

Recover+

Recover+. Digital rehabilitation and health education for osteoporosis and osteoarthritis

ABSTRACT

Osteoporotic fractures and osteoarthritis pose significant challenges to the functionality and quality of life of older adults. Effective prevention and recovery require lifestyle interventions, but not everyone can access face-to-face treatments due to limited accessibility and health resources. Mobile health (mHealth) solutions enable patients to undergo interventions at home, overcoming these barriers. In 2024, we published a systematic review on this topic, highlighting the lack of evidence-based mHealth solutions for the recovery of osteoporotic fractures as well as hip and knee osteoarthritis.. Building on the experience of a previous project, this new initiative introduces a completely novel approach, integrating rigorous scientific methodologies for development and validation. It also aims to address the variability in funding models, health accessibility, and care pathways in countries such as Spain, Portugal, Switzerland, and Italy..

The Recover+ project involves several critical objectives. WP1 focuses on developing culturally adapted health education and telerehabilitation content, and producing multilingual videos for providing digital rehabilitation and health education. WP2 aims to enhance the usability of the app through technological advancements and personalized treatment options by leveraging AI and machine learning to improve the effectiveness and user experience. WP3 will develop a monitoring system for evaluating patients' quality of life and treatment progress, integrating advanced automatic monitoring and predictive analytics.

We also plan to evaluate the feasibility and health economics of Recover+ in hospitals across Portugal, Spain, and Switzerland through WP4 and WP5. WP4 will measure adoption, usage, satisfaction, and clinical outcomes, ensuring our solutions are adaptable to various healthcare systems. WP5 will conduct a cost-effectiveness analysis compared to usual care, using a Markov cohort simulation model to project costs and health benefits over time.

Stakeholder engagement is crucial for the success of our project. WP6 will map and assess key osteoarthritis and osteoporosis patient associations to develop partnerships, establish a Stakeholder Advisory Board, and gather continuous feedback to ensure the platform meets end-user needs. WP7 will focus on disseminating research findings through national and international congresses, and providing training sessions and workshops for stakeholders to effectively use Recover+.

Finally, WP8 will design an innovative business plan for the Recover+ application, emphasizing direct-to-consumer strategies and exploring non-traditional distribution channels such as pharmacies. This business strategy will ensure the sustainability and scalability of Recover+ in diverse healthcare systems, establishing future expansions and innovations in mHealth solutions for musculoskeletal diseases.

Firstly, we aim to enhance the existing ActiveHip+ mHealth, which is currently focused on osteoporotic hip fractures, to provide lifestyle interventions (i.e., exercise, rehabilitation, nutrition and health education) for patients with hip and knee osteoarthritis, both before and after joint replacement surgery.

For that purpose, we will conduct a co-creation study involving main stakeholders to include this new treatment content according to their needs. This expansion, called Recover+ will incorporate technological advancements such as an improved interface design and artificial intelligence to offer a more personalized monitoring and treatment system. Additionally, the content for lifestyle interventions will be translated and culturally adapted for use in Portugal, Italy and Switzerland.

Secondly, we will assess the feasibility of the Recover+ mHealth for treating osteoporotic hip fractures and hip/knee osteoarthritis in three Spanish hospitals, three Portuguese hospitals, and one Swiss hospital. A total of 396 patients and their family caregivers will be included, gathering data on the level of adoption, adherence, reach, and sustainability of the Recover+ mHealth. Moreover, it will be a useful way to get feedback on the system's quality and satisfaction from patients, informal caregivers, and healthcare professionals. As part of the feasibility studies, we will also include an evaluation of clinical outcomes, cost-effectiveness and cost-utility outcomes.

Lastly, we will develop and execute implementation strategies, such as forming partnerships with osteoporosis and rheumatism patient associations, network with NGOs (e.g Frailty Fracture Network or European Alliance of Associations for Rheumatology EULAR), and conducting training sessions in hospitals. These efforts aim to facilitate the adoption of the Recover+ mHealth in the healthcare settings of Spain, Portugal, Italy and Switzerland. All this will position us as the mHealth platform with the highest scientific rigour in Europe and provide a solid foundation for future expansions to clinical relevance to encompass a broader range of musculoskeletal conditions and decrease healthcare costs across different stakeholders.

Our proposal aims to revolutionize musculoskeletal & orthopedic care by integrating lifestyle interventions into a digital platform to combat osteoporosis and osteoarthritis progression and support postoperative recovery beyond the inpatient settings. Recognizing the limitations in current healthcare systems, especially in resource-constrained and rural areas accessibility, we propose a shift towards home-based interventions accessible via patient own smartphones. This shift aligns with the ultimate goal of the current THCS call by enhancing quality, efficiency, equity, and sustainability in health and care systems. Moreover, it is a promising solution to improve key clinical outcomes, such as quality of life or functioning, in adults suffering these conditions. We have extensive experience in developing evidence-based and effective mHealth solutions in the field of rehabilitation, and we aim to build on this foundation to position ourselves as leaders in telerehabilitation across Europe..

KEYWORDS

- mHealth
- Exercise
- Outpatient care
- Orthopedic disorders
- Digital health
- Informal caregivers

DURATION

36 months

PARTNERS

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