients with Hip Osteoarthritis Undergoing Continuing Conservative Treatment. Int J Phys Ther Rehab 2: 120.
3. Kamimura T, Muramatsu K, Komagata J (2017) Participation of Activation of Corticospinal Tract during Dual Task Walking by EMG Coherence Analysis in Healthy Adults. Int J Phys Ther Rehab 2: 119.
4. Tamaki T, Ikutomo M, Arakawa S, Komagata J, Niwa M, Muramatsu K (2017) Exercise Training Prevent Decrease of Muscle Strength in Otsuka Long-Evans Tokushima Fatty Rats: A Preliminary Study. Int J Phys Ther Rehab 2: 121.
5. Sato Y, Izumi Kuboyama I, Takyu H (2017) Time Slot of Out-of-hospital Cardiac Arrest and Social Rehabilitation Rate. Int J Phys Ther Rehabil 3: 132.

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Prof. Susumu Ito
School of Emergency Medical Systems
Kokushikan University
Japan