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STANDARDIZED RESCUE TRAINING AS PART OF AN EXERCISE PROGRAM FOR KNEE OSTEOARTHRITIS: PROOF OF CONCEPT

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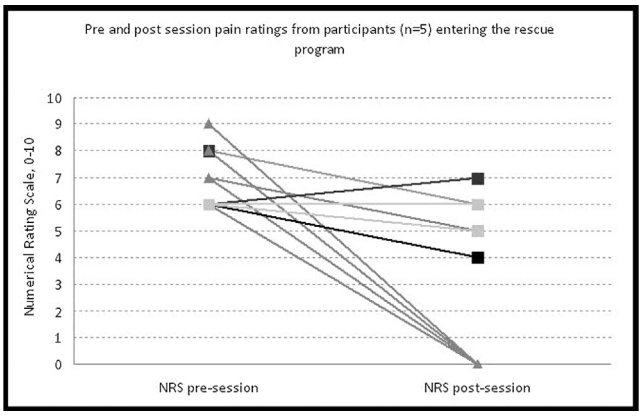
Purpose: Exercise is recommended as one of the primary treatments for patients with knee Osteoarthritis (OA) with known effects on knee pain, mobility, and function. Knee OA pain fluctuates and therefore previously published exercise programs suggest avoiding exercises if excessive knee pain is present. However, applying an exercise program that includes a standardized rescue program would allow the patients to attend an exercise session despite excess pain, and such approach could reduce the current pain intensity because general pain reduction is a known effect of exercise. Although there is a wealth of studies investigating the effectiveness of exercise in patients with knee OA, no such standardised rescue program has been described previously. The aim of this study was to asses if participants referred to a rescue program due to excessive pre-session pain would experience a decrease in pain after rescue exercise.
Methods: We used data from a randomized trial of exercise therapy versus no attention (clinicaltrials.gov: NCT01545258). 31 participants were allocated to the exercise program in the underlying study. These participants exercised for approximately 1 hour 3 times per week for 12 weeks (i.e. 36 possible sessions) supervised by a trained physical therapist. Pre and post exercise pain was recorded using a numeric rating scale (NRS, from 0=no pain to 10=excruciating pain).
The standardized exercise program consisted of 6 focus areas; core strength and control, hip stability, hip abductor strength, knee stability, quadriceps strengthening, and functional training applying the basic exercises into functional tasks. A rescue program was applied if the participant scored a pre-session knee pain of 5 NRS or higher. The rescue program was similar to the full program but excluded weight bearing activities and consisted of 15 minutes warm-up on an ergometer bike followed by 3 exercises: core stability, hip stability and hip strengthening. The 3 exercises were repeated after 5 minutes of cycling.
Results: Of the 31 participants, 5 (16%) was referred to the rescue program between 2 and 8 times during the 12 week period; 2 were referred twice, 2 were referred four times, and 1 was referred eight times. The maximum number of consecutive rescue sessions was 3 times for one participant. In 15 rescue sessions (75%) the participants experienced a decrease in pain. On 4 occasions (20%) the participants experienced no change in pain intensity, and at 1 occasion (5%) a participant experienced an increase in pain intensity (from 6 NRS to 7 NRS). The mean pre-rescue pain intensity was 6.7 (min: 6; max: 9), and the mean post-rescue pain intensity was 3.9 (min: 0; max: 7). The average decrease in pain following a rescue session was 2.9 (min: -1; max: 9). Individual pre- and post rescue session pain ratings are shown in figure 1.
Conclusion: Implementing a standardized rescue program is effective in terms of reducing pain intensity in case of excessive pre-session pain. We believe that the rescue program gives the participants a positive exercise experience despite having knee pain that would make conventional exercise unsafe. It is our belief that a rescue program helps increase adherence to an exercise program and hopefully translates into better self-administered exercise routines and habits.



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SIGNIFICANCE OF PRE-RADIOGRAPHIC MRI LESIONS IN PERSONS AT HIGHER RISK FOR KNEE OSTEOARTHRITIS

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Purpose: The clinical significance of pre-radiographic MRI lesions in persons at risk for knee osteoarthritis (OA) is unclear. Understanding whether such lesions are inconsequential or early disease will aid prevention and disease-modifying strategy design. Our objectives were

Table 1
Pre-radiographic MRI Lesions at the 12-Month Visit and Risk of Incident Persistent Knee Symptoms by the 60-Month Visit (n = 573 knees without frequent knee symptoms at baseline from 573 persons with both knees K/L 0). The table shows the frequency of knees with incident persistent knee symptoms among knees without and with each lesion and the lesion present vs. absent adjusted odds ratio (OR) and associated 95% confidence interval (CI) for incident persistent knee symptoms. Significant results are shown in bold italics. (TF = tibiofemoral; PF = patellofemoral)

	Number of knees (1 knee per person)	Number of knees (row%) with incident persistent knee symptoms	OR [95% CI) Adjusted for age, gender, BMI, previous knee Injury, previous knee surgery
Cartilage damage, TF or PF or both*	419	84 (20.1%)	1.73 (0.98, 3 03)‡
Cartilage damage TF only*	83	12 (14.5%)	1.18 (0.51, 2.74)‡
Cartilage damage, RF only*	176	37 (21.0%)	***1.98 (1.05, 3.76)***‡
Cartilage damage, both TF and PF*	160	35 (21.9%)	***2.00 (1.04, 3.85)***
No carriage damage (TF or PF)	154	18 (11.7%)	*reference*
Bane marrow lesion, TF or PF or both†	334	73 (21.9%)	***1.90 (1.18, 3.06)***‡
Bane marrow lesion, TF only†	47	8 (17.0%)	1.42 (0.59 3.45)§
Bone marrow lesion, PF only†	195	42 (21.5%)	*1.82* ***(1.07,*** *3.09)*
Bone marrow lesion both TF and PF†	92	23 (25.0%)	***2.31 (1.24, 4.32)***
No bone marrow lesion (TF or PF)	239	29 (12.1%)	*reference*
Meniscal HHr‖,¶	108	29 (29.6%)	***1.83 (1.05, 3.19)***‡
No meniscal tear	465	73 (15.7%)	*reference*
Meniscal extrusion¶	60	17 (28.3%)	1.34 (0.68, 2.62)‡
No meniscal extrusion	513	85 (16.6%)	*reference*

*Each cartilage damage pattern was evaluated in a separate model in which no cartilage damage in either TF or PF compartment was the reference group.
†Each bone marrow lesion pattern was evaluated in a separate model in which no bone marrow lesion in either TF or PF compartment was the reference group.
‡BMI also significant.
§Previous surgery also significant.
‖Of the 108 meniscal tears, 80 were horizontal tears. 11 were vertical, 4 were complex, and 13 menisci were partially macerated.
¶To adjust for the presence of the other meniscal lesion, meniscal tear and meniscal extrusion were included in the same model.