EFFECTS OF VIDEO-BASED HOME EXERCISE ON CLINICAL AND RADIOGRAPHIC OUTCOMES IN ADULTS WITH KNEE OSTEOARTHRITIS: A ONE-YEAR RANDOMIZED CONTROLLED TRIAL

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Purpose: Previous systematic reviews conclude that exercise therapy has beneficial effects on pain and physical function of the population with osteoarthritis (OA) of the knee. However, its positive post-treatment effects on pain and physical function decline over time. Exercise adherence has been shown to be an important predictor of long-term outcome in exercise therapy. Video media can be an effective means of delivering exercise instruction. Therefore, use of a home exercise video could enhance adherence to prescribed exercise program. No published research to date has investigated the effectiveness of a home exercise video for patients with knee OA compared with conventional home exercise without video media. Then we have hypothesized that video-based home exercise could enhance adherence to prescribed exercise program and produce substantial improvements in pain, physical function and quality of life in patients with knee OA and also prevent radiographic progression of knee OA compared with conventional home exercise without video media. The purpose of the present study was to test this hypothesis by a one-year randomized controlled trial.

Methods: One hundred and seven subjects who fitted the following criteria were randomized to a DVD-based exercise (DVD) group or a control group by a computer-generated random number. Entry criteria were defined as knee pain, age over 50 years old, and radiographic evidence of OA (Kellgren-Lawrence Grade 2, 3, or 4). Subjects in the DVD group received a DVD-based program encompassing muscle stretching, active ROM exercises, and five forms of muscle strengthening and use it during home exercise. Subjects in the control group initially received detailed verbal and hands-on instruction in a home-based program of a quadriceps exercise program. Subjects in both groups were evaluated after 3, 6, and 12 months and compared with the baseline scores. Measured outcomes were self-reported exercise adherence collected from diaries, knee pain with theVAS, the WOMAC, SF-8, the BMI and radiographic OA parameters (i.e. medial minimum joint space width, medial joint space area, medial osteophyte area, and femorotibial angle (FTA)) using the knee osteoarthritis computer-aided diagnosis (KOACAD) measuring system.

Results: Concerning exercise adherence, subjects in the DVD group performed the prescribed exercise 5.3, 5.0 and 3.8 times in a week at 3, 6 and 12 months, while those in the control group performed the prescribed exercise 3.9, 3.7 and 4.1 times, respectively. The numbers of exercise times in the DVD group were significantly higher than those in the control group at 3 and 6 months, although there was no significant difference between groups at 12 months. The reduction in walking pain was significantly greater in the DVD group than in the control group at 3, 6 and 12 months. The improvements in all categories of WOMAC and physical component summary of SF-8 were significantly greater in the DVD group than in the control group at 3, 6, and 12 months. There were no significant differences in the SF-8 mental component summary or BMI between two groups at 3, 6, or 12 months. Regarding radiographic OA progression of the knee, the DVD group showed significant increase in FTA at 12 months compared with the baseline values, while we could not find significant progression in the medial minimum joint space width, medial joint space area, or medial osteophyte area. There were no significant differences between two groups in the changes of any radiographic parameters at 3, 6, or 12 months from the baseline values.

Conclusions: The present one-year randomized controlled trial showed that video-based home exercise can enhance adherence to prescribed exercise program for 6 months and can produce substantial improvements in pain, physical function and quality of life in patients with knee OA at one year. However, this video-based home exercise cannot prevent radiographic progression of the knee OA.