

Vestibular Rehabilitation: Intelligent or Traditional?

Sir,

Vestibular rehabilitation is a special non-drug therapy. The main goal is to reduce the risk of falls, improve balance and enhance the quality of life (QOL) of patients through the individualised training process. With the development of modern science and technology, new technologies of intelligent rehabilitation are emerging. However, in our clinical practice, not everyone is adapted to the advances in technology, especially elderly patients, where traditional means of rehabilitation bring more face-to-face communication and interaction.

In the 1940s, Cawthorne and Cooksey established vestibular rehabilitation training, a set of exercise techniques designed primarily to address patients' balance disorders and dizziness. Through the functional compensation of the centre and the vestibular system, the stronger information functions of vision, proprioception, and vestibular awareness are integrated to improve the patient's dizziness symptoms and chronic balance function, improve the patient's QOL, and reduce the chances of falling.¹ A study by Thompson *et al.* showed that after the conventional vestibular rehabilitation therapy of balance training, visual stimulation and head body stimulation in 26 patients, the training for head-body movement stimulation was significantly effective, and more than half of the patients were clinically effective.²

The advancement of artificial intelligence (AI) has accelerated the development of virtual reality (VR) technology. VR employs the use of a computer to transform the external sensory world into an artificial reality. The environment will be modified based on individual and bodily motions.³ During a certain time, the patient will move according to the prompts of the voice or rehabilitation division to make the tasks set by different training scenarios to get the corresponding training scores after completing the instruction.

Intelligent rehabilitation can share big data of patients' vestibular rehabilitation assessment and training, as well as real-time remote diagnosis and treatment of patients' medical histories, and whole-process cloud health management. Furthermore, based on biofeedback data, rehabilitation training techniques and programs are adjusted and implemented through the development of balance and gait assessment models and fall risk prediction models.

Thus, more consideration should be given to the existing approach to intelligent rehabilitation. Intelligent rehabilitation means carry out periodic training, which is to provide a good treatment plan, but how to establish the treatment plan, which

treatment plan is the most appropriate, and individual differences, also need consideration. Although the indications can be quantified, their dependability and correctness cannot be validated. As stated previously, rehabilitation machines are primarily mechanical gadgets that lack communication and cannot substitute human interaction, particularly emotional communication among the elderly. The most fundamental issue is that intelligent rehabilitation is an engineering means, with quantifiable technical characteristics and indicators,^{4,5} whereas traditional vestibular rehabilitation is more significant for personal sensations and experiences, which cannot be measured by indicators. As many studies still have limitations,⁶ it may not be appropriate for the current vestibular rehabilitation to completely transform from traditional to intelligent rehabilitation.

COMPETING INTEREST:

The authors declared no conflict of interest.

AUTHORS' CONTRIBUTION:

DZ: Substantial contributions to the design of the work, drafting, and revising of the manuscript.

HF: Drafting and revising of the manuscript.

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