Learning to swim with back pain: a qualitative study of swimmers with chronic low back pain.

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INTERNATIONAL JOURNAL OF QUALITATIVE STUDIES ON HEALTH AND WELL-BEING
2025, VOL. 20, 2474357
https://doi.org/10.1080/17482631.2025.2474357

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Learning to swim with back pain: a qualitative study of swimmers with chronic low back pain

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ABSTRACT

Purpose: Swimming is one form of exercise advised to people with chronic low back pain (CLBP), there is limited research, however, supporting this recommendation and describing the experience and use of swimming in this population. The aim of this study was to explore the experience of people who use swimming to manage CLBP.

Methods: Semi-structure interviews were conducted with 14 swimmers who were using swimming to manage CLBP. Thematic analysis was used to analyse the interview data, and the themes were mapped onto the capability, opportunity, motivation and behaviour (COM-B) model to understand the behavioural factors.

Results: Five common themes were developed during the analysis: (1) My back pain journey; (2) Learning to swim with back pain; (3) How swimming looks for me; (4) What I gain from swimming; and (5) Keep calm and carry-on swimming. The themes mapped onto all three COM-B domains.

Conclusions: The participants found that swimming was a valuable self-management tool for CLBP. The findings from the thematic and COM-B analysis indicate that learning to swim with CLBP can be a complex journey, influenced by several interrelated behavioural factors. In the absence of multi-professional support, inclusive swimming communities and accessible swimming venues, swimming participation rates may be affected.

CLINICAL RELEVANCE

- Swimming can be a valuable self-management tool for some people with CLBP
- Learning to swim with CLBP can be a complex journey
- Swimming engagement can be impacted by inter-related behavioural factors
- Multi-professional support and inclusive swimming communities could improve swimming uptake in this population

ARTICLE HISTORY
Received 29 October 2024
Accepted 26 February 2025

KEYWORDS
Behaviour change; chronic low back pain; COM-B model; experience; swimming

Introduction

Low back pain is the leading cause of disability worldwide, affecting 619 million people globally and is projected to increase to 843 million by 2050 (Ferreira et al., 2023). When back pain is experienced for more than 3 months and is accompanied by functional disability and emotional distress, it can be defined as chronic low back pain (CLBP) (Treede et al., 2015). The National Institute for Health and Care Excellence (NICE) guidelines recommend that health professionals provide advice and information to enable self-management and group exercise programmes, either mind-body, aerobic or biomechanical or a combination of these approaches as treatments for low back and sciatica (NICE, 2016). Mind-body exercise refers to exercise which combines movement, breathing and attention regulation (Zhang et al., 2021), and aerobic exercise is a form of exercise which is rhythmic, continuous and uses large muscles (Patel et al., 2017). Biomechanical exercise focuses on correct technique and form so that the body moves safely and efficiently (Forte & Teixeira, 2023).

In line with the NICE guidelines, it is common practice for health professionals to recommend swimming to people with CLBP for rehabilitation, pain management and to improve levels of physical activity (Cole et al., 1997; Ribaud et al., 2013). There is limited research, however, supporting this recommendation and describing the use of swimming by people with CLBP (Baptista et al., 2020; Oakes et al., 2023; Pocovi et al., 2022; Setchell et al., 2019; Wareham et al., 2024). Swimming can be practised in many different ways and in a variety of community locations (Newsome & Young, 2012) and use, uptake and engagement can be impacted by behavioural factors (Oakes et al., 2024; Swim England, 2017). It is

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recommended when behavioural factors affecting an intervention are uncertain, theoretical frameworks such as the capability, opportunity, motivation and behaviour (COM-B) model can be used to gain an understanding of the domains impacting change (Michie et al., 2014).

Personal accounts have been published describing how swimming has had a positive impact on physical and mental health (Deacon & Allan, 2019; Heminsley, 2017; Swim England, 2019). Although there have been several qualitative studies exploring the experience and impact of open water swimming for health and wellbeing (Costello et al., 2019; Denton & Aranda, 2020; Murray & Fox, 2021); to date there has been no attempt to use research methods to evaluate and synthesize the experiences of swimmers who use swimming to manage CLBP, to identify whether there are common themes in the way swimming is practised by this population. Gaining insight into the experience and use of swimming by people with CLBP could provide valuable data to guide health professionals when recommending swimming, public health initiatives and direct future research in this field.

The aim of this study was to use semi-structured interviews to explore the experience of people who use swimming to manage CLBP.

Methods

Study design

Qualitative study utilizing semi-structured interviews.

Ethical approval

This study was granted ethical approval on the 22nd of April 2020 by the London Queen Square Research Ethics Committee. REC reference 20/LO/0307

Participants

Swimmers were eligible to take part in this study if they had experienced CLBP for more than 3 months, they used swimming to manage their CLBP and were aged at least 18 years old. Swimmers were recruited by advertising the study on both pool swimming and outdoor swimming social media groups. Participants were sent an information sheet and provided written informed consent to take part in the study. A purposive sampling approach was adopted to ensure that all participants met the eligibility criteria and had lived experience of using swimming to manage CLBP.

Data collection procedures

The interviews were conducted in person by HO outdoors, via video conference platform or telephone following an interview guide; see Table I. The interviews were recorded and transcribed verbatim by HO. The participants were emailed the transcripts to check content and to give them an opportunity to make any changes. Recruitment continued until no new themes emerged during the interviews and analysis.

Data analysis

Thematic analysis was used to analyse the interview data. HO read the transcripts to get familiar with the data and then started making notes and coding the data using NVivo software, using a combination of a priori codes and through the development of inductive codes. Codes were collated into possible themes and a thematic map was generated to check the themes and subthemes. HO developed the initial themes and subthemes, these were then reviewed and developed further in collaboration with MDV, DS and HM. The themes and subthemes were mapped onto the COM-B model using the process described

Table I. Interview guide.

Research question: What is the experience of swimmers who use swimming to manage CLBP?	
Key concepts	Interview questions
Experience of CLBP	Could you tell me a bit about your experience of having CLBP?
Experience of swimming with CLBP	Did you swim before you had CLBP?
	Tell me about your experience of swimming since you had CLBP.
Why did they choose swimming	Why did you choose to try swimming?
Other strategies used to manage CLBP	What else do you do to manage your CLBP?
Modifications/adaptations to swimming	Did you have to adapt or modify your swimming stroke because of your LBP and if so, what changes did you make?
	Do you have to avoid a swimming stroke due to your back pain and if so which one?
Stroke and drills they found helpful/unhelpful	Which swimming stroke do you find most helpful for your back?
	Do you use any swimming drills or other exercises in water?
Setbacks and management of setbacks	How do you manage setbacks?
Frequency of swimming and time in water	How often do you swim and for how long?
Motivations to keep swimming/keep active despite CLBP	What has motivated you to keep swimming and keep active despite having CLBP?

by Michie et al. (2014) in order to understand how they could impact swimming uptake and engagement.

Reflexivity

It is recognized that the researcher's background and worldview will have influenced the research approach taken and the analysis. The lead researcher (HO) completed this study during her PhD, she is a physiotherapist and competitive swimmer; she does not have CLBP.

Results

Swimmer characteristics

Fourteen swimmers were interviewed, four males and 10 females; six were pool swimmers, five were outdoor swimmers and three swimmers swam both in the pool and outdoors. The number of years the swimmers had experienced CLBP ranged between 3 and 45 years, median 25 years, interquartile range 10 years. The interview length ranged from 14 min to 41 min, median time 25 min. Table II provides a summary of the swimmer characteristics.

Data saturation

The number of participants recruited for this study was based upon data saturation models (Saunders et al., 2018). The number required to reach saturation varies and can be dependent on many factors including the heterogenicity of the participants and the study aims (Mason, 2010). The participants in this study were all swimmers with CLBP and the purpose of the interviews was clearly defined, meaning that data saturation could be achieved with a smaller sample size. It has been suggested that 12 interviews are usually required for data saturation (Guest et al., 2006); therefore, initially this was set as the benchmark for the minimum number of swimmers.

Themes

The interview data provided a rich multi-dimensional view of the experience of using swimming as a self-management tool for CLBP. Each swimmer had his/her own unique biography and experiences; however, five common themes were developed during the analysis. Table III provides a summary of the themes and subthemes. Each swimmer has been allocated a number, for example S1 and the location where they swam, for example pool, outdoor or pool and outdoor.

Theme 1: My Back Pain Journey

Theme one included four subthemes describing the swimmer's experience of CLBP.

How my back pain started

Each swimmer had a different experience of how their back pain started. Some spoke about a significant injury, for some there were several factors which had contributed, and for others their back condition had developed over time.

Understanding my back pain

Some swimmers spoke about diagnostic tests undertaken to determine a structural cause for their back condition and others were unsure of the cause.

More than just back pain

Symptoms varied day to day; most swimmers had baseline symptoms and then times when they experienced a flareup. The swimmers spoke about more than just CLBP but also loss of mobility, and the impact on family, work, sport, and mental health.

How I manage my back pain

The swimmers in this study were all self-managing CLBP. They had tried using many different methods to manage their CLBP; some of these were used early

Table II. Swimmer characteristics.

Swimmer	Location	Gender (Female/Male)	Years with back pain	Long-term/recent swimmer
1	Outdoor	Female	30	Recent
2	Pool	Male	30	Long-term
3	Pool	Female	40	Long-term
4	Outdoor and Pool	Male	40	Long-term
5	Outdoor and Pool	Male	25	Long-term
6	Outdoor and Pool	Female	20	Long-term
7	Outdoor	Male	20	Long-term
8	Pool	Female	30	Long-term
9	Outdoor	Female	25	Recent
10	Outdoor	Female	3	Recent
11	Pool	Female	5	Long-term
12	Pool	Female	20	Long-term
13	Outdoor	Female	45	Long-term
14	Pool	Female	6	Long-term

Outdoor Swimmer swam outdoors in the sea, lake or river; **Pool** Swimmer swam in a pool; **Long-term** Swimmer had been swimming for more than a year; **Recent** Swimmer had started swimming regularly in the last year.

Table III. Themes, subthemes and COM-B mapping.

Themes				
1	2	3	4	5
My back pain journey *The swimmers experience of CLBP*	**Learning to swim with back pain** *How and why, they started swimming and their journey and experience since swimming with CLBP*	**How swimming looks for me** *Where they swam, how they trained and whether they were swimming alone or with a group*	**What I gain from swimming** *The therapeutic benefits gained from swimming*	**Keep calm and carry-on swimming** *Strategies to enable regular swimming*
Subthemes				
1. How my back pain started (PhC, PsC)	1. My swimming journey (PhC, PsC, PO, SO)	1. Where I swim (PO)	1. Relief through swimming (AM, RM)	1. My goals and motivation (AM, RM)
2. Understanding my back pain (PsC)	2. How my back feels when I swim (PhC, PsC)	2. My swimming community (SO)	2. Swimming improves my physical and mental health and helps me function (AM, RM)	2. Developing a swimming habit (AM, RM)
3. More than just back pain (PhC, PsC)	3. How I swim with back pain (PhC, PsC)	3. My training regime (PhC, PsC, PO, SO)	3. My feelings about swimming (Am, RM)	3. Developing a setback plan and resilience (PsC)
4. How I manage my back pain (PhC, PsC)	4. My barriers to swimming and how I overcome them (PhC, PsC)			

Physical capability (PhC); psychological capability (PsC); physical opportunity (PO); social opportunity (SO); reflective motivation (RM); automatic motivation (AM).

on and others were still used alongside swimming. Most of the swimmers had medication but now managed without unless they were experiencing a setback and three of the swimmers had undergone spinal surgery.

> I've had 2 ops, I had an emergency decompression, S1, literally my left leg stopped working, never felt any pain or nothing. It just went, and then they went back in and dealt with some scar tissue and sorted out the one above. (S6 pool and outdoor swimmer)

Theme 2: Learning to swim with back pain

Theme two included four subthemes describing how and why the swimmers started swimming and their journey and experience of swimming with CLBP.

My swimming journey

Each swimmer shared a different story, describing how and why they started using swimming as a management tool for CLBP. Some had been recommended swimming by a health professional, some said that it was an educated choice and others found it was helpful by chance. Some swimmers had always swum and were ex-competitive or current competitive swimmers and others only swum or swam occasionally for leisure. For others, swimming was a transition from other exercise they could no longer manage.

> The impact (of running) through my legs irritates my lower back so I took up the swimming as another form of exercise. (S7 outdoor swimmer)

How my back feels when I swim

The swimmers spoke about how the water provided support, stability, and a safe environment in which to exercise.

> It just felt like that kind of support of being held in the water that really seemed to make it a lot easier. (S10 outdoor swimmer)

The swimmers were aware how their back felt whilst swimming; some sensations were deemed comfortable and others uncomfortable or painful. Although swimmers sometimes spoke about discomfort, they followed this by discussing how they adapted their stroke or choice of stroke to reduce or eliminate these sensations.

> I will almost lift my lower back and drop my legs because after a while if I do get in the same position for too long and relaxed, I do tend to arch and that, it doesn't necessarily cause pain, but it is just uncomfortable. (S14 pool swimmer)

How I swim with back pain

Front crawl was the most popular stroke for the swimmers and for most swimmers it was the most comfortable stroke for their back. One swimmer found that initially after her injury front crawl increased her pain, and she had to stick to backstroke. Since modifying her position, by lifting her back and dropping her legs in the water, she was now able to do both backstroke and front crawl unless she was having a bad day. Most swimmers did not have to adapt front crawl. A couple of swimmers felt that front crawl helped *"lengthen their spine"*; one swimmer found that using her arms and not kicking helped enhance this feeling. The less able swimmers spoke

about taking lessons to learn how to swim front crawl correctly.

> The good thing about the catchup drills is you are stretching forwards, you are stretching; I have found that helps loosen up the back because you are stretching the sides, potentially. When you are in pain you tend to tighten everything up, you hold everything in a little bit, so that kind of drill helps loosen everything up a bit. (S2 pool swimmer)

Some of the experienced pool swimmers felt that backstroke was the most comfortable stroke for their back. Old English backstroke was mentioned by one swimmer; she had found it a helpful stroke for stretching her back. Some outdoor swimmers did not practise backstroke, partly due to sighting difficulties and lack of confidence.

> Double armed backstroke, old English backstroke. If I am really stiff then I will do that as well, not just normal backstroke … the weight of your legs sort of almost helps the stretch on your back. So, a big kick and a massive glide and try and get those arms back as far as I can. (S3 pool swimmer)

Some swimmers said they had been advised against swimming breaststroke.

> But I was told never to do breaststroke and I have never ever been able to do breaststroke. (S6 pool and outdoor swimmer)

One outdoor swimmer had lessons to improve breaststroke technique, this was helpful. Swimmers mentioned that the breaststroke can put either pressure or compression or "*pull*" in the lower back and the stroke extended or flexed their back.

> So, with breaststroke, if I do a lot of breaststroke, I find it pulls on the bottom of my back. (S2 pool swimmer)

One swimmer avoided breaststroke during a flare-up, and another would only swim it later in a session. One experienced swimmer said that the core of the body needed to be strong to do breaststroke over a long distance. Another swimmer mentioned a breaststroke kicking drill which was helpful, particularly when he was underwater as he was able to keep in a more horizontal position, he said that the kick symmetry was beneficial. Some swimmers alternated breaststroke with other strokes. Only two swimmers, one pool and the other outdoor said that breaststroke was their preferred stroke; swimmers with knee pain tended to avoid breaststroke.

Very few swimmers swam butterfly, it was only discussed by the ex-competitive swimmers. The arch during butterfly was mentioned as problematic and others said that their back didn't have enough flexibility.

> But my back wouldn't be flexible enough to take the butterfly, so I have learned to leave that. (S4 pool and outdoor swimmer)

One swimmer commented that doing a butterfly kick on his back as a drill felt good. The swimmers didn't swim butterfly early in the set or for too long and avoided the stroke if they were having a bad day; for some swimmers, butterfly was always avoided.

My barriers to swimming and how I overcome them

The less able swimmers discussed gaps in swimming ability and skills and the desire to take lessons, improve technique and overcome swimming fears such as putting their face in the water. Swimmers spoke about comorbidities and how this impacted their choice of swimming stroke. The most common comorbidity was a knee condition, and this stopped them swimming breaststroke. Three swimmers had nerve damage due to their back condition and this had resulted in weakness, and they had to adapt how they swam.

> When I was getting really bad with my knees, before I had them replaced, because I have got OA so it just got gradually worse and worse and I learned to do freestyle, I couldn't do breaststroke because of my knees. It hurt too much so I learned to do freestyle so that's all I do really, crawl . (S13 outdoor swimmer)

Theme 3: How swimming looks for me

Theme three includes three subthemes which describe an average swim for swimmers, describing where they swam, how they trained and whether they were swimming alone or with a group.

Where I swim

The swimmers swam in several locations including pools, the sea, tidal pools, harbours, rivers, lakes, and quarries. Some swimmers swam both indoors and outdoors and others swam in one location; the advantages and disadvantages of these locations were discussed. Most of the less able swimmers reported the pool was better when learning new skills. One pool swimmer felt that the pool was better as her back was worse in colder water.

> But some days I just can't, I haven't got the flexibility in there that day, for whatever reason it is, if I haven't warmed up properly or it is too cold. So, the water temperature makes a humungous difference to me. (S3 pool swimmer)

One outdoor swimmer stopped swimming in the pool due to experiencing more back pain crouching in the shallow end and pushing off the side. Another outdoor swimmer mentioned the pool was an intimidating place due to faster swimmers, and she had a sore throat due to chlorine. The outdoor swimmers

discussed the advantages of swimming outdoors; these included that there was no cost, you could swim when you wanted, there was more space, and it was more enjoyable. Some swimmers spoke about encounters with wildlife and that the colder water had additional benefits for pain and mood. The negative problems relating to swimming outdoors included having to check the weather and sea conditions and the time limits due to the cold. Concern was raised for the safety of new swimmers starting open water swimming; outdoor swimmers spoke about looking out for other swimmers.

My swimming community

Some swimmers swam with clubs or informal groups. For the outdoor swimmers, the support groups were important from a social point of view but also for safety. The outdoor swimmers spoke about how swimming can be inclusive, but this was not always the case. There were mixed views with regard to inclusivity; one swimmer felt that all body types could swim so it was inclusive. Another swimmer spoke about feeling "*intimidated by superfast swimmers*" in the pool, and she would avoid the pool for this reason. Outdoor swimming seemed more inclusive than pool swimming and outdoor swimmers seemed more aware of the issue of inclusivity. One outdoor swimmer spoke about the process that she took to "*enter that world*" in becoming a swimmer.

> We weren't a super sporty family, so I grew up thinking it wasn't really my world and I think that is what swimming has really taught me is to, certainly that was why I really went up to the Serpentine that year, just to observe things, see how things work and choosing a wetsuit and all those things, although I don't use a wetsuit now. Just those things that kind of enable you to enter that world. (S10 outdoor swimmer)

My training regime

The ex-competitive swimmers and to some degree the less able swimmers spoke about the different aspects training they used when swimming, however only the ex-competitive swimmers referred to it directly as training. Training methods used included aerobic, anaerobic, specific skill and technique, flexibility, core strength exercises and cross training. The swimmers discussed building up, easing off and monitoring progress through devices and diaries. Only the ex-competitive swimmers in this study did a land-based warm up prior to swimming. Swimmers who didn't do a land-based warmup reflected that maybe they should do one and others did not have the time, or they lacked confidence. The "*dose*" of swimming was also discussed, including the time in the water, distance swum and swim frequency; this varied considerably.

Theme 4: What I gain from swimming

Theme four included three subthemes describing therapeutic benefits gained from swimming.

Relief through swimming

The swimmers reported feeling more mobile and supple after swimming; they spoke about how they felt their body grow after swimming. When describing the impact of swimming on symptoms, the swimmers often used the word *"relief"*.

> It does give me relief; I always feel better after I have swum (S13 outdoor swimmer)

Swimming improves my physical and mental health and helps me function

The swimmers discussed how swimming helped them maintain a healthy weight, improve muscle strength and fitness, it was beneficial for their mental health and enabled them to do more and lead a normal life.

> It's my headspace (S8 pool swimmer)

My feelings about swimming

The words the swimmers used during the interviews conveyed their feelings about swimming. This included feeling confident, empowered, enthusiastic, hopeful, and eager to share.

> I am constantly overcoming lots and lots of fears. And even at my age, thinking gosh if I can do this, I can do anything and even with the problems that I have incurred throughout my life I feel like completely like a different person in the water. (S9 outdoor swimmer)

Theme 5: Keep calm and carry-on swimming

Theme five included three subthemes describing the strategies the swimmers used to enable regular swimming.

My goals and motivation

Some swimmers discussed setting goals and signing up for challenges. Other sources of motivation included wanting to maintain a healthy weight, to feel more mobile, have less pain, improve fitness and wellbeing and keep mobile for the future. Two of the swimmers spoke about the fear of a less active future.

Developing a swimming habit

The swimmers all swam regularly, developing an exercise habit; going swimming had become automatic and exercise was part of life. What was common in the interviews was the swimmers swam every week and the language they used indicated they had accepted that swimming was part of their self-management plan.

> I think it is just part of my life to be honest … You know you talk to people, and they say I have not been to the gym in 6 weeks, and I say have you been ill? It's just part of my life. (S13 pool swimmer)

Developing a setback plan and resilience

All of the swimmers had a setback plan when they experienced a flare up; it was clear that some swimmers had always been resilient, and others had developed resilience since swimming. The swimmers' setback plans usually involved easing off for a couple of days, being careful, sometimes taking painkillers, using ice and heat, and then starting to get moving again and stretching. It was clear from the language that hope was the dominant emotion for this group.

> I probably, I tend to kind of ease off most things for a couple of days to give it a rest completely and then swimming, and stretching are probably my first thing to go back to. (S14 pool swimmer)

COM-B analysis

The themes and subthemes were mapped onto the COM-B model in order to understand how the themes could impact uptake and engagement in swimming, see Figure 1. It was found that the themes and subthemes developed during the thematic analysis covered the three domains of capability, opportunity, and motivation.

Discussion

This study aimed to explore the experience of people who use swimming to manage CLBP. The themes and subthemes provide valuable insight into the use of swimming by people with CLBP. The themes describing the health and wellbeing benefits, and the positive impact of the swimming community aligned with findings from several qualitative research studies exploring outdoor swimming for health and wellbeing (Costello et al., 2019; Denton & Aranda, 2020; Murray & Fox, 2021). The COM-B analysis identified potential behavioural factors impacting uptake and engagement. The COM-B model domains include psychological and physical capability, physical and social opportunity and reflective and automatic motivation (Michie et al., 2014).

In the case of this study, the psychological and physical capability domains relate to swimmers having the necessary knowledge and the practical swimming and pain management skills to be able to use swimming as a self-management tool for CLBP. Theme 1, *My back pain journey*, Theme 2, *Learning to swim with back pain*, Theme 3, *How swimming looks for me*, Subtheme, *My training regime*, and Theme 5, *Keep calm and carry-on swimming*, Subtheme, *Developing a setback plan and resilience*, aligned with the capability domains. The analysis suggested that when recommending swimming, different swimming strokes, and training regimes could be discussed, and some people may benefit from developing swimming and pain management skills. The findings suggest that multiprofessional support from health and swimming professionals may be required, aligning with recommendations for greater collaboration when providing rehabilitation for long-term conditions (Chartered Society of Physiotherapy, 2023).

Physical opportunity refers to opportunities related to the environment, time, and money and social opportunity refers to interpersonal influences, such as access to a swimming community and the inclusiveness of this community. Theme 2, *Learning to swim with back pain*, Subtheme, *My swimming journey*, and Theme 3, *How swimming looks for me*, Subthemes, *Where I swim*, *my swimming community* and *My training regime* aligned with the opportunity domains. The themes in the opportunity domain support the development of inclusive swimming communities for people with long-term conditions such as CLBP, and accessible swimming venues, reflecting the recommendations in the most recent "*Value of Swimming*" report (Swim England, 2023).

Reflective motivation refers to reflective processes including being able to schedule swimming and beliefs about the value of swimming and automatic motivation refers to automatic processes related to engagement in swimming, including emotional reactions, therapeutic benefits, or unwanted side effects from swimming. Theme 4, *What I gain from swimming*, Subthemes, *Relief through swimming*, *Swimming improves my physical and mental health and helps me function* and *My feelings about swimming* and Theme 5, *Keep calm and carry-on swimming*, Subthemes, *My goals and motivation* and *Developing a swimming habit* aligned with the motivation domains. The themes suggest that health professionals discuss potential therapeutic benefits and side effects from swimming, recognizing the impact on automatic motivation. Consultations could also include goal setting, motivations, habit formation and the development of a setback plan, as recommended in the NICE guidelines for the management of chronic pain (NICE, 2021).

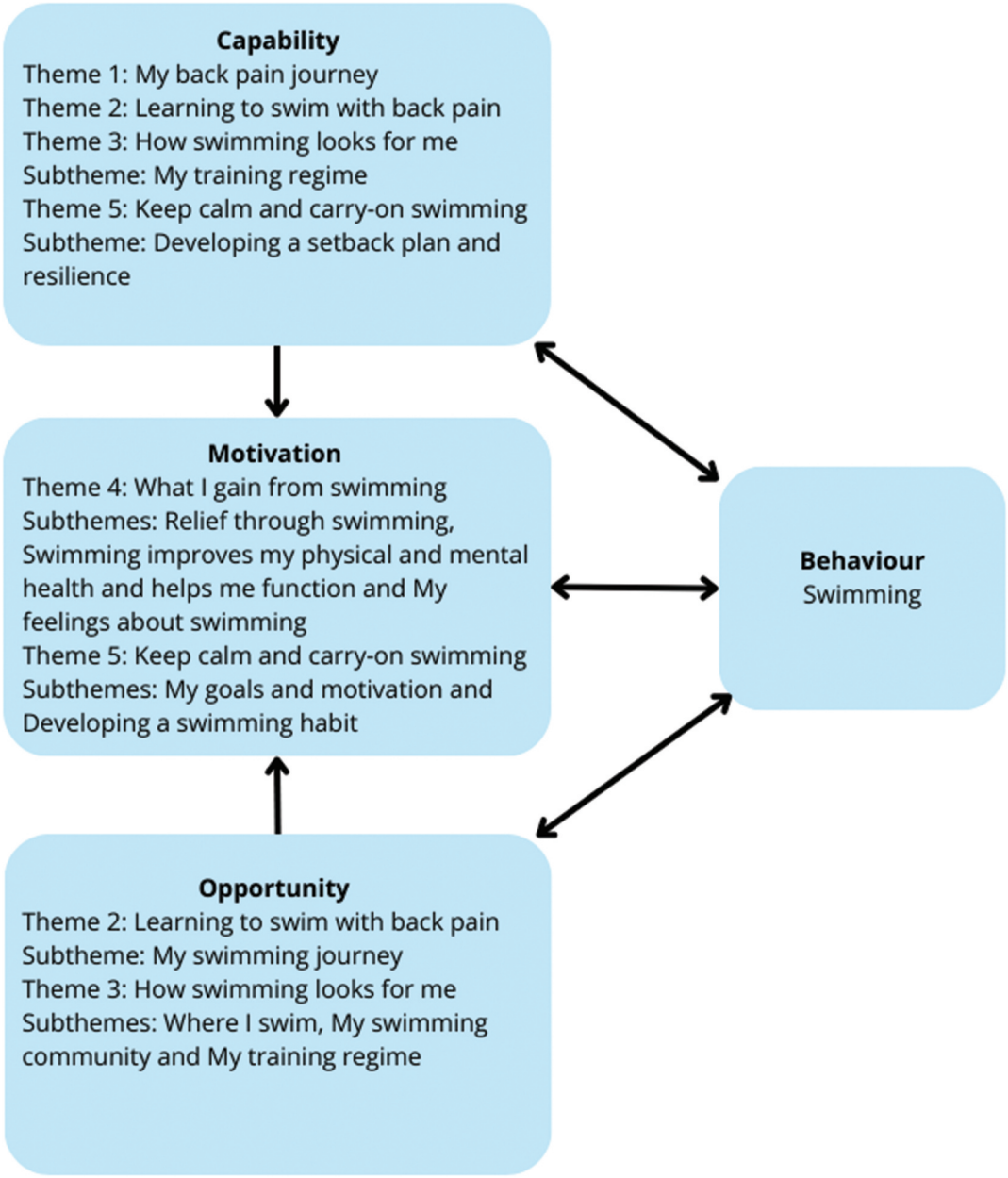

Figure 1. Themes and subthemes mapped onto COM-B model.

Limitations

The swimmers swum in several locations, including pools, the sea, rivers, lakes, and quarries. The water temperature when swimming outdoors would vary depending on the season and the salinity of the water would impact buoyancy; these contextual factors could be considered when interpretating the data. Furthermore, the participants' comorbidities, body mass index or ethnicity were unknown and collecting this data could have provided additional context to better understand the findings. The study could have also include people with CLBP who do not find swimming helpful for the management of CLBP. It is acknowledged that recruiting only "*expert patients*" may provide only one perspective, future research should include those who have faced challenges in accessing or using swimming to manage CLBP. Doing so could provide a more comprehensive understanding of the experience of using swimming by this population, inform future delivery methods and guidance for people with CLBP.

Conclusions

The participants in this study found that swimming was a valuable self-management tool for CLBP. The thematic and COM-B analyses, however, suggested that learning to swim with CLBP can be a complex journey, impacted by multiple interrelated behavioural factors. Whilst these findings could provide a consultation guide when health professionals discuss swimming with people with CLBP, further research is required to explore how swimming could be effectively used and implemented as a rehabilitation modality for this population. The

findings suggest that without multi-professional support, inclusive swimming communities and accessible swimming venues swimming participation rates may remain low in this population.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Funding

This work was supported by the Musculoskeletal Association of Chartered Physiotherapists, East Kent Hospitals University NHS Foundation Trust, the Chartered Society of Physiotherapy.

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