Results: In the baseline, no significant differences in pain, joint stiffness and physical function were found between the two study groups. Although, after the intervention the ExG showed better results than the CG for pain (CG 8.7 ± 3.2; ExG 6.3 ± 3.2; p = 0.003), joint stiffness (CG 4.6 ± 1.5; ExG 3.2 ± 1.5; p < 0.001) physical function (CG 36.2 ± 11; ExG 26.5 ± 12.5; p = 0.001) and WOMAC Index (CG 49.5 ± 14.7; ExG 36 ± 16.7; p = 0.001). Significant improvements in pain (25.6%, p = 0.001), joint stiffness (26.9%, p = 0.001) physical function (21.4%, p = 0.001) and WOMAC Index (22.6%, p = 0.001) were observed after 8 weeks of exercise program. Within CG, differences from the baseline to the post-intervention assessment were also found. Comparisons between the home-based (21.3 ± 9.2) and nursing-based (30.7 ± 13.4) exercise groups showed only significant difference in physical function (p = 0.027).

Conclusions: An 8 weeks exercise program performed even in unsupervised environments (home based) individually or in group, showed to have superior improvements in pain, joint stiffness and physical function, and might be a good alternative to organized exercise, especially for patients with impaired physical function and restricted mobility. Nevertheless, poorer physical function was found in the nursing-based subjects that probably is associated to restricted capacity to exercise.

041 RECENT KNEE JOINT BUCKLING IS NOT ASSOCIATED WITH CO-ACTIVATION OF THE HAMSTRINGS DURING ISOKINETIC QUADRICEPS ACTIVATION

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Purpose: Co-activation of the hamstrings during quadriceps contraction is necessary to counteract the anterior pull of the quadriceps on the tibia through assisting the anterior cruciate ligament. However, older adults with knee OA, particularly those with a sense of instability, have demonstrated higher levels of co-activation than persons without OA. Knee joint buckling is a functionally significant impairment that can limit mobility and restrict participation in activities. It is possible that co-activation of the hamstrings during quadriceps activation could brace the joint, leading to less buckling or co-activation could be an ineffective compensation that occurs in people with more frequent buckling episodes. We hypothesized that in adults age 55-84 with or at high risk for knee OA, hamstrings coactivation during an isokinetic quadriceps task would be higher in those who report knee joint buckling in the prior 3 months.

Methods: Participants in the MOST study completed surface electromyography of the medial and lateral hamstrings muscles during maximal isokinetic quadriceps strength testing. Mean muscle activity during each repetition was standardized by maximum agonist activation levels (% maximum). Co-activation was assessed as the median hamstring activity (% maximum) during knee extension (antagonist activity) for each muscle individually and combined, correcting for baseline error. Kellgren-Lawrence (KL) grade was determined from fixed flexion knee radiographs, alignment from full-length radiographs, and age, history of knee surgery or injury and WOMAC knee pain score from questionnaires. After confirming linearity, we used generalized estimating equations to calculate the associations between antagonists hamstring co-activation and report of knee joint buckling (ipsilaterally and in either limb), while treating participant as a repeated factor for those who contributed more than 1 limb.

Results: In 480 participants (524 limbs, 67.9% women) 65.8% had a KL grade of less than 2. The mean±SD age, BMI, peak isokinetic knee extensor and flexor strength were 61.6±7.8 years, 29.8±5.8 kg/m², 85.0±32.5 Nm, and 57.5±20.9 Nm, respectively. Knee joint buckling was reported in the past 3 months by 14% of participants. The sample mean±SD for participants’ median percent co-activation of the hamstrings when acting as an antagonist are presented in Table 1. In unadjusted analyses, hamstring antagonist co-activation levels did not differ by report of knee joint buckling. Adjusting for age, KL grade, alignment, history of knee surgery or injury and WOMAC knee pain score confirmed no significant association between co-activation level and either ipsilateral or any knee joint buckling in the prior 3 months.

Table 1

<table>
<thead>
<tr>
<th>With Ipsilateral Buckling (N=45)</th>
<th>Without Ipsilateral Buckling (N=474)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medial Hamstrings</td>
<td>7.3±4.7</td>
<td>9.2±6.8</td>
</tr>
<tr>
<td>Lateral Hamstrings</td>
<td>19.5±10.6</td>
<td>17.4±10.6</td>
</tr>
<tr>
<td>Combined Hamstrings</td>
<td>13.4±5.9</td>
<td>13.3±7.5</td>
</tr>
</tbody>
</table>

Conclusions: In data collected to date, co-activation level of the hamstring muscles during isokinetic quadriceps activation does not differ between older adults in the MOST cohort with and without report of knee joint buckling in the prior 3 months.

042 EFFECTIVENESS OF VIDEO-BASED HOME EXERCISE FOR OSTEOARTHRITIS OF THE KNEE: A RANDOMIZED CONTROLLED TRIAL

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Purpose: Several 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 declined 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. The purpose of this study was to investigate the effects of video-based home exercise on pain, physical function and quality of life. In patients with knee OA in comparison with those of conventional quadriceps exercise.

Methods: One hundred seven subjects, aged 50 years or older with knee pain and radiographic evidence of OA (Kellgren-Lawrence Grade 2, 3, or 4) were randomized to a video-based exercise group or a control group. Subjects in the video-based exercise group received a digital video disk-based program encompassing eight types of muscle stretching, active ROM exercises, and muscle strengthening. Initially, they watched the video alongside a physiotherapist. They were then given a 30-min exercise video to take home and use it during home exercise, reinforced at a clinic visit 4 weeks later. Subjects in the control group received detailed verbal and hands-on instruction in a home-based program of a conventional quadriceps exercise program initially, reinforced at a clinic visit 4 weeks later. Subjects in both groups were evaluated after 3 and 6 months and compared with the baseline scores. Measured outcomes were self-reported exercise adherence collected from diaries, the Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC), 8-Item Short-Form Health Survey (SF-8), pain during walking with the visual analog scale (VAS), and the body mass index (BMI).

Results: Concerning exercise adherence, subjects in the video-based exercise group performed the prescribed exercise 5.3 times (SD 1.9) and 5.0 times (SD 2.0) in a week at 3 and 6 months, while those in the control group performed the prescribed exercise 3.9 times (SD 2.1) and 3.7 times (SD 2.4), respectively. The numbers of times in the video-based exercise group were significantly higher than those in the control group (3 months: p<0.008, 6 months: p<0.007). The video-based exercise group showed significant improvements in WOMAC, SF-8 physical component summary, and VAS scores at 3 months; improvements were still evident at 6 months.