

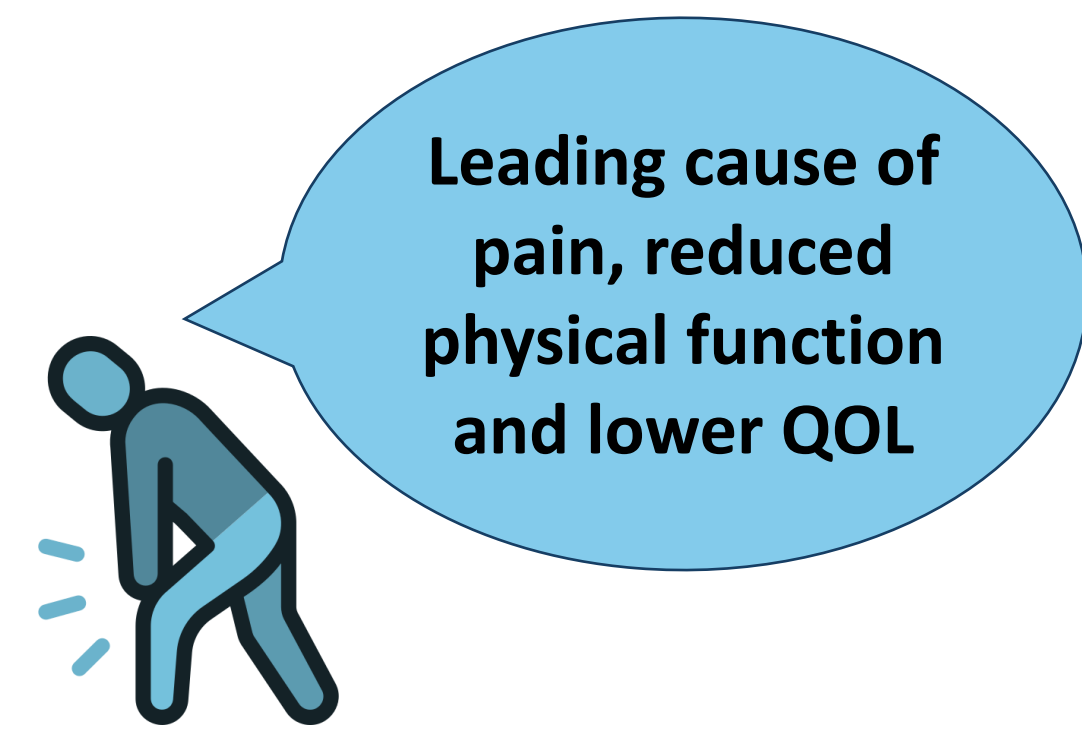
# Barriers to and facilitators of maintaining physical activity for hip and knee osteoarthritis: A mixed-methods systematic review using the theoretical domains framework

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## Background

Osteoarthritis (OA) currently affects over 595 million people worldwide<sup>1</sup>. **Physical Activity (PA) is continually recommended** by major international clinical guidelines<sup>2,3,4</sup> as a **first line treatment for the management of hip and knee OA**. Supervised exercise and education programmes such as GLA:D® (Good Life with osteoArthritis from Denmark) have shown significant improvements in pain reduction, physical function and Quality of Life (QOL).



Traditional research has examined the barriers and facilitators to the adoption and adherence of PA behaviour; however, this novel study is the first to explore **determinants in the maintenance (≥ 6-months) of PA behaviour for people with hip and knee OA**. Addressing this critical gap is instrumental to informing behavioural interventions **to maximise clinical effectiveness in supporting long-term PA** – a behaviour repeatedly linked with improved outcomes and reduced healthcare burden.

## Methods

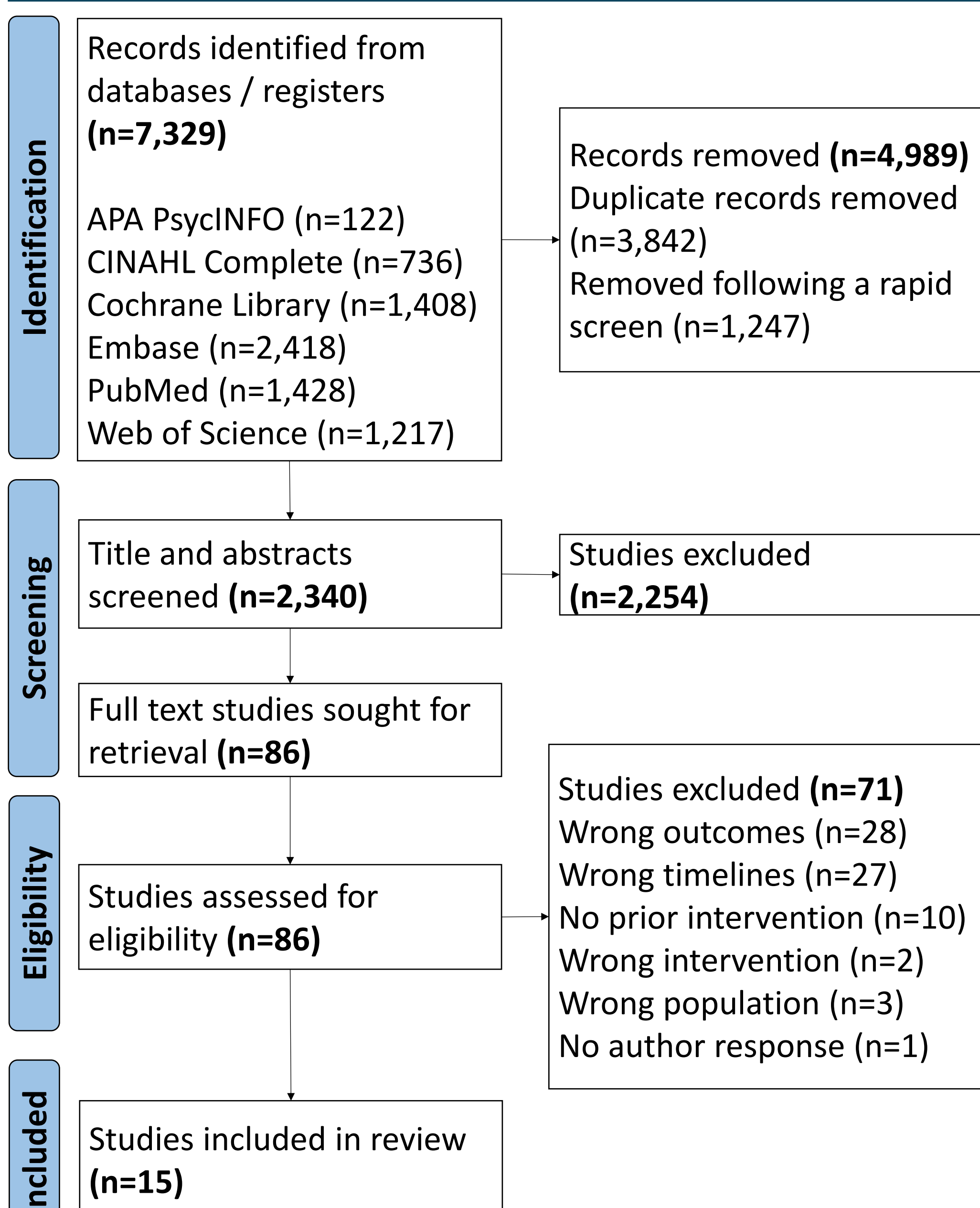


Figure 1. PRISMA Flowchart

Following a pre-registered protocol<sup>6</sup>, six databases were searched from inception to February 2025 and followed the process as detailed in figure 1.

Eligibility criteria: peer-reviewed, reported in English studies were included if they met the following criteria: **Sample** (hip or knee OA), **phenomenon of interest** (previously participated in a PA programme ≥ 6-months ago with follow-up), **design** (observational, cross-sectional, cohort, longitudinal studies), **evaluation** (barriers and/or facilitators reported), **research type** (qualitative, quantitative or mixed-methods).

Data were extracted, appraised using the Mixed-methods Appraisal Tool (MMAT), and synthesised narratively.

Qualitative themes and quantitative evidence were mapped to the Theoretical domains Framework (TDF). These findings were then integrated in the development of the **Physical Activity Maintenance for osteoArthritis (PAMA) conceptual map**.

## Results

**Fifteen studies (n=1,464; 73.8% female)** were included: six quantitative, five qualitative and four mixed-methods. 12 studies were found to be high quality meeting at least 75% of the MMAT assessment criteria with the remaining 3 reporting medium quality. The most frequently cited qualitative themes mapped to the TDF domains were **beliefs about capabilities, environmental context and resources, and social influences**. Quantitative evidence supported this, highlighting key determinants such as self-efficacy, energy levels, social support and resource availability strongly influenced the maintenance of PA behaviour for hip and knee OA.

Table 1. Most frequently cited TDF domains in qualitative studies

TDF Domain	Studies (n = 15)	Constructs identified	Exemplar illustrative quote (qualitative synthesis)
Beliefs about capabilities	(n = 12)	Beliefs; empowerment; perceived competence; Self-confidence; Self-efficacy; Self-esteem	"The more exercise I do, the more I do with it, I think the better it's gonna be, rather than nursing it, keep doing it and keep exercising it and so that's what I do" (Moore et al., 2020) (Facilitator)
Environmental context and resources	(n = 11)	Barriers; environmental stressors; facilitator; organisational culture; person and environment interaction; resources / material resources available; salient event	"The information that we were given through the booklets and through the website was extensive and easy to read and easy to look at and easy to follow" (Lawford et al., 2023) (Facilitator)
Social influences	(n = 9)	Alienation; group identity; power; social pressure; social support	"I feel like I've self-destructed. I felt like once the program ended I probably—I really needed someone just doing a constant check-in with me..." (Lawford et al., 2023) (Barrier)

## Results

Findings of this review were mapped to the **PAMA Conceptual map (figure 2)**, illustrating the individual, social and environmental barriers and facilitators, and feedback loops that influenced PA maintenance.

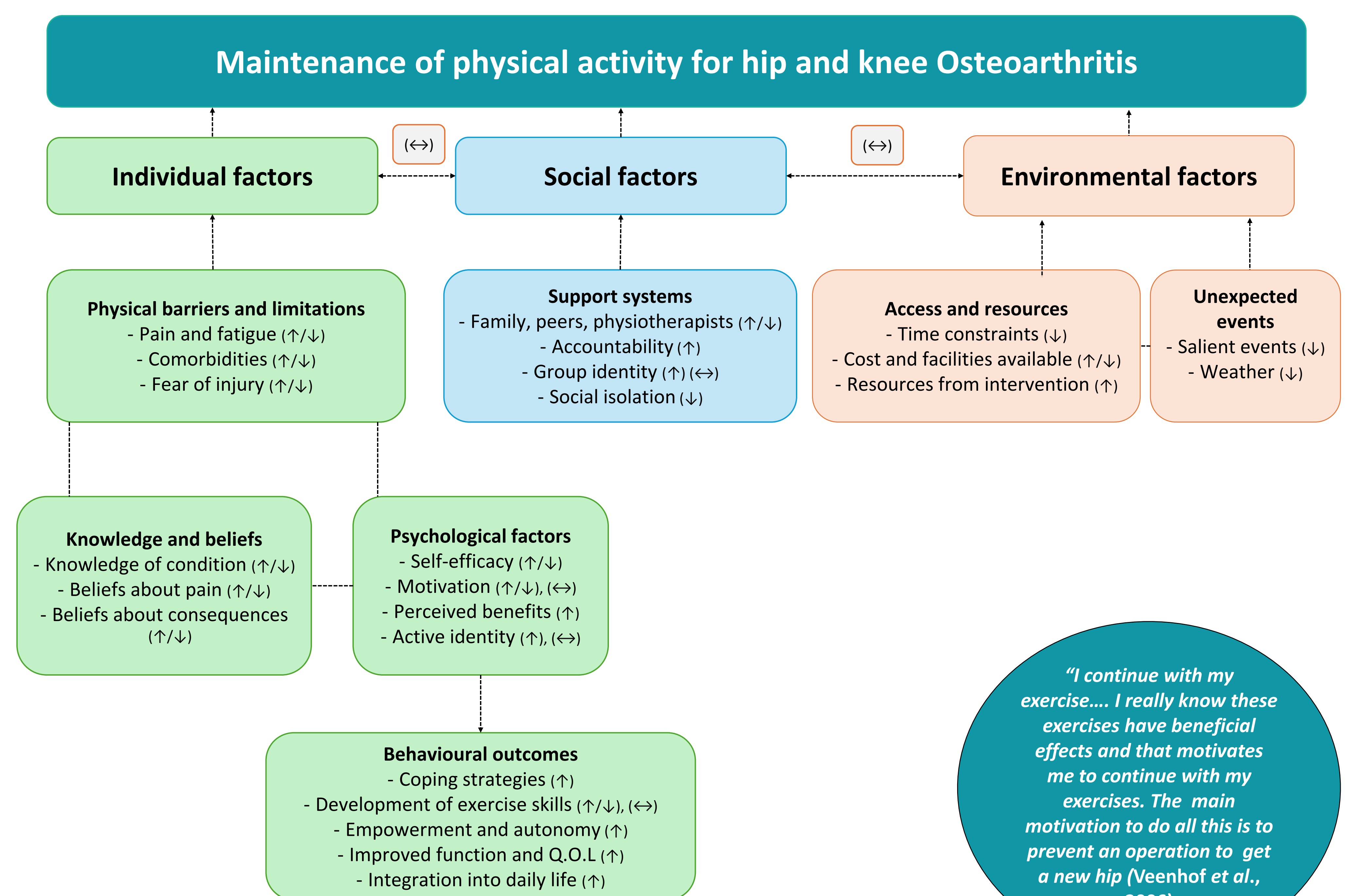


Figure 2. Physical Activity Maintenance for osteoArthritis (PAMA) Conceptual map (↑, facilitator; ↓, barrier; ↔, feedback loop)

## Conclusions

This review provides the first comprehensive synthesis of barriers and facilitators for maintaining PA for individuals with hip and knee OA. Through the integration of the TDF findings and the development of the PAMA conceptual map; this review highlights the dynamic interplay of individual, social and environmental factors affecting long-term PA behaviour. The insights derived in this review do not provide the panacea for long-term OA management however, provide a significant overview of the determinants affecting the maintenance of PA behaviour, informing future long-term studies and healthcare practices.

## References

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