Similarly, for WOMAC stiffness, a significant improvement in outcome was observed in the OA group (p=0.02) but not in the IA group (0.82) after corticosteroid injection.

Conclusions: Our data shows a significant improvement in knee pain measured by VAS, WOMAC pain and function in participants treated with corticosteroid injection for flares of knee OA. Subjects with knee OA also had pain sensitisation measured by painDETECT that improved significantly after intra-articular corticosteroid injection. In contrast, in participants with IA, the overall VAS pain or painDETECT score did not improve significantly 3 months after corticosteroid injection, but knee specific pain assessed by WOMAC showed an improvement in OA and IA subjects. Traditionally knee flares are triggered by knee effusion and synovitis. Our data show that inflammatory and sensitisation pain components in knee OA are improved with intra-articular corticosteroid injection. In contrast, in subjects with IA, pain measures were not significantly improved, suggesting that interventions in systemic inflammatory arthritides require additional treatment to intra-articular knee injections in order to have an impact on improving outcomes for disease flares.

Outcomes	Osteoarthritis	Inflammatory arthritis
Visual Analogue Scale (VAS) for pain		
Baseline (95% CI)	6.7 (6.2 to 7.2)	5.8 (4.7 to 6.7)
3 months (95% CI)	4.8 (3.9 to 5.7)	5.4 (4.2 to 6.5)
Mean difference (95% CI)	-1.8 (-2.6 to -0.9)	-0.4 (-1.5 to 0.7)
p value	<0.0001	0.7
painDETECT		
Baseline (95% CI)	15.4 (13.2 to 17.6)	14.7 (11.0 to 18.3)
3 months (95% CI)	12.7 (10.4 to 14.9)	13.9 (9.7 to 18.1)
Mean difference (95% CI)	-2.4 (-4.1 to -0.8)	-0.8 (-3.5 to 2.0)
p value	0.002	0.6
WOMAC pain		
Baseline (95% CI)	64.7 (58.9 to 70.5)	59.8 (47.1 to 72.4)
3 months (95% CI)	53.8 (45.7 to 61.9)	48.7 (36.9 to 60.5)
Mean difference (95% CI)	-10.7 (-18.2 to -3.2)	-11.1 (-19.4 to -2.7)
p value	0.005	0.03
WOMAC function		
Baseline (95% CI)	62.6 (56.5 to 68.6)	57.9 (44.6 to 71.2)
3 months (95% CI)	53.9 (46.3 to 61.6)	50.9 (36.6 to 65.2)
Mean difference (95% CI)	-8.6 (-14.1 to -3.1)	-7.0 (-17.9 to 3.8)
p value	0.003	0.23

PRESENTATION NUMBER: 272

A DOUBLE-BLIND RANDOMIZED TRIAL TO EVALUATE THE EFFICACY OF CORTICOSTEROID INJECTIONS FOR OSTEOARTHRITIS OF THE KNEE USING MOBILE DEVICES

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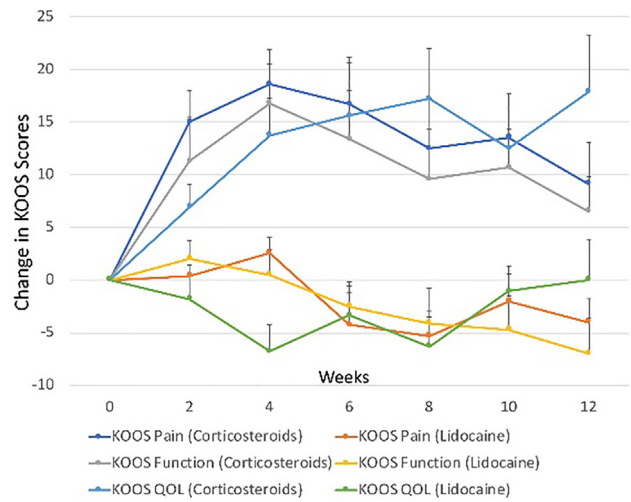
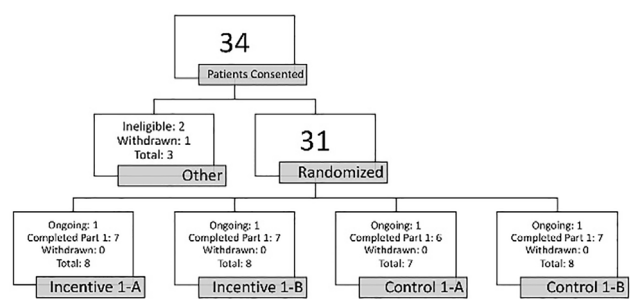
Purpose: Recent evidence has called into question the value of corticosteroid injections for osteoarthritis of the knee (KOA). Variability in clinical trial design has resulted in inconsistent Results from clinical studies evaluating efficacy of this commonly performed procedure. We designed a pilot and feasibility double-blind trial to evaluate the benefit of corticosteroid injections with monitoring of response using mobile devices at 2-week intervals.

Methods: Participants with KOA, ages 40-80, who were either receiving or found to be a candidate for a corticosteroid injection by their physician were eligible for enrollment. Participants received a Fitbit™ activity monitor and were signed up to an online platform (*Way To Health*). Participants were randomized after a 2-4 week run-in period to assess baseline physical activity. Participant could receive 40 mg methylprednisolone acetate plus 2 mL 1% lidocaine or 2 mL 1% lidocaine only in each affected knee. Participants were also randomized in a factorial design to receive social incentives to promote exercise (not shown here). Participants and study staff were blinded to treatment allocation and the research pharmacist prepared an opacified syringe to the physician at the time of the injection. Text messages were sent at 2-week intervals to remind participants to complete patient reported outcomes (PROs) including the Knee Injury and Osteoarthritis Outcome Score (KOOS). The primary outcome was the change in total KOOS from baseline. Linear regression incorporating generalized estimating equations was used to compare the change in KOOS cross treatment groups incorporating all outcome measures over 12 weeks (2, 4, 6, 8, 10, and 12 weeks). Sensitivity analyses were performed utilizing a last-observation-carried-forward (LOCF) approach.

Results: At the time of this interim analysis, 27 participants (24 male) were randomized (Figure 1). Baseline characteristics are shown in Table 1. A total of 18 had completed all 12 weeks of follow-up. Participants that received corticosteroids had significantly greater improvement in overall KOOS score [B: 10.2 (2.7, 17.7) p=0.007]. This pattern was observed for all KOOS sub-scales (Figure 2), and was most prominent between weeks 4 and 10 weeks of follow-up. Three adverse events were reported during the trial; none were considered related to the intervention. The effect was robust with imputation of missing values in sensitivity analyses using LOCF [B: 10.2 (2.8, 17.6) p=0.007].

Conclusions: In this pilot double-blinded randomized trial, there was a significant benefit of corticosteroid injections compared to lidocaine. The intervention was beneficial in terms of pain, function, and quality of life and was clinically-important in magnitude. This study suggests that trials evaluating evaluate benefits of corticosteroid should consider the importance of short-term benefits.





PRESENTATION NUMBER: 273

MINDSETS PREDICT PHYSICAL ACTIVITY AND MANAGEMENT STRATEGIES IN INDIVIDUALS WITH KNEE OSTEOARTHRITIS

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Purpose: Engagement in physical activity can reduce pain, improve function, and prevent loss of muscle strength in individuals with knee osteoarthritis (KOA). Despite these benefits, management of KOA with physical activity is under-utilized, and long-term adherence to physical activity programs within the KOA population is low. Emerging research has highlighted the influence of mindsets about the process of physical activity on exercise engagement. Mindsets about the process of physical activity are defined as the extent to which individuals associate the process of engaging in exercise behaviors with appeal-focused (e.g., fun, pleasurable, social, and indulgent) versus unappealing-focused qualities (e.g., boring, painful, isolating, and depriving). In individuals without KOA, mindsets about physical activity can be changed, are associated with health status, and predict physical activity involvement. However, the relationship between mindset and physical activity has not been evaluated in individuals with KOA. Thus, the aim of this study was to evaluate the mindsets that individuals with KOA hold about physical activity and their effect on physical activity levels and KOA management.

Methods: Participants with (n = 150) and without (n = 152) self-reported, clinically diagnosed KOA completed an online survey at enrollment (T1). Those with KOA repeated the survey three weeks later (T2; n = 62). We used the 7-item process mindset inventory to assess mindsets about the process of engaging in physical activity (e.g., exercising is stressful/relaxing). The scale measured on a 4-point scale, with higher scores reflecting a more appeal-focused mindset about physical activity. Physical activity levels were assessed with the Physical Activity Scale for the Elderly (PASE). Individuals' KOA management strategies were determined with the open-ended response question, "In your own words, describe how you manage and/or improve the symptoms of osteoarthritis." Other information collected included gender, age, body mass index (BMI), health via the PROMIS v.1.1 Global Health Short Form, and knee pain and functioning via the Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC). To assess internal consistency and test-retest reliability of the process mindset, we calculated Cronbach's alpha and the intraclass correlation coefficient (ICC), respectively, between the mean mindset score at baseline and follow-up. To test for differences in physical activity level, demographic variables, and health between those with and without KOA, we calculated the standardized mean difference (SMD). We used multivariate linear regression modeling to determine if having KOA (1 indicating KOA) was a predictor of the process mindset when controlling for gender (1 indicating female), age, BMI, health at T1, and physical activity level at T1. We used a second multivariate linear regression model to test if the process mindset at T1 predicted future physical activity (PASE at T2) when controlling for demographics, health, knee pain and functioning, and physical activity level at T1. Three researchers reviewed the open-ended management question responses and determined nine distinct management strategies. Two researchers separately coded all 150 responses for each strategy. To assess agreement in coding, we computed Cohen's kappa for the two most common strategies, pain medication or injections (e.g., cortisone shots) (n = 74) and exercise (n = 41), which was 0.987 ($p < 0.001$) and 0.931 ($p < 0.001$), respectively, indicating "almost perfect" agreement. We used independent t-tests to assess differences in mindset between those who manage their osteoarthritis (1) with medication or injections but no exercise, (2) with exercise but no medication or injections, and (3) with both exercise and medication or injections. The a priori level of significance, α, for all statistical tests was 0.05.

Results: The process mindset inventory demonstrated strong internal consistency ($\alpha = 0.92$ at T1 for n = 150 and $\alpha = 0.92$ at T2 for n = 62) and test-retest reliability (ICC > 0.841, $p < 0.001$) within the KOA population. The group with KOA had an older age ($p = 0.006$), a higher BMI ($p < 0.001$), lower global health ($p < 0.001$), and lower physical activity ($p < 0.001$) than individuals without KOA. There was no difference in gender ($p = 0.640$) between groups. Having KOA was marginally associated with a less appeal-focused mindset by 0.125-points ($p = 0.096$) when controlling for gender, age, BMI, global health, and physical activity level (Table 1). A lower score corresponds to a mindset that physical activity is less appeal-focused (e.g., more boring, isolating, and depriving). Additional factors related to a less appeal-focused process mindset were gender (being female; $p = 0.047$), lower global health ($p < 0.001$), lower physical activity levels ($p < 0.001$), and, marginally, a higher BMI ($p = 0.053$). Within the KOA group, a more appeal-focused mindset predicted higher future physical activity ($\beta = 20.68$, CI = [1.06, 40.30], $p = 0.039$) while controlling for demographics, health, knee pain and functioning, and physical activity level at T1 (Table 2). The process mindset was the only variable aside from the PASE at T1 predictive of physical activity level at T2. Individuals that used exercise with or without pain medication or injections had more appeal-focused process mindsets than those who used medication or injections without exercise ($t = -2.95$, $p = 0.011$, CI = [-1.08, -0.17], mean = (2.02, 2.65) and $t = -5.63$, $p < 0.001$, CI = [-0.95, -0.45], mean = (2.02, 2.72), respectively; Figure 1). Mindsets did not differ between individuals who used physical activity with medication or injections and those who used physical activity without medication or injections.

Conclusions: The process mindset inventory for physical activity is a reliable and relevant measure for the KOA population. Within the KOA population, mindset about the process of physical activity predicted future physical activity when controlling for other factors that commonly influence physical activity. Although a sensitivity analysis revealed this relationship may only be marginal, this is likely do to a smaller than sufficient sample to detect a small effect size. Individuals who chose exercise as a strategy for osteoarthritis management had a higher appeal-focused mindset about physical activity than those who chose pain medications or injections without exercise. These findings can help guide clinicians' strategies for increasing physical activity participation in patients with KOA by improving mindsets about the

Dependent Variable	Independent Variables	β (95% CI)	p	Adj. R^2	F
Process Mindset	Gender	-0.137 (-0.271, -0.002)	0.047	0.303	22.8 (p<0.001)
	Age	-0.040 (-0.111, 0.030)	0.262		
	BMI	-0.071 (-0.144, 0.001)	0.053		
	Global-10	0.144 (0.066, 0.222)	<0.001		
	PASE	0.247 (0.172, 0.321)	<0.001		
	Knee OA (Binary)	**-0.125 (-0.273, 0.022)**	**0.096**		

Abbreviations: Global-10, Global Health Short Form; PASE, Physical Activity Scale for the Elderly.

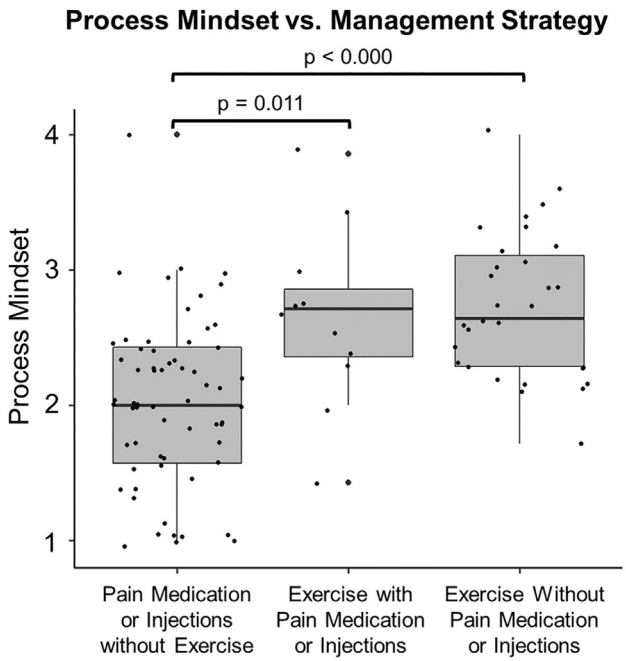
Linear regression on the process mindset for participants with and without KOA (n = 302).

Dependent Variable	Independent Variable	β (95% CI)	p	Adj. R^2	F
PASE (T2)	Gender	-3.16 (-21.48,15.15)	0.730	0.49	9.26 (p<0.001)
	Age	-26.21 (-60.55, 8.12)	0.132		
	BMI	-6.77 (-24.99, 11.46)	0.460		
	Global-10 (T1)	14.03 (-8.62, 36.67)	0.220		
	WOMAC (T1)	11.16 (-10.20, 32.52)	0.300		
	PASE (T1)	47.52 (28.55, 65.95)	<0.001		
	Process Mindset (T1)	**20.68 (1.06, 40.30)**	**0.039**		

Abbreviations: Global-10, Global Health Short Form; WOMAC, Western Ontario and McMaster Universities Osteoarthritis Index; PASE, Physical Activity Scale for the Elderly.

Linear regression on physical activity (PASE) at time point 2 (T2) for participants with KOA (n=62).

process of physical activity. For example, a clinician might help a patient with KOA think creatively about different types of physical activity they may enjoy (e.g., yoga, swimming, gardening, dancing, or walking the dog), while highlighting how it can also be social (e.g., walking with a friend, playing with grandchildren, or joining group exercise classes). Future research should identify effective strategies to deliver mindset interventions to individuals with KOA and measure if they indeed change mindsets, physical activity, and health.



PRESENTATION NUMBER: 274

EFFECTIVENESS OF ELECTROACUPUNCTURE COMBINED WITH RENAL TONIC AND BLOOD-BOOSTING FORMULA IN THE TREATMENT OF POSTMENOPAUSAL OSTEOPOROSIS

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Purpose: To investigate the clinical efficacy of electroacupuncture combined with kidney tonifying and blood revitalizing formula in the treatment of postmenopausal osteoporosis.

Methods: 56 postmenopausal patients with osteoporosis were randomly divided into a control group and a treatment group, the control group was given the formula of tonifying the kidneys and revitalizing blood orally, 150 ml twice a day, the treatment group in the tonifying the kidneys and revitalizing blood formula on the basis of oral combined electroacupuncture treatment, acupuncture site selection of Shen Shu, Da Chang Shu , Guan Yuan Shu , Zu San Li , Wei Zhong and other acupuncture points, leaving the needle 20 min, 2 days once, each group of 28 cases, a total of 8 treatments. weeks. Bone density, visual analogue score (VAS) of pain, and cytokines of interleukin 1 (IL-1), interleukin 6 (IL-6), and tumor necrosis factor-α (TNF-α) were observed and recorded before treatment, 2 weeks of treatment, 4 weeks of treatment, and 8 weeks of treatment.

Results: On the improvement of VAS score and bone density, the difference between the two groups was statistically significant before and after treatment (P<0.05); the comparison summary of IL-1, IL-6 and TNF-α showed statistically significant differences in the distribution of bone density between the two groups before and after treatment (P<0.05), but after 8 weeks of treatment, the electroacupuncture combined with tonification of kidney and blood circulation formula group improved significantly compared with the control group (P<0.05).

Conclusions: Electroacupuncture combined with Kidney Tonic and Blood Revitalizing Formula has a certain effect on the pain and bone density of postmenopausal osteoporosis, and can reduce cytokines such as IL-1, IL-6 and TNF-α, and has a more significant effect on the improvement of IL-6 index than oral Kidney Tonic and Blood Revitalizing Formula alone.

Table 1 :Comparison of VAS scores between two groups of patients ($\bar{x}\pm s$)

group	Sample size	prior treatment	After 2 weeks of treatment	After 4 weeks of treatment	After 8 weeks of treatment
treatment group	Twenty-eight	4.72±1.04	3.75±0.97*	2.36±0.65*	2.04±0.62*
control group	Twenty-eight	4.52±1.05	4.14±0.97*	2.46±0.75*	2.06±0.67*

Note:* Compared with the same group before treatment, p<0.05

Table 2 :Comparison of lumbar spine bone density between two groups of patients ($\bar{x}\pm s$, g/cm2)

group	Sample size	prior treatment	After 2 weeks of treatment	After 4 weeks of treatment	After 8 weeks of treatment
treatment group	Twenty-eight	0.75±0.07	0.79±0.08*	0.80±0.09*	0.81±0.07*
control group	Twenty-eight	0.76±0.08	0.77±0.06*	0.78±0.05*	0.79±0.06*

Note:* Compared with the same group before treatment, p<0.05

Table 3 :Comparison of IL-1, IL-6 and TNF-α before and after treatment in two groups of patients ($\bar{x}\pm s$)

group	time	IL-1/(ug.L-1)	IL-6/(ug.L-1)	TNF-α /(ng.L-1)
treatment group	prior treatment	2.55±0.65	132.53±22.31	11.10±2.41
	After 8 weeks of treatment	0.46±0.23#	78.69±10.75#*	5.52±1.19#
control group	prior treatment	2.28±0.63	126.46±26.71	10.18±2.26
	After 8 weeks of treatment	0.76±0.31#	91.25±16.76#	5.53±1.22#

Note:1) #Compared with the same group before treatment, p<0.05;2) *compared to control group p<0.05

PRESENTATION NUMBER: 275

CLINICAL OBSERVATION OF NEEDLE STIMULATION OF PAIN POINTS COMBINED WITH SODIUM VITREOUS ACID IN THE TREATMENT OF KNEE OSTEOARTHRITIS

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Purpose: To observe the clinical efficacy of needle stimulation of pain points in combination with sodium vitreous acid in the treatment of osteoarthritis of the knee.

Methods: Sixty-eight patients diagnosed with knee osteoarthritis were selected and randomly divided into a control group and an observation group, with 34 patients in each group.The control group was given sodium vitreous acid joint cavity injections, 5 ml each, once a week for 5 weeks.The observation group was treated with combined needle stimulation of pain points on the basis of sodium vitreous acid joint injection, leaving the needle in place for 25 min and needle pricking once every other day for a total of 5 weeks.Visual analogue pain score (VAS), osteoarthritis index score (WOMAC), Lysholm knee function score, and levels of inflammatory factors interleukin-18 (IL-8) and tumor necrosis factor-α (TNF-α) were observed before and after treatment in both groups.

Results: The difference in VAS and WOMAC scores between the two groups before treatment was not statistically significant (P>0.05); after treatment, VAS scores and WOMAC scores were significantly reduced