	Baseline	3 Months	Mean difference (95% CI)
NRS pain, mean (SD)	5.0 (1.9)	3.6 (2.0)	-1.4 (-1.5 to -1.2), p<0.001
NRS Function, mean (SD)	4.4 (1.9)	3.6 (2.2)	-0.8 (-1.0 to -0.6), p<0.001
Wish for surgery, n (%)			
No	145 (70.7)	160 (78.0)	-3.4 (-7.8 to -1.0)
Yes	19 (9.3)	12 (5.9)	
Surgery performed	(available only at follow-up)	3 (1.5)	
Don't know	41 (20.0)	30 (14.6)	
Stiffness, mean (SD)	4.4 (2.2)	3.6 (2.1)	-0.8 (-1.0 to -0.6), p<0.001
Analgesic use, n (%) of "yes"	153 (43.5)	132 (37.5)	-6.0 (-11.2 to -0.7), p=0.026
Kinesiophobia, n (%) of "yes"	61 (14.9)	46 (11.2)	-3.7 (-7.3 to -0.0), p=0.049
PASS, n (%) of "yes"	107 (26.2)	207 (50.6)	24.4 (19.0 to 29.9), p<0.001

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Table 2. Treatment outcomes, n=409.

ering your hand function, do you feel that your current state is satisfactory?) doubled after 3 months (24% increase, 95% CI 19.0 to 29.9). For reported kinesiophobia, the changes in proportion were inconclusive with 95% CI covering a wide range of values.

Conclusions: The preliminary findings reported herein suggest an improvement in self-reported symptoms of hand OA after 3 months of participation in a digitally delivered first-line treatment program focused on hand exercises and patient education. Further analysis and investigation into factors of relevance for improvement is needed.

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PATIENT ACCEPTABLE SYMPTOM STATE AND TREATMENT FAILURE FOR THE KNEE/HIP INJURY AND OSTEOARTHRITIS OUTCOME SCORE AND PAIN IN PATIENTS PARTICIPATING IN A DIGITALLY DELIVERED FIRST-LINE TREATMENT PROGRAM FOR HIP OR KNEE OSTEOARTHRITIS

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Purpose: To define cut-offs for patient acceptable symptom state (PASS) and treatment failure (TF) in pain and patient-reported function and quality of life for people participating in digital first-line treatment for hip and knee osteoarthritis (OA).

Methods: Observational registry-based study with consecutively recruited participants between 2020-04-14 and 2021-07-15 (clinicaltrials.org Nr: NCT05316194). Ethical approval was obtained through the Swedish Ethical Review Authority (Dnr: 2021-01713) and digital informed consent was collected for all participants. The responses to the Knee injury and Osteoarthritis Outcome Score 12 (KOOS-12) and the Hip disability and Osteoarthritis Outcome Score (HOOS-12) (0-100 with higher values indicating better status) and NRS pain (0-10 with higher score reflecting more pain) and also two anchor questions assessing the participants' satisfaction with their symptom state and, if not, treatment failure were obtained at 3 and 12 months follow up. The PASS and TF threshold values at different follow-ups were estimated using the anchor-based predictive modeling method (MICpred), adjusting for the proportion of improved patients.

We also explored baseline dependency of threshold values.

Results: Data from 4383 (2987) and 2041 (1264) participants with knee (hip) OA at 3- and 12-month follow ups were used.

After 3 months of treatment, 42.6% and 42.1% of participants with knee and hip OA, respectively, reported their current state as satisfactory. Corresponding proportions at 12-month follow up were 51.2% and 51.3%, respectively.

The PASS threshold values for NRS pain were 3 for both knee and hip OA at follow ups. For KOOS-12, the PASS threshold values ranged from 53 for KOOS-Quality to 71 for KOOS-Function subscales. For HOOS-12, the PASS threshold ranged from 56 for HOOS-Quality to 73 for HOOS-Function subscales. The magnitude of the PASS threshold values depended on baseline pain with participants with more severe pain at baseline having higher thresholds for NRS pain and lower thresholds for KOOS-12/HOOS-12 subscales compared with those with mild pain at baseline.

After 3 months of treatment, 3.4% and 4.0% of participants with knee and hip OA, respectively, reported their current state being so unsatisfactory that they considered the treatment failed. The corresponding figures at 12-month follow ups were 2.4% and 2.1%, respectively.

The TF threshold for NRS pain was around 5 points in both knee and hip OA groups. The TF threshold values ranged from about 34 for Quality subscales of KOOS-12/HOOS-12 to around 55 for Function subscales of KOOS-12/HOOS-12 during follow ups. The baseline dependency of the TF thresholds to pain was similar to the one observed for the PASS thresholds.

Conclusions: The PASS and TF threshold estimates increase our understanding and aid the interpretation of outcomes after first-line OA interventions when measured with the NRS Pain, KOOS-12 and HOOS-12. The baseline pain dependency identified is crucial to consider when these values are used to interpret changes in other OA populations.

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CLINICAL OUTCOMES OF OSTEOARTHRITIS MANAGEMENT PROGRAMS: A PROJECT OF THE OA TRIAL BANK AND OARSI JOINT EFFORT INITIATIVE USING INDIVIDUAL PARTICIPANT DATA

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Purpose: People living with osteoarthritis (OA) often do not receive best evidence care. Coordinated OA management programs (OAMPs) have been implemented to address this global evidence-practice gap. An OAMP is defined as a package of care with the following: i) a personalized management plan; ii) with reassessment and progression; iii) using a minimum of 2 core treatments (education, exercise, weight control), and; iv) optional adjunctive therapies. Existing OAMP models differ in treatment mode, intensity, duration, the health professionals delivering care, and the healthcare systems and settings they operate within. Randomized trials (RCTs) and cohort studies assess the outcomes of different OAMPs, however, these models are unlikely to ever be compared in RCTs due to the huge expense and complicated logistics required. Prognosis research provides another method of comparing outcomes of different OAMP models. This study aimed to estimate the pain and self-reported function outcomes (at 12-, 26- and 52-weeks) of people with hip and/or knee OA who participated in international OAMPs. It also aimed to describe the characteristics of OAMP participants.

Methods: This study was undertaken by members of the OARSI Joint Effort Initiative (JEI), in collaboration with the OA Trial Bank (Erasmus MC, Netherlands). RCTs and clinical cohorts assessing OAMPs were identified through the JEI membership and literature searches. Eligible studies included data from an ongoing OAMP, in any real-world setting, with participants who were diagnosed with hip or knee OA, and longitudinal measures of patient-reported pain and function. The

investigators of eligible studies were invited to complete data delivery agreements with the OA Trial Bank, share individual participant data (IPD), contribute to study design and authorship. Investigators ensured they had local ethics review board approval to contribute IPD to the OA Trial bank. Each dataset was converted to a common format to enable merging into one dataset. The IPD were evaluated to convert pain and function variables to standardized scales as appropriate. Pain scores were converted to a 0-100 point scale (100 worst). Function scores were converted to a 0-100 point scale (100 best). A generalized estimating equations (GEE) model analysis was performed to assess the change in pain and function from baseline across weeks 12, 26, and 52. The model specification was based on an unstructured correlation structure and robust standard errors. Pain and function estimates were adjusted by age, sex and body mass index (BMI). Data analyses were carried out using Stata 15 (StataCorp 2015) and SPSS 17.

Results: The investigators of 13 international OAMPs were invited to take part. IPD from 9 OAMPs were delivered: the OA Chronic Care Program, Ramsay Health OA Management Program, Joint Health Program, University of Wisconsin Health Knee and Hip Comprehensive Non-Surgical OA Management Clinic, Improved Management of Patients With Hip and Knee OA in Primary Health Care, Joint Academy, Amsterdam OA cohort, Management of OA In Consultations, and Collaborative model of care between Orthopaedics and allied healthcare professionals in knee OA. The characteristics of the OAMPs are summarised in table 1. The OAMPs were conducted in-person except for the Joint Academy that was implemented as an online OAMP. Individual participant data from 9819 participants were analyzed. The cohort studies were missing large amounts of data, as expected in clinical practice. The characteristics of OAMP participants are summarised in Table 2. The majority of OAMP participants reported the knee as their index joint, their mean age ranged between 62- 67 years, 58-74% were female, 25-48% were working and mean BMI indicated they were overweight at baseline.

Pain was most commonly assessed using a Numeric Rating Scale or validated questionnaires e.g. the Knee Injury and OA Outcome Scale (KOOS). Function was mostly assessed using validated questionnaires such as the KOOS. The pain and fuction measured in the original datasets are reported in Table 1. The changes in pain and function of the OAMP participants from baseline across weeks 12, 26, and 52 are summarised in Table 3. There were reductions in pain scores and improvements in function scores seen across all programs at the majority of timepoints.

Conclusions: We established the first data bank of IPD from different international OAMPs. Analysis of the IPD demonstrated modest improvements in pain and function across the programs at all timepoints. The most rapid improvements were made by week-12, however, these gains were maintained at week-52. In future work this project will use IPD meta-analysis to identify prognostic factors of people with OA who participate in OAMPs.

Table 1. OA Management Program characteristics

	OACCP	RH-OAMP	JHP	UW KHOA	JA	AMS	SAMBA (intervention group)	MOSAICS (intervention group)	CONNACT (intervention group)
Program level characteristics									
Country	Australia	Australia	USA	USA	Sweden	Netherlands	Norway	UK	Singapore
Setting	Public hospital clinic	Private hospital clinic	University hospital clinic	Hospital clinic	Online, primary care	University clinic	Primary care	Primary care	Community health
Study type Health professional program lead	Cohort Physio	Cohort Physio or exercise physiologist	Cohort Physio	Cohort Physician	Cohort Physio	Cohort Physio	RCT General Practitioner	RCT General Practitioner	RCT Multi-disciplinary
Main interventions	Education for self-management, exercise, weight control, psychosocial support	Education for self-management, exercise, weight management, psychosocial support	Education for self-management, exercise, weight management, cognitive behavioral-theory based strategies, sleep hygiene	Education for self-management, exercise, weight management, psychological support	Education for self-management, exercise, weight control	Education for self-management, exercise, weight control, psychosocial support	Education for self-management, exercise, weight control	Education for self-management, exercise, weight control	Education for self-management, exercise, weight management, psychological support
Multi-disciplinary	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
Pain measure Function measure	Pain NRS HOOS/KOOS function	Pain NRS HOOS/KOOS function	Pain NRS HOOS/KOOS-JR	Pain NRS HOOS/KOOS function	Pain NRS HOOS/KOOS-12-items	Pain NRS WOMAC function	Pain NRS Function NRS	Pain NRS WOMAC 8 Physical Function	KOOS Pain KOOS function

OACCP=Osteoarthritis Chronic Care Program, RH-OAMP=Ramsay Health OA Management Program, JHP=Joint Health Program, UW KHOA= University of Wisconsin Health Knee and Hip Comprehensive Non-Surgical OA Management Clinic, SAMBA =Improved Management of Patients With Hip and Knee OA in Primary Health Care, JA=Joint Academy, AMS=Amsterdam OA cohort, MOSAICS =Management of OA In Consultations, and CONNACT=Collaborative model of care between Orthopaedics and allied healthcare professionals in knee OA. NRS= numeric rating scale. KOOS= Knee injury and osteoarthritis outcome score. HOOS= Hip disability and osteoarthritis outcome score. HOOS/KOOS-JR= HOOS/KOOS Joint Replacement. WOMAC= Western Ontario and McMaster Universities Arthritis Index

Table 3. Generalized estimating equations (GEE) model analysis from baseline across weeks 12, 26, and 52 adjusted by age, sex and body mass index

Mean difference (95% CI)

Study	OACCP	RH-OAMP	JHP	JA	UW KHOA	AMS	SAMBA	MOSAICS	CONNACT
				Patient reported pain					
Baseline	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]
Week 12	-5.0 (-5.94, -4.10)**	-15.3 (-17.91, -12.73)**	-15.2 (-16.76, -13.55)**	-18.2 (-19.12, -17.26)**	-7.4 (-10.28, -4.49)**	-7.6 (-9.14, -6.13)**	-9.0 (-11.26, -6.76)**	-12.7 (-15.57 -9.77)**	-11.9 (-16.64, -7.10)**
Week 26	-5.3 (-6.45, -4.17)**	-14.8 (-18.11, -11.59)**	-15.5 (-17.53 -13.45)**	-22.7 (-23.71, -21.72)**	-3.4 (-7.41, 0.61)	-	-11.3 (-14.18, -8.43)**	-18.1 (-21.65 -14.56)**	-14.7 (-20.04, -9.46)**
Week 52	-7.1 (-8.44, -5.82)**	-13.8 (-20.57, -7.12)**	-18.2 (-20.85, -15.61)**	-23.5 (-24.52, -22.41)**	-2.9 (-10.31, 4.47)	-	-	-17.2 (-21.31 -13.09)**	-17.4 (22.18, -12.62)**
				Patient reported function					
Baseline	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]
Week 12	3.2 (2.52, 3.91)**	12.0 (10.23 13.75)**	8.5 (7.56, 9.50)**	6.6 (5.80, 7.32)**	6.6 (3.85, 9.42)**	19.7 (18.56 20.91)**	7.57 (4.99, 10.15)**	4.6 (2.80, 6.46)**	8.4 (3.87, 12.86)**
Week 26	4.3 (3.51, 5.15)**	10.1 (7.666 12.47)**	10.2 (9.08, 11.27)**	7.8 (6.95, 8.59)**	5.4 (1.50, 9.31)**	-	10.22 (7.33, 13.12)**	7.0 (4.92, 9.15)**	10.4 (6.01, 14.84)**
Week 52	5.5 (4.45, 6.47)**	10.5 (4.97, 16.05)**	11.4 (9.71, 13.02)**	6.8 (5.92 7.70)**	-0.9 (-10.44, 8.55)	-	-	7.0 (4.69, 9.35)**	11.8 (6.60, 17.01)**

Pain standardized scale 0-100 (100 worst). Function standardized scale 0-100 (100 best). OACCP=Osteoarthritis Chronic Care Program, RH-OAMP=Ramsay Health OA Management Program, JHP=Joint Health Program, UW KHOA= University of Wisconsin Health Knee and Hip Comprehensive Non-Surgical OA Management Clinic, SAMBA =Improved Management of Patients With Hip and Knee OA in Primary Health Care, JA=Joint Academy, AMS=Amsterdam OA cohort, MOSAICS =Management of OA In Consultations, and CONNACT=Collaborative model of care between Orthopaedics and allied healthcare professionals in knee OA.

Table 3. Generalized estimating equations (GEE) model analysis from baseline across weeks 12, 26, and 52 adjusted by age, sex and body mass index

Mean difference (95% CI)

Study	OACCP	RH-OAMP	JHP	JA	UW KHOA	AMS	SAMBA	MOSAICS	CONNACT
				Patient reported pain					
Baseline	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]
Week 12	-5.0 (-5.94, -4.10)**	-15.3 (-17.91, -12.73)**	-15.2 (-16.76, -13.55)**	-18.2 (-19.12, -17.26)**	-7.4 (-10.28, -4.49)**	-7.6 (-9.14, -6.13)**	-9.0 (-11.26, -6.76)**	-12.7 (-15.57 -9.77)**	-11.9 (-16.64, -7.10)**
Week 26	-5.3 (-6.45, -4.17)**	-14.8 (-18.11, -11.59)**	-15.5 (-17.53 -13.45)**	-22.7 (-23.71, -21.72)**	-3.4 (-7.41, 0.61)	-	-11.3 (-14.18, -8.43)**	-18.1 (-21.65 -14.56)**	-14.7 (-20.04, -9.46)**
Week 52	-7.1 (-8.44, -5.82)**	-13.8 (-20.57, -7.12)**	-18.2 (-20.85, -15.61)**	-23.5 (-24.52, -22.41)**	-2.9 (-10.31, 4.47)	-	-	-17.2 (-21.31 -13.09)**	-17.4 (22.18, -12.62)**
				Patient reported function					
Baseline	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]
Week 12	3.2 (2.52, 3.91)**	12.0 (10.23 13.75)**	8.5 (7.56, 9.50)**	6.6 (5.80, 7.32)**	6.6 (3.85, 9.42)**	19.7 (18.56 20.91)**	7.57 (4.99, 10.15)**	4.6 (2.80, 6.46)**	8.4 (3.87, 12.86)**
Week 26	4.3 (3.51, 5.15)**	10.1 (7.666 12.47)**	10.2 (9.08, 11.27)**	7.8 (6.95, 8.59)**	5.4 (1.50, 9.31)**	-	10.22 (7.33, 13.12)**	7.0 (4.92, 9.15)**	10.4 (6.01, 14.84)**
Week 52	5.5 (4.45, 6.47)**	10.5 (4.97, 16.05)**	11.4 (9.71, 13.02)**	6.8 (5.92 7.70)**	-0.9 (-10.44, 8.55)	-	-	7.0 (4.69, 9.35)**	11.8 (6.60, 17.01)**

Pain standardized scale 0-100 (100 worst). Function standarised scale 0-100 (100 best). OACCP=Osteoarthritis Chronic Care Program, RH-OAMP=Ramsay Health OA Management Program, JHP=Joint Health Program, UW KHOA= University of Wisconsin Health Knee and Hip Comprehensive Non-Surgical OA Management Clinic, SAMBA =Improved Management of Patients With Hip and Knee OA in Primary Health Care, JA=Joint Academy, AMS=Amsterdam OA cohort, MOSAICS =Management of OA In Consultations, and CONNACT=Collaborative model of care between Orthopaedics and allied healthcare professionals in knee OA.

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LARGE VARIABILITY IN RECOMMENDATIONS FOR RETURN TO DAILY LIFE ACTIVITIES INCLUDING WORK AND SPORT AFTER KNEE ARTHROPLASTY IN THE NETHERLANDS

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Purpose: Due to increasing levels of obesity and aging, the prevalence of patients with severe knee osteoarthritis is rising rapidly. For people with end-stage knee osteoarthritis, knee arthroplasty (KA) has shown to improve knee functioning and quality of life. However, setting realistic expectations is of importance to secure patient satisfaction. Therefore, uniform recommendations concerning the return to daily life activities including work and sport are essential, especially for high demanding (young) KA patients. Fulfilment of these patient expectations not only contributes to more satisfaction but probably also to enhanced recovery during KA rehabilitation. Until now, scientific evidence for such recommendations is limited, and recommendations are often only based on expert opinions of healthcare professionals. We aimed to summarize the current recommendations regarding return to daily life activities, including work and sport, provided by Dutch hospitals and clinics to patients after KA.

Methods: Recommendations of 43 Dutch hospitals and clinics that perform KA's were identified, representing the advice that is provided to 70% of the total Dutch KA patients annually. Recommendations were retrieved using their websites (n = 8), brochures (n = 40) and content from mobile phone applications (n = 9). Two researchers independently summarized the recommendations regarding return to daily life activities, including work and sports.

Results: In total, recommendations for 24 activities were identified and summarized. On average, hospitals and clinics provided recommendations for 9 (0-15) activities. Recommendations regarding return to daily life activities including work and sport varied greatly between Dutch hospitals and clinics. For example, the recommendations for resuming cycling after KA were mentioned by 38 of the 43 hospitals and clinics, and varied from 3 weeks to 3 months. Recommendations for return to work were mentioned by 18 out of the 43 hospitals and clinics and varied from 2 weeks to 4 months. In total, 24 hospitals and clinics provided a recommendation for return to light sports activities, varying from 6 to 8 weeks after surgery.