Document Coversheet

Study Title: Development of a Mind Body Program for Obese Knee Osteoarthritis Patients With Comorbid Depression: Does a Mind Body Program Reduce Osteoarthritis Pain?

Institution/Site:	University of Kentucky
Document (Approval/Update) Date:	08/16/2021
NCT Number:	NCT04334278
IRB Number	67336
Coversheet created:	06/04/2024

Development of a Mind Body Program for Obese Knee Osteoarthritis Patients with Comorbid Depression

Materials and Methods

Participants and Recruitment

60 different patients will be enrolled in the feasibility RCT. Eligible patients with mild to moderate knee OA, using standard diagnostic criteria, will be referred by seven physicians at the University of Kentucky (UK) Healthcare Hip & Knee Center and the UK Healthcare Orthopedic & Sports Medicine Center during regularly scheduled office visits. Standard diagnostic criteria will include clinical examination, patient-reported symptoms/functional limitations, and radiographic assessments. In addition, because the study activities can all be completed remotely, the IRB-approved study flyer will be circulated electronically at the participating institutions as well as by patient adovacate groups such as the Arthritis Foundation.

Inclusion criteria are: obesity (BMI $\geq$ 30 kg/m^2), idiopathic knee OA[1] with mild to moderate radiographic changes (Kellgren/Lawrence grade 2 or 3[2] or Knee injury and Osteoarthritis Outcome Scores (KOOS) consistent with knee OA[3]), elevated depressive symptoms (PHQ-9 $\geq$ 10[4-6]), age 45 or older[7,8], history of concurrent psychotropics for < 2 weeks prior to initiation of treatment or on stable doses for > 6 weeks, access to an internet-enabled computer/smart phone, willingness to comply with the study protocol and assessments, and cleared by a medical doctor to participate. Exclusion criteria are: any disorder requiring the use of systemic corticosteroids; rheumatoid arthritis; history of cancer within 5 years of screening; unable to walk/wheelchair-bound; prior surgical fixation of a femur or tibia fracture; taking high doses of opioid pain medication (>50 milligrams of morphine equivalent per day); diagnosis of a medical illness expected to worsen in the next 6 months (e.g., malignancy); active suicidal

ideation or past-year psychiatric hospitalization; non-English speaking; lifetime history of schizophrenia, bipolar disorder, or other psychotic disorder; current substance abuse or dependence (or a history within the past 6 months); practice of yoga/meditation, or other mind body techniques once per week > 45 min within the last 3 months; engagement in regular moderate or vigorous physical exercise for >30 min daily. These criteria are consistent with other clinical trials in knee OA or mind-body interventions.[8,9] Patients with reduced or altered capacity due to administration of any mind-altering substances such as tranquilizers, conscious sedation or anesthesia, brain injury, or age outside of the targeted range will not be recruited for participation in this study.

Enrollment and baseline data collection (self-report questionnaires, blood draws, urine samples) will coincide with the patient's office visit with their treating physician and will not require an additional visit. After providing verbal consent, potential participants will meet with a research assistant for study screening. If the screening indicates that the patient meets all inclusion and exclusion criteria, study staff will begin the written informed consent process.

Eligible participants will undergo written informed consent prior to the baseline assessments. Due to the sensitive data collected in this study, patients will review and sign the combined informed consent and HIPAA-authorization if they choose to participate. The informed consent process will take place in a dedicated research room at either facility to ensure that both the patient and research team have adequate time and privacy. A specific item will be included on the Informed Consent and Data Collection Checklist Forms to ensure that "Patients were asked if they had any questions (Yes / No)." The patient will then be given the option to provide informed consent that day, to return on a different day, or opt out. Study staff will coordinate scheduling to continue the informed consent process with patients as needed. A copy

of the completed informed consent will be given to patients, added to their medical records, and documented in study progress notes.

Live Video Delivery

Participants will be recruited in-person at the University of Kentucky, but will also be recruited via electronic means at the other study sites (Massachusetts General Hospital (MGH) and Brigham & Women's Hospital (BWH)). In addition, because the study activities can all be completed remotely, the IRB-approved study flyer will be circulated electronically by patient adovacate groups such as the Arthritis Foundation. The intervention will be performed remotely by the study team at MGH via live video through a HIPPA-approved software used in clinical practice at MGH for a variety of medical populations. We have extensive experience with delivery of similar mind-body programs and focus groups via live video.[102,121] After enrollment, participants will receive an emailed link for one-click installation of the video software. A research assistant will offer participants a test call and assist with installation as needed. Participants will receive a reminder email about the appointment information and a link to access the virtual group session. The research assistant will be available to assist participants in real time with any technical challenges they may experience during the treatment sessions.

Pilot Randomized Controlled Trial

The goal of the pilot RCT is to assess the feasibility of recruitment procedures (e.g., screening, eligibility, enrollment rates), the feasibility and acceptability of the GetActive-OA and control interventions (e.g., adherence, retention), and the feasibility of data collection procedures by group (e.g., adherence, accelerometer data, blood and urine biomarker data). In line with common guidelines for feasibility studies [47], we will not test efficacy or perform between-group analyses.

We will enroll up to 60 patients with 3-8 participants per group. Participants will be randomized in a 1:1 design using a randomization scheme developed by the study statistician. The control group will have the same format and procedures as the GetActive-OA and will follow the format of the HEP.[10] We will modify this program for the specific needs of patients with knee OA. Session structure is outlined in Table 3. To control for between-session practice, participants will receive an audio recording and informational handout to complete after each session. All of the patient education information, in a simplified form, will be included as an appendix in the GetActive-OA manual. We have successfully used this procedure in our clinical trial in neurofibromatosis.[10]

Table 3. Structure of the Health Enhancement Program to be utilized with the control group

Session	Health Enhancement Program Topics
1	Educational information on depression, obesity and knee function including the role of inflammation
2-3	Educational information on physical activity and effects on mood, weight and knee function
4-5	Educational information on nutrition
6	Educational information on sleep
7	Educational information on navigating medical care
8	Review

Analysis Plan

We will calculate descriptive statistics and report definitive feasibility and acceptability markers for the GetActive-OA, the control intervention, and the study data collection and analysis procedures. We will report feasibility as number of participants approached, screened, eligible, and enrolled. We will report number of participants who completed at least 4 out of the

6 sessions (67%). The research team's senior orthopedic researcher will assess the number of days participants wore the accelerometers at baseline and post-test using the active wear time of 8 hours/day. The research team's senior orthopedic researcher will assess the number of missing specimens (blood, urine). This will provide a realistic assessment of the study procedures as they will occur during the fully-powered efficacy trial, information on how participants might engage differently with the intervention and control, and signal of improvement in the intervention before investment of resources in the full RCT.

References

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