NATIONAL INSTITUTE FOR HEALTH AND CARE EXCELLENCE

HealthTech Programme

GID-HTE10069 Digital platforms to support rehabilitation before and after primary elective hip or knee replacement surgery

Final scope

1. Introduction

The technologies included in this NICE HealthTech evaluation are digital platforms to support rehabilitation before and after primary elective hip or knee replacement surgery.

The technologies are assessed for early use. Early-use assessment considers HealthTech products that could address a national NHS unmet need. It rapidly assesses products early in the lifecycle (but that have appropriate regulatory approval for use in the UK) or that have limited use in the NHS and need further evidence to support wider use. Technologies considered for early use can be conditionally recommended for use while further evidence is generated during the evidence generation period. This enables early access to promising new technologies for patients. Conditional recommendations are for a fixed period of time and the technologies will be reassessed for routine use using the evidence generated.

This scope document describes the context and the scope of the assessment. Questions for the scoping workshop are in appendix A. The methods and process for the assessment follow the NICE HealthTech programme manual.

2. The condition

Hip and knee joint replacements are among the most common orthopaedic operations performed in the UK and demand for total replacements is predicted to rise by nearly 40% between 2018 and 2060 as the population ages and as the prevalence of osteoarthritis rises (Matharu et al. 2022). In 2024, more than 250,000 primary knee and hip replacements were recorded in the National Joint Registry. Of these joint replacements, osteoarthritis is the most common indication, accounting for 92% of primary hip replacements and 98% of primary knee replacements recorded in 2024. Joint replacement surgery may also be indicated due to rheumatoid arthritis, osteonecrosis, trauma or previous injury, congenital or development abnormalities, or other causes that lead to progressive joint deterioration.

The demand for knee and hip replacements places a substantial burden on NHS services, including surgical capacity, inpatient beds, physiotherapy and community support. Preoperative rehabilitation (also known as prehabilitation) aims to help improve physical readiness, confidence and understanding of the procedure but access to structured programmes varies across regions. Although enhanced recovery and day-case pathways can support earlier discharge after joint replacement, people may still experience a variation in the type and extent of rehabilitation offered after surgery. Improving the consistency and access to prehabilitation and rehabilitation may help support faster recovery, reduce complications and optimise the use of healthcare resources.

3. Current practice

In the NHS, the referral, diagnosis, peri-operative management and rehabilitation of people undergoing hip and knee replacement are informed by:

- Osteoarthritis in over 16s: diagnosis and management (2022) NICE guideline NG226

- Joint replacement (primary): hip, knee and shoulder (2020) NICE guideline NG157
- Ambulatory hip and knee replacement guide (2023) GIRFT

3.1 Referral for joint replacement surgery

Referral for joint replacement should be considered when joint symptoms (such as pain, stiffness, reduced function or progressive deformity) are substantially impacting quality of life and non-surgical management (such as therapeutic exercise, weight loss, pain relief) is ineffective or unsuitable (NICE guideline on osteoarthritis in over 16s).

3.2 Prehabilitation and optimisation before surgery

NICE guidance on primary joint replacement recommends providing information to support preoperative rehabilitation. This includes advice on exercises to do before and after surgery that will aid recovery, lifestyle (including weight management, diet and smoking cessation), and on maximising functional independence and quality of life before and after surgery.

The GIRFT ambulatory hip and knee replacement guide recommends that a patient education programme is completed before surgery. This may include video libraries, app resources, video consultations (small group or individual), face to face groups or a hybrid of these. This education should appropriately prepare people for surgery, outline expectations for recovery, and provide clear guidance on exercises (aerobic and strengthening) to support readiness for surgery. GIRFT also highlights the importance of timely preoperative assessment and standardised pathways to optimise patient outcomes.

3.3 Rehabilitation after surgery

NICE guidance on primary joint replacement recommends that people are offered inpatient rehabilitation as early as possible after surgery. This should include mobilisation on the day of surgery or within 24 hours, advice on managing activities of daily living, a home exercise programme, and support to prepare for discharge. Before leaving hospital, people should receive clear

information about self-directed rehabilitation, goals of recovery and who to contact for advice or concerns. Supervised group or individual outpatient rehabilitation for people should be offered who have difficulties manging daily activities, ongoing functional impairment, unmet rehabilitation goals, or cognitive impairment.

GIRFT guidance focuses on best practice to support enhanced recovery and efficient follow-up. The 2023 Ambulatory Hip and Knee Replacement Guide recommends early mobilisation, patient education and extending therapy service hours to enable same-day discharge. It also advises streamlined follow-up models, such as a single post-surgery review followed by patient-initiated follow-up for patients meeting expected milestones, with additional appointments for those who need further support. The 2020 Follow-up Report highlights opportunities to reduce unnecessary routine outpatient appointments and implement patient-initiated follow-up safely, supported by clear escalation pathways.

4. Unmet need

There is significant unmet need for providing consistent, comprehensive preparation and rehabilitation support for people undergoing primary elective hip or knee replacement. Access to prehabilitation before surgery varies substantially across regions and services. While NICE guidance on primary joint replacement recommends preoperative optimisation and structured preparation, many people currently receive little or no prehabilitation and programmes often begin only 2 to 6 weeks before surgery. Experts highlighted that this timeframe may be insufficient to provide meaningful physiological improvements and that some aspects of preparation, such as exercise, weight management, smoking and alcohol cessation, and lifestyle changes may need to start earlier to have a meaningful benefit. Currently there is also limited access to education and psychological preparation before surgery.

Access to rehabilitation support after surgery also varies. Although enhanced recovery pathways support early mobilisation, the extent of structured support following discharge varies across NHS services. Many people are discharged

with written exercise instructions or links to exercise videos but do not receive routine in person follow-up from physiotherapy services. Exercise plans can be generic and are not adjusted to suit the needs of the person or the progress in their recovery.

The variation in support both before and after surgery may contribute to inconsistent advice, differences in expectations for recovery and limited opportunities to monitor progress or respond to concerns. People may find it difficult to know whether their recovery is progressing as expected and when to seek additional help. Long travel distances, limited community physiotherapy capacity and variation in local pathways may further restrict access to support for some people. The psychological impact of living with long term pain, reduced mobility and uncertainty about recovery and anxiety around major surgery may impact people's ability to engage with rehabilitation. Lack of timely support may contribute to reduced confidence, difficulty maintaining motivation, and delays in returning to daily activities.

More consistent access to personalised, structured and timely prehabilitation and rehabilitation support may help reduce unplanned follow-up, support return to usual activities and improve functional recovery.

5. The technologies

This section describes the properties of the technologies based on information provided to NICE by manufacturers and experts, and publicly available information. NICE has not carried out an independent evaluation of these descriptions.

Technologies are included if they:

- are intended to support rehabilitation before and after primary elective hip or knee replacement
- include structured exercise programmes and education both before and after surgery

- provide tools for people to record symptoms and progress, with escalation processes if symptoms worsen or recovery is not progressing as expected
- include prompts, reminders or other features designed to support engagement and encourage people to continue with rehabilitation activities
- have a CE or UKCA mark where required. Products may also be considered if they are actively working towards required CE or UKCA mark
- are currently available (or are planned to be made available) for procurement in the NHS.

Technologies that do not support rehabilitation before and after primary elective hip or knee replacement, offer only educational or exercise content, exercise libraries without monitoring or feedback, or general wellness applications are not included.

Evidence base

Evidence is expected to include usability, adherence, patient-reported outcomes and early measures of function and recovery, with few comparative or long-term studies.

Sections 5.1 to 5.16 describe the 16 included technologies. All the included technologies were available to the NHS at the time of writing this scope or were expected to become available during the assessment period.

5.1 BPMpathway (270 Vision Ltd)

BPMpathway is a digital rehabilitation platform that combines a wearable motion sensor with a mobile app and a clinician dashboard to support recovery. The platform provides exercise guidance through video demonstrations and real-time motion feedback to help users complete exercises accurately. People typically begin using the system shortly before surgery and a separate educational module is in development. The platform includes a structured exercise library, demonstration videos and real time

motion feedback to support correct technique and progression. Health care providers set or adjust exercise thresholds and review pain, movement and adherence data remotely. Virtual review points are commonly scheduled at around 6 and 12 weeks after surgery. Escalation pathways include automated alerts for missed assessments, reduced progress or when pain scores rise. People can contact clinical teams when needed via two-way messaging, and health care providers can adjust plans or arrange in person care. It is available to people over the age of 18. BPMpathway is Class I CE marked medical device, can be offered in 8 languages and is being used in the NHS though pilot programmes.

5.2 ForPatientApp (B. Braun Medical Ltd)

ForPatientApp is a digital patient-support platform which provides structured information before and after surgery, including preparation tasks operation specific guidance and recovery advice. A calendar interface presents key steps along the surgical pathway, and reminders help support adherence. An optional module, ForPatientApp MOVE uses technology from Kemtai to enable providers to assign guided home-exercise plans. This uses computer-vision technology to give real-time feedback on exercise form. Healthcare professionals can use a dashboard to view patient-reported information, send one-way messages, review submitted questionnaires and view adherence and performance metrics. People can access the app after being registered by their treating hospital, which links them to procedure specific pathway configured for that site. The length of use depends on individual need but is usually 6 weeks before surgery and up to 12 months after surgery. ForPatientApp supports multiple languages, is not classified as a medical device but the optional Kemtai technology included in the platform has a CE mark. The platform is available to the NHS.

5.3 getUBetter (getUBetter Ltd)

getUBetter is a digital self-management platform with modules to support each step in the care pathway. Before surgery, the platform provides condition specific education, recovery expectations, lifestyle recommendations and

specific exercises to support physical preparation. After surgery, getUBetter offers structured recovery support, alongside content for longer-term MSK self-management. The platform includes symptom checking tools, stratification questionnaires and worsening symptom prompts that signpost people to appropriate local NHS services where required. It also has an automated physiotherapy referral pathway. Access is through self-referral, or referral from primary, community or secondary care services. Length of use is often 12 weeks before surgery and 12 weeks extending to one year after surgery. The platform offers an easy read, read out loud, information in 14 languages and subtitled videos. It is available to people over the age of 16. getUBetter is a Class I CE marked medical device and is used across several NHS trusts.

5.4 Good Boost (Good Boost Wellbeing Limited)

Good Boost is a digital rehabilitation platform that can be delivered via community-based group sessions hosted in leisure centres or via a mobile app for home use. This assessment is limited to the app. Programmes include personalised therapeutic exercise plans (created using an AI expert clinical algorithm) that adapt based on user progress and ongoing symptom reporting, joint-specific educational materials, and lifestyle advice before and after surgery. People also have the option to join virtual group classes. The platform includes motivational features such as gamification, peer support, and behavioural tools. People with low engagement receive automated nudges to support engagement while red-flag symptoms trigger guidance to contact a healthcare professional. People access Good Bost via self-referral through the app. The length of use is not predefined. The platform has accessibility functions including text zoom, text to speech and availability in 10 languages. It also allows people to access the technology in a community venue if people have low technology confidence or limited access to devices or the internet. Good Boost is a UKCA Class I medical device and is available to the NHS.

5.5 GoWellHealth (SHI Global Ltd)

GoWellHealth is a digital platform that provides structured content before surgery covering expectations, pain management, discharge criteria and lifestyle advice such as weight management and smoking cessation. Progressive exercise modules are available through a library of physiotherapist-produced videos and NHS instructional materials, and healthcare professionals can select or adapt content to local protocols. After surgery, content includes guidance on mobilisation, wound care, and return to daily activities. Scheduled reminders support adherence to exercises and education. The platform can collect patient-reported outcome measures and symptom checks for review by healthcare professionals while also allowing for two-way messaging. Red-flag symptoms trigger guidance to contact a healthcare professional. GoWellHealth is available to the NHS. It is not currently classified as a medical device.

5.6 Huma (Huma Therapeutics Limited)

Huma is a digital platform that provides preparation and recovery tasks, educational content and exercises tailored to the surgery type and local pathways. People can record symptoms, activity levels and other patient-reported outcomes. The platform supports integration with commercial wearable devices and mobile health apps to track physical activity or motion data where enabled. The platform provides actions and reminders to users to encourage task completion. Healthcare professionals can review data through a web-based portal to monitor trends and intervene when required. This portal also allows two-way communication between the clinician and person having surgery. Huma uses AI to automate summaries of patient-reported data and range of motion assessments (as part of recovery examinations). The platform also allows the addition of a proxy user (such as a caregiver or family member) to manage the application. Access is through clinical referral and is available to adult and paediatric populations. Huma is a class IIb CE marked medical device and is used in several NHS trusts.

5.7 Joint Academy (Artho Therapeutics AB)

Joint Academy is a digital platform that provides structured exercise therapy and education. Before surgery the content focuses on building strength, understanding the procedure and managing lifestyle factors. After surgery, content covers early mobility, wound care, concerning symptoms, pacing and return to activity guidance. Exercises are tailored according to self-reported symptoms, functional ability and on-going clinical review. Each person is assigned a named company physiotherapist who provides clinical support through secure messaging and video consultations. The physiotherapists monitor progress, adjusts the video-based exercise plans and offers advice on symptoms, mobility and pacing. Length of use is both 12 weeks before and after surgery but can be extended. People over the age of 18 can access the platform through NHS referral or self-referral. Joint Academy is a Class I CE marked medical device and is available to the NHS.

5.8 moveUP (moveUP N.V.)

moveUP is a digital rehabilitation platform which provides structured, procedure-specific education and personalised rehabilitation plans generated from intake data such as baseline mobility, symptom reports and functional assessments. Video-led exercise programmes adapt automatically based on patient-reported progress, rate of perceived exertion and symptom changes. The platform also provides automated alerts to the user to provide guidance about concerning symptoms and when to seek medical attention. Healthcare professionals can review progress through a real-time dashboard showing adherence, activity trends, patient reported outcome metrics, medication use. It also automatically flags if someone needs healthcare professional intervention. The platform also allows two-way messaging with healthcare professionals. The platform can incorporate optional activity-tracking data from commercial wearables and can be tailored to local pathways. Standard pathways typically span 6 to 8 weeks after hip replacement or 8 to 12 weeks after knee replacement, with flexible timelines for preparation before surgery, often lasting 4 to 8 weeks. moveUP is available to people over the age of 18.

It can be delivered in 4 languages and is a class IIa CE marked medical device and is available to the NHS.

5.9 mymobility (Zimmer Biomet)

mymobility is a digital care-management platform that provides procedure specific education, daily tasks, and video guided exercises. It also uses activity and gait data to support remote monitoring, including a predictive mobility model (WalkAI) that may help identify people recovering more slowly. The platform also allows the device camera to measure and track range of motion following knee surgery. People can share symptom updates, images and messages with their care team, and healthcare professionals can review progress and respond to automated alerts in real-time. People are enrolled by their surgical team and follow personalised plans through the mobile app on their phone, with optional smart watch integration. Content before surgery can be accessed from the point of referral and may extend up to 12 months before surgery, while recovery support after surgery is generally used for up to 180 days but can be used for longer. mymobility is a Class I CE marked medical device, available in English and Welsh and is used in several NHS trusts.

5.10 myrecovery (HOPCo Ltd)

myrecovery is a configurable digital platform that provides procedure-specific educational content, lifestyle advice and recovery tasks delivered through multimedia modules, videos and interactive checklists. Before surgery, it offers education, exercise guidance and lifestyle advice with timing determined by local pathways. After surgery, the platform delivers structured rehabilitation exercises, and educational guidance around wound-care, pain, medication and recovery for around 8 to 16 weeks. Healthcare professionals can monitor progress through a web-based dashboard that displays survey responses, activity data, and patient-reported measures to support early identification of people requiring additional support. The programme is adjusted by the clinical team and one or two-way communication is available. The platform supports 9 languages and supports the use of assistive technologies such as screen readers. Each video is accompanied by audio

narration, subtitles, and supporting text. It is available to people over the age of 13. myrecovery is a Class I CE marked medical device and is currently used within several NHS trusts.

5.11 Phio: Phio Access, Phio Engage and Phio Collect (EQL Ltd)

The Phio system includes 3 technologies. Phio Access is a triage support tool. Phio Engage is a digital platform that supports structured rehabilitation. Phio Collect is a data collection tool which can be used to collect outcome data. Phio Engage provides clinician assigned personalised exercise programs, educational content and symptom tracking features. People complete symptom check-ins and functional assessments, and exercise difficulty is adjusted by the user or physiotherapist according to their needs and progress. Users can receive exercise reminders and automated symptom-check prompts, and escalation messages tell users when they should seek further care. The Engage app allows two-way communication to get exercise support, symptom or recovery advice and help with using the app. People over the age of 16 usually access the programme through referral from primary, community or secondary MSK services depending on local commissioning (using Phio Access). Length of use is anticipated to be 12 weeks and Phio is used in several NHS trusts. Phio is not classified as a medical device.

5.12 Physitrack (Physitrack PLC)

Physitrack is a digital care management platform that supports structured, individualised rehabilitation and preventative care through tailored exercise programs and patient education. Healthcare professionals select appropriate content from a library of exercises and educational resources, including videos and leaflets, and can upload their own materials to customise pathways. The platform enables remote engagement via secure video consultations, two-way messaging, and real-time dashboards showing adherence, symptom trends and patient-reported outcome measures. Automated reminders and progress tracking encourage engagement, and healthcare professionals can monitor outcomes and intervene when

necessary. It is available in multiple languages. It is not classified as a medical device and is used in several NHS trusts.

5.13 PreActiv (Snow Squared Ltd)

PreActiv is a digital rehabilitation platform which provides structured strengthening, cardiovascular fitness and modules on education and lifestyle (such as smoking cessation, mindfulness and nutrition). Content after surgery covers mobility, gait progression, circulation, pain management and gradual return to activity. Programmes are personalised using intake data with exercises adjusted automatically in response to rate of perceived exertion, symptoms, and exercise completion. Exercise can also be adjusted manually by healthcare professionals. Users can contact the company's healthcare professional team for support, and a community forum and gamification are used to improve engagement. Healthcare professionals (generally from the company, with read only access for NHS clinicians unless configured for them to have admin permission) monitor progress through a secure dashboard using real-time data on adherence and outcomes with automated alerts prompting review when people report red flag symptoms or there is decreased activity. Future optional integrations with partner technologies (wearables and symptom tracking modules) that support data collection are planned. Standard use typically starts up to 12 weeks before surgery and lasts for 6 weeks after surgery, with adjustment based on need. It is available to adults, and the platform uses plain language content, easy-read formatting and could support additional languages. PreActiv is progressing towards a Class I CE mark and is currently in use across several NHS trusts.

5.14 QuestPrehab (C Digital Healthcare Ltd)

QuestPrehab is a digital platform provided personalised exercise programmes, sign posting, education, and behavioural support before and after surgery. Preparation before surgery often begins when people are added to added to the surgical pathways, often 2 to 6 weeks before their procedure and includes tailored exercise plans, nutritional guidance, psychological preparation and education content. After surgery users continue with

rehabilitation by completing daily tasks, symptom check-ins and functional assessments. There is no set length of time for this. The platform can allow sending reminders to users to complete tasks. Programmes are adjusted automatically or manually by a healthcare professional. Healthcare professionals can remotely monitor progress via a management portal and intervene when required (due to a lack of engagement, progress or red flag symptoms). Two-way communication is available so that users can ask questions or report concerns to clinicians. People can self-refer or be referred by their medical team, with a clinical suitability assessment completed before starting the programme. The platform supports multiple languages through configurable language files, including right-to-left formats, and can host educational materials in accessible formats such as easy-read text, audio, video and illustrated content. QuestPrehab is a Class I UKCA medical device used in several NHS trusts.

5.15 Slider (AI Rehab Ltd)

Slider is a digital rehabilitation platform combines a physical device used when seated or lying positions with a companion app to deliver guided lower-limb exercises at home. It measures heel force, horizontal displacement and heel lift in real time, allowing NHS (and optionally company) professionals to remotely track performance, adherence and recovery trends. The platform provides education content covering expectations before and after surgery and general lifestyle advice, with both automated alerts and manual escalation of red flags and poor compliance. Gamification is used to encourage motivation to complete tasks. People over the age of 18 typically begin using Slider from 2 to 8 weeks before surgery to build strength and control and continue with daily sessions for the first 6 to 12 weeks after surgery. Healthcare professionals can remotely review progress, adjust exercises or initiate follow-up through two-way messaging. Slider is Class I CE and UKCA marked medical device and is available to the NHS.

5.16 Sword Thrive (Sword Health)

Sword Thrive is a digital platform that provides a personalised exercise plan delivered through the Thrive Pad device (a tablet with camera) using AI-enabled computer-vision technology to track repetitions, range or motion and movement quality, alongside educational content and behavioural coaching. The platform allows automated reminders to encourage engagement. The platform uses company physiotherapists who remotely do an initial assessment, oversee progress (using AI collated data), allow two-way communication and provide follow up where needed to adapt exercises or escalate care. The physiotherapist also works with users on an individual basis providing additional health education and behavioural support. The programme is typically used for around 8 weeks before and 8 weeks after surgery but can be adjusted. Sword Thrive is available in four languages and supports accessibility through closed-captioning, adjustable text size, audio-visual cues and optional live medical interpreting or real-time translated captioning during video consultations. As a Thrive Pad is provided, users do not need access to their own device. Sword Thrive is a CE class IIa (MDR) or Class I (MDD) marked medical device and is used in several NHS trusts.

5.17 The place of technologies in the care pathway

Digital rehabilitation platforms are intended to be used alongside routine NHS rehabilitation care. They do not replace clinical assessment, inpatient physiotherapy or supervised rehabilitation (where needed).

Before surgery, the platforms can be used to deliver rehabilitation (including education, behaviour change support, and exercise programmes) after referral for joint replacement in line with the recommendations listed in NICE's guideline on primary joint replacement. Most technologies are expected to be accessed following referral or onboarding by the clinical team, although some platforms have features that allow self-referral.

After surgery, platforms are used to deliver self-directed rehabilitation following discharge.

The platforms could be used on their own or alongside additional in person physiotherapy appointments (if needed as part of self-directed rehabilitation).

5.18 Innovative aspects

Digital platforms for hip and knee replacement include several innovative features compared with self-directed rehabilitation without digital technologies. These platforms provide structured support before and after surgery through a single digital pathway offering personalised exercise programmes, symptom check-ins, reminders and educational materials that can be delivered consistently regardless of geography or local appointment availability. Several platforms also incorporate targeted education on pain, expected recovery patterns and self-management strategies which may help people prepare for the early postoperative period and manage symptoms more confidently at home. Some platforms have automated or AI-supported adjustments to rehabilitation plans. Many platforms include tools that may support stratification of need, such as progress tracking dashboards, symptom-monitoring questionnaires and automated engagement prompts that can help identify when someone is not recovering as expected and may require additional clinical input. These same tools can help people recognise when they should seek further advice or clinical review themselves. Many include remote monitoring dashboards and red-flag prompts that may support timely escalation. Some technologies also integrate optional wearable sensors and or computer-vision tools to provide range of motion measurements and feedback on exercise form.

6. Comparator

The comparator for this assessment is current standard NHS care without the use of digital rehabilitation platforms, outlined in NICE's guideline on primary joint replacement.

In current practice people undergoing hip or knee replacement are usually supported through self-directed rehabilitation before and after surgery. Delivery varies across NHS trusts, but typically includes:

- printed exercise programmes or digital leaflets linking to instructional videos
- verbal advice and education from physiotherapists, occupational therapists and surgical teams
- physiotherapy input, delivered in person or by telephone, where available and based on clinical need
- information resources, such as leaflets and or web-based education materials.

Some centres may provide supervised exercise sessions as part of preparation for surgery (for example, prehabilitation classes or joint school), but this is not routinely available.

7. Patient issues and preferences

People having hip or knee replacement surgery may want support before and after their operation. Before surgery, people may want help to prepare, manage symptoms and understand what to expect. After surgery, people may want clear guidance on exercises, pain management, mobility and recovery. Reassurance and timely information can help people feel more confident and prepared.

Digital rehabilitation platforms may support people by offering:

- structured and individualised preparation and guidance before surgery
- exercise programmes tailored to their procedure, with some platforms allowing exercises to be adjusted to suit individual needs
- education modules to provide information before and after surgery so that they are better prepared and have realistic expectations of the procedure and recovery
- reminders and progress monitoring to encourage engagement
- more access to support including earlier identification of concerns so that people can seek advice

- flexible access to information and rehabilitation at home, which some people may prefer if attending in person appointments is difficult because of mobility, work, or caring responsibilities, or distance from services
- programmes available in multiple languages and accessible formats

Some people may have concerns about:

- whether digital platforms provide personalised and accurate advice and consider comorbidities
- reduced access to in person contact if services rely more heavily on digital platforms, particularly for people who cannot use digital tools or if they are not suitable for them
- difficulties using technology because of confidence, skills or access
- being able to follow exercises on a digital device, especially if it is a small screen
- understanding the information provided such as health-related information or terminology related to health and social care
- whether information and educational content are tailored to cultural backgrounds
- data sharing and privacy
- how to seek support if they have concerns or feel their recovery is not progressing as expected.

8. Potential equality issues

NICE is committed to promoting equality of opportunity, eliminating unlawful discrimination and fostering good relations between people with protected characteristics (Equality Act 2010) and others.

Condition related equality issues:

Osteoarthritis is the most common indication for hip and knee replacement. Its prevalence increases with age and is more common in people aged 45 and over, people with overweight or obesity and people living in the most deprived

areas. It is also more common in women who tend to experience more severe symptoms then men. NICE's clinical knowledge summary for osteoarthritis states that other risk factors include low bone density, joint injury or trauma and genetics. Access to joint replacement also varies by socioeconomic status. For example, people living in the least deprived areas were almost five times more likely to receive NHS-funded elective hip replacement in 2016 than those living in the most deprived areas, despite similar levels of clinical need (Versus Arthritis, 2025).

Technology related equality issues:

Digital platforms may help reduce inequality in access to rehabilitation by providing standardised information and remote support for people who find it difficult to attend in person services. Differences in community physiotherapy capacity and long waiting times in many regions may increase reliance on digital platforms which may not be accessible to everyone.

Some people may find it more difficult or may be unable to use digital technologies. NHS England's report on digital inclusion states that digital exclusion is more common in a range of groups including in older people, people with disabilities, people who do not have access to a private device, affordable data or reliable internet connection. Socioeconomics factors such as a low income, unemployment and homelessness can also lead to digital exclusion.

Groups who may particularly benefit from digital technologies include:

- people living in rural or underserved areas with limited access to in person physiotherapy
- people who prefer flexible access to rehabilitation at home
  people who may benefit from more frequent monitoring, reminders or earlier identification of concerns.

Some people may find it more difficult or may not be able to use the digital platform, for example:

- people with neurodiverse conditions
- people with a learning disability
- people with a visual, hearing or cognitive impairment
- people with problems with manual dexterity
- people who are less used to using digital technologies in general
- people who do not have access or private access to smart phone tablet or a computer or internet (if internet is needed)
- people who are unable to read or understand health-related information (including people who cannot read English)
- people who require information in accessible formats.

9. Guidance type

The digital platforms to support rehabilitation before and after primary elective hip or knee replacement surgery are assessed for early use. This approach to guidance development is because:

- the assessed technologies have limited or no current use in the NHS
- limited evidence is available for all technologies
- the technologies have the potential to address a high unmet need in the NHS
- the technologies have recent, ongoing or upcoming appropriate regulatory approval for use in the UK.

10. Decision problem

The key decision questions for this assessment are:

- Does offering digital platforms to support rehabilitation before and after primary elective hip or knee replacement surgery have the potential to be a clinically and cost-effective use of NHS resources?
- Are there gaps in the evidence base and what are the key gaps?

Table 1: Decision problem

Type of assessment	Early use
Population	People listed for primary elective hip or knee replacement surgery. If the evidence allows, the following subgroups may be considered: • People having total hip replacement • People having total knee replacement
Interventions	Digital platforms to support rehabilitation before and after primary elective hip or knee replacement surgery, including: • BPM Pathway • ForPatientApp • getUBetter • Good Boost • GoWellHealth • Huma • Joint Academy • moveUP • mymobility • myrecovery • Phio • Physitrack PLC • PreActiv • QuestPrehab • Slider • Sword Thrive (Only technologies that meet the inclusion criteria in section 5 will be assessed)
Comparator	Self-directed rehabilitation before and after primary elective hip or knee replacement without digital platforms which includes: • Written or verbal advice, including exercise leaflets or links to exercise videos • In person or telephone physiotherapy input when available • Information resources, such as printed leaflets or web-based patient education
Setting	Outpatient care and community or home-based care
Outcomes and costs (may	The outcome measures to consider include:

include but are not limited to)	**Primary outcomes** Patient reported outcomes • Health-related quality of life (for example EQ-5D, SF-12 or VR-12) • Pain and joint-specific function (for example Oxford Hip Score [OHS], Oxford Knee Score [OKS], Hip Disability and Osteoarthritis Outcome Score - Physical Function Short form [HOOS-PS], Knee Injury and Osteoarthritis Outcome Score for Joint Replacement [KOOS, JR.]) • Meaningful function and participation in daily life, including return to usual activities, roles and independence (MSK-HQ functional items) • Confidence in recovery and self-management (for example Canadian Occupational Performance Measures [COPM], Patient Activation Measure-13 [PAM-13], MSK-HQ self-efficacy items, Arthritis Self-Efficacy Scale [ASES]) Clinical outcomes: • Healthcare use: unplanned healthcare contacts or unplanned readmission • Escalation to face to face clinical review when concerns are identified • Mobility or functional performance tests where routinely collected (timed up and go, 30 second sit to stand, gait speed, range of motion) [Where comparator care is self-directed rehabilitation, in-person tests may only be collected at routine postoperative review or before discharge] **Secondary outcomes** Patient reported outcomes • Psychological outcomes (anxiety or wellbeing measures where collected) • User satisfaction and acceptability (of the technology to support recovery) • Return to usual activities (return to work or caring responsibilities) Intermediate outcomes • Intervention adherence, completion of exercises or recommended activities • Interaction with healthcare professionals, messaging or education engagement • Early identification of concerns, including digital red-flag alerts that trigger clinical triage • Intervention-related related adverse events (including falls during exercise, device or sensor-related issues, failure of red-flag mechanisms)

	Costs and resource use:
	• Costs of the technologies (including license fees and maintenance)
	• Cost related to supporting digital technologies (including but not limited to additional hardware or software, cost of staffing and training)
	• Costs related to length of rehabilitation before and after surgery
	• Cost of resource use
	  ○ Primary, community and secondary care appointments
	  ○ Surgical-team follow-up
	  ○ Physiotherapy or multidisciplinary review
	• Length of treatment or rehabilitation period before and after surgery

Economic analysis	A health economic model will be developed comprising a cost utility or cost-comparison analysis. Costs will be considered from an NHS and Personal Social Services perspective. Sensitivity and scenario analysis should be undertaken to address the relative effect of parameter or structural uncertainty on results. The time horizon should be long enough to reflect all important differences in costs or outcomes between the technologies being compared.

11. Other issues for consideration

11.1 Subgroups

The same digital platforms may be used across both total hip and total knee replacement and offer similar educational and exercise-based modules. But the content is tailored to the joint being replaced and the expected recovery trajectory. Recovery following total knee replacement is generally slower and may involve more prolonged pain, stiffness and functional limitation compared with total hip replacement. As a result, the intensity, duration and type of rehabilitation, as well as patterns of engagement with digital rehabilitation platforms differs between these groups. This could impact the clinical and cost-effectiveness of the technologies.

11.2 Potential implementation issues

Initial suitability assessment

Digital platforms may be unsuitable for some people. Technologies use different approaches to screening, including assessment by healthcare professionals during referral or preoperative appointments, or digital questionnaires that identify suitability and highlight risks. Eligibility assessment may need to ensure that people:

- can safely take part in digital rehabilitation
- have adequate support and access to digital platforms
- can understand and act on the information in the prompts provided
- are directed to alternative or more intensive rehabilitation if required.

How screening is incorporated may vary depending on the local care pathway and the technology selected.

Ongoing monitoring, escalation and safety

Technologies include different approaches to monitoring progress and safety. Many rely on people reporting their symptoms, completion of exercises or progress questionnaires. Some include automated alerts to flag concerns (for example uncontrolled pain, reduced mobility, poor wound healing, or low engagement). Where red flag alerts exist, they may alert health care professionals (associated with the company or the NHS where configured), or the person using the technology, to seek appropriate clinical review.

Integration with NHS systems, capacity and costs

Technologies may need to integrate with NHS electronic systems or provide data in formats compatible with existing workflows.

The Digital Technology Assessment Criteria (DTAC) is designed to be used by healthcare organisations to assess digital technologies at the point of procurement to make sure that they meet NHS clinical safety, data protection, technical security, interoperability and usability and accessibility standards.

Introducing digital rehabilitation platforms may require adjustments to local pathways and additional tasks for staff. Training may be needed on

onboarding people onto the platform, interpreting data from the technologies and responding to alerts or changes in recovery. Some technologies may require scheduled review by healthcare providers while others require only occasional oversight. This may affect allocation of staff time across physiotherapy, surgical and preoperative teams.

Implementation may involve costs for technology licenses, onboarding and staff-training, as well as support for people who need help with digital tools. IT infrastructure may need updating to ensure reliable connectivity or compatibility with existing systems.

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Appendix A: Related Guidance

Related Guidelines:

- Perioperative care in adults (2020) NICE guideline NG180
- Chronic pain (primary and secondary) in over 16s: assessment of all chronic pain and management of chronic primary pain (2021) NICE guideline NG193
- Patient experience in adult NHS services: improving the experience of care for people using adult NHS services (2021) Clinical guideline: CG138

Related Quality Standards:

- Osteoarthritis in over 16s (2022) Quality standard QS87
- Joint replacement (primary): hip, knee and shoulder (2022) NICE quality standard 206
- Patient experience in adult NHS services (2019) Quality standard QS15