Application of Kinect Virtual Reality (VR) technology in Baduanjin training for COPD patients

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Introduction
"Baduanjin" is one of the Health Qigong revised by State General Administration of Sport of China in 2003 to promote health nourishment and disease prevention through integrating and harmonizing one's mind, breath, posture, and movement. Occupational therapist has incorporate Baduanjin as one of the treatment modality for COPD patients.   However, teaching the movements of Baduanjin requires constant feedback and practice which is a time consuming process. On the other hand, learning Baduanjin through conventional video is a dreary experience for patient without feedback on the performance.   A newly designed Kinect VR program was developed in OT department of SH in 2014.   The program integrated Baduanjin movement steps with 3D VR motion sensor.   The sensor captured the movement accuracy of patient and compare with the displayed demonstration video model.   It provides real time animated visual feedback on the body movement of the patient and it generates an overall score reviewing the accuracy in their performance.

Objectives
To evaluate the effectiveness of the learning of Baduanjin in COPD patients through the use of Kinect VR technology.

Methodology
Fifty COPD patients received training of Baduanjin with the Kinect VR program. Questionnaire with 5-point Likert scale was designed to measure the effectiveness of the program for learning Baduanjin in five aspects: i) user-friendliness of the program; ii) increasing interest in learning Baduanjin; iii) usefulness of VR feedback in facilitating learning; iv) fun learning experience; v) likelihood of practicing Baduanjin at home.

Result
Results from the questionnaires have shown that all the participants "Agreed" or "Strongly agreed" that the VR program is user-friendly and provides fun learning

experience in learning Baduanjin.   Over 86% of the patients "Agreed" or "Strongly agreed" that the real-time visual feedback of their performance helps them to correct their posture in practicing Baduanjin.   Seventy-four percent of the patients "Agreed" or "Strongly agreed" that the program increased their interest in learning Baduanjin.   And, half of the patients expressed that they would continue practice Baduanjin at home.   To conclude, the application of the newly designed Kinect VR program is an effective training modality for COPD patient in learning Baduanjin.