

**Challenging perspectives; understanding the barriers to engaging in an outdoor swimming feasibility randomised controlled trial.**

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## **Background**

There is growing research evidence that swimming in outdoor water, along with other activities that involve immersion in blue space, has a positive impact on mental health and wellbeing. Creative and mobile qualitative methods have been explored, for example swim-along interviews and audio-visual recording devices attached to surf boards, to discern the complex details of the multi-sensory experience (Denton et al., 2021; lisahunter and Stoodley, 2021; Bates and Moles, 2023). Through the use of these techniques, an understanding of the experience of immersion in outdoor water is developing. Common themes indicate that being submerged in water does offer a unique experience that is different to activities on land (Denton et al., in press). These shared experiences include an enthralling focus on the present moment and of being *in nature* (McDougall et al., 2022); engaging in a challenging activity in which mastery allows a risky practice to become enabling (Britton and Ronan, 2021); the chance to escape from the pressures of day to day life or from difficult thoughts (Denton and Aranda, 2020, Caddick et al, 2015); and the importance of being part of a community that is undemanding (Bell et al., 2015) and welcoming to bodies that might otherwise be 'overlooked or problematised' (Throsby, 2013 p17).

Key components, that contribute to the positive impact of immersing in blue space on mental health and wellbeing, are also being ascertained. Foley and Kistemann (2015) suggest that the health-giving benefits of engaging in blue space arise from four modes of experience: embodied, sensory engagement with the water; inter-subjective experiences, as a result of the group interactions that are often associated with these environments; the experience of movement; and water's symbolic power through meanings linked to culture and identity. Overbury et al (2023) identified two overarching themes in their scoping review of seven qualitative papers exploring the mental health benefits of outdoor swimming: Water Connectedness and Social Connectedness. Within these themes, they highlighted subthemes including relationship between human and water, blue space as therapeutic, embodiment, mindfulness/presence and belonging/purpose. They concluded that the mental health and wellbeing benefits run throughout the themes and can be experienced as a 'transformative therapeutic effect' (p11). Moreton et al. (2022) reviewed the potential mechanisms that may underpin the psychotherapeutic effects of surfing. They proposed a number of core aspects that might contribute to the positive impact, including exercise, water immersion, sunlight, transcendent experiences, reductions in rumination and the satisfaction of basic psychological needs.

Research studies using a quantitative methodology to determine any impact of immersion in blue space on measurable mental health and wellbeing outcomes are more limited (Britton

et al., 2020). Quantitative research into surf therapy is leading the way (Moreton et al., 2022) with swimming under-researched given its popularity (Britton et al, 2018). However, there are some early indications that the reported benefits of outdoor swimming are reflected in measurable changes on standardised outcome measures; including Profile of Mood States (POMS; Grove & Prapayessis, 1992), Patient Health Questionnaire – 9 (PHQ9; Kroenke et al., 2001) and Short Warwick-Edinburgh wellbeing scale (sWEMWBS; Haver et al., 2015). Novice swimmers showed reductions in negative mood, increases in positive mood and increases in well-being, compared to a non-swimming control group, both immediately after sea swimming sessions and at the end of a ten-week outdoor swim course (Massey et al., 2020). In an uncontrolled study evaluating the potential impact of an eight-week sea swimming course on anxiety and depression, participants showed significant improvements in their scores on standardised measures taken before and after the course (Burlingham et al., 2022). These improvements were maintained at follow up three months later.

RCTs are considered the 'gold standard' in clinical health research (Jones & Podolsky, 2015) and are generally required before interventions can be recommended in clinical guidelines (Guyatt et al, 2011; Howick et al, 2011). Whilst the research evidence exploring potential benefits of outdoor swimming for mental health is promising, an adequately powered RCT has yet to be undertaken. There has, however, been some success with undertaking RCTs exploring the impact of surf therapy. Pereira et al (2020) undertook an RCT with 73 children and adolescents living in residential care in Portugal. The mental health outcomes of the young people engaging in the surfing was positively impacted, as reported by the residential workers, compared to the control group. However, these were not reflected in the self-report measures. Walter et al., (2023) undertook an RCT comparing surf and hike therapy for 96 veterans in the US. Both activities were found to be an effective adjunct to other interventions, however, no clear differences were found between the two. Finally, a feasibility RCT undertaken with 36 young people in Australia (Olive et al., 2023), found that the intervention was acceptable and that preliminary evidence suggested improvements in the mental health whilst the young people were engaging in the activity. Although these RCTs support the emerging evidence that immersion in blue space has a positive impact on mental health, participants were all young people or veterans and so the results may not be generalisable to a wider population. An RCT exploring the impact of outdoor swimming is also warranted.

Before attempting a full-scale RCT, however, it was important to undertake a feasibility study to understand potential challenges (Massey et al., 2023). A qualitative component was embedded with the aim of developing greater insight into the barriers and facilitators for participation. In this paper we outline the methodology for the qualitative component, the insights gained from the analysis and the proposed improvements to the full RCT design.

### **Public and patient involvement (PPI)**

Alongside emerging evidence that blue space activities have a positive impact on mental health and wellbeing, there are, however, clear indications that access is not equal amongst people from all communities. Outdoor leisure participation is predominately enjoyed by 'White, middle class, car-owning individuals/families' (OIA, 2016) with barriers faced by other groups including distance, cost, confidence, safety and access to information. A similar lack of diversity is found amongst blue space users (Bell et al., 2019). People from lower socio-economic groups can feel socially and culturally excluded (Thomas, 2015, Hignett et al., 2017). People with mobility issues may struggle to get to blue space locations at all (Job at al. 2022). Racism can define the experience of people from minoritised groups (Burdsey, 2013). In addition, a high proportion of Black and Asian people do not swim (Black Swimming Association, 2023).

As an RCT into outdoor swimming had not previously been undertaken PPI was considered a key aspect of this study. Involving public and patients, people with their own lived experience of mental health problems, as contributors alongside the research team, can encourage more thoughtful and engaging designs (Brett et al. 2012). This often includes making the research more accessible through changes to how studies are advertised and the wording on participant facing documents (Paterson, 2004). To ensure the focus on different perspectives was maintained throughout the feasibility study, there were two PPI co-applicants (SR, SC) and three lay (non-researcher) members on the study steering group. A 'Lived Experience Advisory Panel' (LEAP) was also set up specifically for the study (including SM, PW). This group provided regular feedback on the study design and was supported by both SR, a co-applicant, and CE-P, a LEAP facilitator.

As a result of PPI discussions undertaken by HM, before the start of the feasibility study, two key elements were incorporated into the design with the aim of supporting participation. To ensure that all participants felt valued, it was agreed that a swim course would be offered to the control group at the end of the study. Also, a lido (outdoor swimming pool) was included as one of the locations, on the advice of the Black Swimming Association and Mental Health Swims Community Interest Company, as a way to increase accessibility for people with less confidence in the water.

## **Method**

Participants were recruited into the feasibility RCT through a number of different routes: social prescribers (health workers often based in primary care who recommend local community groups to support wellbeing); social media and advertising in local Facebook groups; a press launch in the national media and finally posters in local GP surgeries. Courses were offered in three locations in England; one coastal, one rural and in a lake, and one in an inner-city lido. Participants were eligible if they were over 18 years, able to give fully informed consent, had mild to moderate depression as determined by the PHQ-9 (scores 5 - 19) and had some minimal swimming ability for the sea and lake locations. Exclusion criteria included evidence of severe mental health issues or physical health issues

that are contra-indicated for immersion in cold water. Prior experience of swimming outdoors was not an exclusion criterion; however, it was made clear that the course was very much aimed as an introduction to outdoor swimming.

Once participants had given their consent, they were allocated randomly either to the intervention group, who undertook an 8-week outdoor swimming course during the study, or to the control group (usual care), who were offered the swim course after the study had finished. All participants completed a number of standardised health and wellbeing measures and health economic questionnaires; at the start of the study, after the intervention group had finished their swim course, and at an eight-week follow up (see Massey et al., 2023 for more details). In a full-scale RCT, with sufficient numbers of participants, standardised questionnaires completed at different time points allow for differences in changes in mental health, wellbeing and other outcomes to be examined over time between groups (intervention vs control). As people are allocated to the intervention or control arms of the study randomly, any differences in changes over time can be attributed to intervention.

All participants who were recruited to the feasibility study were invited to share their experiences as part of the qualitative component of the study. Evaluation forms (see appendix) were sent to intervention participants at the end of the swim course, and to all participants at the end of the study, inviting feedback about their experiences. All participants were also invited to attend online focus group discussions, to enable a more detailed understanding to be accessed. Attempts were made to gather feedback from participants who had chosen not to remain in the study, however these were unsuccessful. Online focus groups were also undertaken with other relevant stakeholders. This included social prescribers, members of the study team involved in the recruitment, and the swim coaches and lifeguards who provided the swim courses.

The qualitative data gathered was combined and analysed thematically using the six-stage approach outlined by Braun & Clarke (2006). These stages involve familiarisation with the data, generating initial codes, searching for themes, reviewing themes, defining and naming themes and writing up. The different viewpoints of participants and other stakeholders were approached from a critical realist frame to allow the experience of the swimming course to be understood from multiple perspectives. HD took the lead on the analysis, with support from AJ, and with other members of the team acting as critical friends to aid with reflexivity.

## **Results**

87 participants were recruited to the feasibility study. The participants were predominantly female (n=73; 84%), mean age of 46.2 years (SD 13.7; range 22-74), heterosexual (n=73; 84%), White British (n=65; 75%), in a relationship (n=49; 56%), without a disability (n=66; 76%), educated to at least degree level (n=53; 61%).

See Table 1: recruitment process

### Overarching themes

Through the thematic analysis, five enmeshed and overlapping themes were identified: Accessibility, Belonging, Facing challenges with support, Benefiting and enjoyment, and Clarity of information. These themes provided insights into the barriers and facilitators to participating in the RCT.

#### Accessibility

There were factors that made accessing the research, and the swim courses, more difficult for some people. To join the study, participants needed to both know about the research and to sign up. As a result of the seasonal nature of the intervention, the recruitment period was very short, and so attempts to target under-served groups were limited. The majority of participants heard about the study via social media and the sign-up process was primarily completed online. As a result, only people with regular access to the internet could easily participate. There were also some additional factors that might have further deterred participants during the consenting process, for example the use of a private withheld number to call people.

The study team had planned to use social prescribers to support recruitment and to encourage inclusion of people who otherwise would not have known about the opportunity. However, the identified social prescribers were often working with people experiencing increasingly complicated issues and so they did not fit within the research criteria

*Although they're meant to be low level mental health, it's always slightly more severe or they're having to deal with a lot more complicated issues. So actually, again, the research might not necessarily be appropriate just because of the level, but that's partly to do with our service and I guess what's happening across the country at the moment really with every other [social prescribing] service (social prescriber, SP02).*

The courses were arranged at fixed times. Finding time to attend a regular course can be a struggle, with participants citing work commitments and childcare as reasons for missing sessions

*I have to balance a lot of child care to come, which was fun, but I know that that's like an extra level of difficulty, of stuff to sort (intervention participant, P103).*

Due to the time pressures within the study, there was also not always sufficient notice given to participants attending the swim courses

*I don't know how much notice we were given about the time in the day, the time and the days it was going to be, either, I think it was quite, quite close to it starting where*

*we were told, I mean, I'm unemployed at the moment, so it didn't bother me, but I think with anyone that was in full-time work, it would have been an immediate no for a lot of bosses (intervention participant, P100).*

A fundamental barrier to being able to enjoy outdoor blue space is not being able to swim. As a result of tides, currents, waves or varying depths, many outdoor swimming locations, including two of the study sites, require a level of swim skill to be able to stay safe. Without a level of confidence in the water, the experience can be unpleasant or even frightening and therefore unlikely to benefit mental health.

*This poor lady wasn't happy in water out of her depth, we do have to get out of depth in the lake. She had a thing about not being able to see the floor, 'ooh it's not like a swimming pool'. She pulled out because she was too anxious (swim coach, SC03).*

Different bodies of water potentially have a different impact on the experience (Pitt, 2018), with swimming pools often seen as more regulated (Olive, 2023). Including a lido as one of the research courses, however, enabled people with a wider range of swimming history to be involved.

*I think we could... engage ... people, who there's absolutely no way you'd get them to a beach. But you might get into a Lido and get them feeling confident in the water (swim coach, SC04)*

Blue spaces can also present numerous challenges for people with mobility issues, including both getting to the location and being able to get into the water. As well as feeling safer for people who are not confident in water, lidos can provide increased options for disabled access allowing more people with mobility issues to participate.

*There was one lady who is concerned about access to the pool, but luckily, she was in the London site, so they have a ramp into it, so that wasn't a problem (recruiter, R003).*

Some of the locations were difficult to access by public transport; and those that were could potentially be expensive to get to. Travel costs were not able to be paid in advance, and this also had the impact of preventing some people from attending.

*We had a couple [of potential participants] where travel cost was going to be prohibitive. Even though we suggested that there would be travel reimbursement, they sort of said the upfront cost was the problem and not getting the money back later. So then, yeah, they may have just had issues with the cost of traveling to the location (recruiters, R003).*

## Belonging

Feeling part of a community is often reported as a key aspect of outdoor swimming (Denton & Aranda, 2020). However, some people feel 'out of place' in blue spaces (Thomas, 2015). Particular aspects that might have contributed to participants not feeling comfortable attending a swim course for people with depression were highlighted.

The requirement to wear revealing clothing caused some people to feel uncertain about attending.

*Sharing the space with users outside the group, would have preferred only female lifeguards on site. It's been a long time since anyone saw me in a swimming costume!*  
(intervention participant, P079)

Surveys exploring outdoor swimming currently indicate the majority of people undertaking the activity are White, women and aged 40-60 (e.g. Outdoor Swimmer, 2021, 2022). There was a concern that this might deter people from different ethnic backgrounds, however, having people of colour on the swim coach team helped to encourage participation.

*I really enjoyed the course. Having [a swim coach who was a person of colour] there was great, it was great that there was coaching staff that represented us*  
(intervention participant, P066).

Men were under-represented in participation in this study. It was suggested that they are less open to doing activities for mental health reasons.

*The fact that it's about anxiety and depression, whereas women might be a little bit more accepting.... some men really don't want to be associated with having some sort of health condition* (social prescriber, SP01).

The requirement to be a good swimmer seemed to be a concern and also potentially a barrier for people with anxiety who might have less confidence in their skills.

*The only thing I will say is that sort of self-belief and the anticipated anxiety and that conception that 'Oh, I have to be a really good swimmer'* (social prescriber, SP01).

Knowing that the course would be attended by other people struggling with their mental health was however supportive.

*I'm quite looking forward to making some new friendship groups. And you know, bonding with people who have been through similar, you know, trying to help each other* (control participant, P105).

As reported in many studies (Iisahunter and Stoodley, 2021; Caddick et al., 2015; McDougall et al., 2022), feeling part of the group was an important aspect of the experience for the participants who attended the swim courses

*Those groups were really friendly groups to one another.... I think it's because of what they're actually doing because it is quite scary or frightening, and people share quite a lot and support one another (swim coach, SCp5).*

Being part of a swimming community allowed participants a chance to experience themselves in a way that wasn't about their mental health.

*It's just if you chat you chat, if you don't you don't...which is really nice. Just naturally the conversation will just flow. And yeah, if it comes up, it comes up. If it doesn't, it doesn't. So yeah, there's no sort of that feeling of, you know, that this is a mental health group, we need to talk about our mental health. There's nothing like that. It is just a group of people who like to go swimming (intervention participant, P104).*

With the group finding ways to support each other

*My group also started a WhatsApp group to support and motivate each other through out. We are still in touch and swim together (intervention participant, P004).*

However, not everyone found the groups experience as supportive

*First session expected to, put head underwater and allow wave to go over my head, absolutely killed all my confidence especially as other participants were able to do so, felt a failure and stupid (intervention participant, P035)*

As this was an RCT it was also important to ensure that the control group felt part of the research, despite not attending a swim course during the study period.

*I think, a little bit like just not isolating as such, but it's been quite distant, and I think that I had the expectation of maybe more check in I guess, for the for the control (control participant, P107)*

### Facing challenges with support

A particularly challenging aspect of participating in the study was the experience of being randomised and the uncertainty of the outcome

*Unsettling but understood why (control participant, P001)*

*Understandable, slightly anxious but worth trying (control participant, P050)*

For some participants finding out they were in the control group was hugely disappointing.

*Yes, I found it difficult to be in the group that wasn't swimming, because I felt like if I had been in the swimming group I might feel better than I do. My mental health has been poor over the past few months and I would have welcomed an intervention that might have helped (control participant, P009).*

The feedback from participants also gave an insight into how difficult it can be to attend an activity like a swim course.

*I was nervous before going to the first session, I nearly didn't go, if there could be something done to help with that feeling it would be a big thing, not just for me but I'm sure others felt that way too (intervention participant, P066).*

This could be particularly the case if struggling with mental health at the time.

*If you wake up on a bad day, when you have anxiety and depression, just getting out of bed, can feel like the hardest thing to do, let alone go and drive... to a lake with people that you don't know very well, who are potentially gonna see you at your most weakest (intervention participant, P100)*

Some participants needed additional support between sessions to be able to attend.

*But actually, because I was the lead on that I spent a lot of time on texting her each time she didn't come. I said, come on, you coming! So there was a lot of coaxing going on actually behind the scenes (swim coach, SC01).*

However, in keeping with other research into outdoor swimming, overcoming challenge seemed to be a beneficial part of the swimming intervention (Denton and Aranda, 2020; Thompson and Wilkie, 2021, Britton & Foley, 2021).

Participants developed confidence in themselves both in and out of the water.

*Fantastic, an uplifting experience which took me out of my comfort zone so felt I was achieving something (intervention participant, P027).*

This was often as a result of the swim coaches, and without support there might have been a different outcome.

*At first I was a bit anxious with the water. But with the [swim instructor] support I quickly began to love it and feel at ease (intervention participant, P049).*

There was, however, some uncertainty from the swim coaches about how much support to give participants especially around mental health concerns.

*And I wonder if we should follow up if there is a particularly challenging circumstance for an individual. I think we as coaches should perhaps do it because we're the familiar faces (swim coach, SC05).*

Even with support, the challenge could be too much for some people.

*What [swim coaching provider] does is not the right program for someone with that severe anxiety, because actually she needed some quite- I would have said more*

*therapy around her access to water before actually going into the sea, to deal with the general anxiety and well-being (swim coach, SC02).*

Finally, there was a wish from some participants that the courses were longer.

*You know. It's like you just get into it, or you're just getting familiar. Or you're just getting over the first obstacles or anxiety, and then it's over (intervention participant, p099)*

With some participants struggling to find opportunities to maintain the swimming after the research finished.

*Since completing the course, I have not swim as much as I would like, and I have noticed a decline in my mental well-being (intervention participant, p030)*

### Benefiting and enjoyment

Many of the participants reported enjoying the swim courses and that they experienced benefits as a result of undertaking the activity.

Some participants described feeling positive about finding a different way to manage their mental health.

*I had just reached a point where I needed to do something because I was not in a good place, and I just needed to try... So I didn't want to go to the doctor, so I was the other side of it, but I was at the point where I really probably should have done, but this seemed like a nice non doctor way of doing it, if that makes sense (intervention participant, p103).*

The positive experience they had on the course, translated into increases in their confidence.

*It has made me feel more positive about the future and confident in myself. I feel less apprehensive about trying new things (intervention participant, P084).*

And impacted their sense of themselves and their place in the world.

*I have felt less anxiety since doing the course and much more connected with myself and nature (intervention participant, P025).*

There was also feedback from both control and intervention participants that being involved in the research felt meaningful.

*I think, having experienced open water swimming before, but then actually have it in a kind of a scientific kind of piece of research to be part of that, I felt like it was nice to be able to contribute and hopefully, have other people be supported in the positive*

*ways of open water swimming and I just felt really privileged to be part of it (intervention participant, p100)*

Despite all the potential benefits, however, it is also perhaps important to remember that not everyone will enjoy outdoor swimming.

*I can swim ok in a pool, when I pool swim I am always able to stand up. I really didn't like going out of my depth, which I know is likely to happen in the sea. The swim instructors were great and really supportive, but despite their support I would prefer just to swim in the pool (intervention participant, P112)*

### Clarity of Information

Not having access to clear information, and therefore feeling uncertain about aspects of the study, seemed to discourage some people from choosing to participate.

Participants described being unsure about how outdoor swimming might be beneficial and why they might want to try. This was reflected by one of the participants sharing some of her doubts prior to joining the course.

*I know I'm going open water swimming. I didn't really know what that meant as I've never done anything like it before. But yeah, just to give us some idea of like, why we were doing it, and what the purpose is... (intervention participant, P103).*

The potential danger of cold-water immersion was also highlighted as a concern. One of the social prescribers, shared some of the fears of the people she had spoken to.

*A few patients that I've spoken to and actually, yeah, maybe slightly older... or actually even those with like medical conditions... sort of thinking the warm water will help me, and don't sort of want it to be painful or make certain conditions worse (social prescriber, SP02).*

Undertaking any new activity requires confidence, and not knowing what to expect could discourage people attending. Participants expressed concerns about the facilities, for example knowing how they would keep their belongings safe.

*I think, knowing where to put your belongings, etc. safely, and what facilities there are to lock away... as I had to independently go and find that out. So I think people, you know, weren't sure what to do on that (intervention participant, P099).*

They wanted to have a better understanding of what a session might involve.

*A bit more of a kind of refresher into what's happening. Maybe like an itinerary of this session (control participant, P105).*

And they wanted information about what equipment they might need so they could be prepared.

*What to bring, you know that kind of stuff. People will be so worried about turning up and meeting people that they might forget a towel (control participant, P105).*

Beliefs about requirements to have the right kind of kit could also deter possible participants.

*Given the boom in cold water swimming amongst white middle class people, I think, and also the boom in equipment to go with it, you know, the fancy dry robes that cost £200, and all the kit that goes with it (intervention participant, P047).*

However, participants described how much they valued the opportunities the courses gave for them to learn about the locations.

*For example, you learned that at Saunton, it doesn't matter if the tide is in, you can still swim, whereas at Westward Ho, if the tide is in, it is right up at the pebble ridge, so it is a different ball game (intervention participant, P102).*

They also wanted to be able to have a record of their swimming experiences to better remember how they had felt at different points during the course

*I thought we should have the booklet at the beginning, so I could have recorded each swim (intervention participant, P103).*

## **Discussion**

The analysis undertaken highlighted some of the barriers that might discourage participants from engaging in an RCT determining the impact of outdoor swimming on mental health. Some of these aspects were related to being part of a research study for example engaging in the consent process, the requirement to be randomised and the experience of being in the control group. However, much of the feedback was related to engaging in the swim course and therefore reflects some of the challenges for accessibility and inclusion for outdoor swimming more generally.

Outdoor swimming locations are also not accessible for a wide range of people. Blue spaces can be remote and difficult to access by public transport (Bates and Moles, 2022). Increased house prices are associated with views of water (Lange & Schaeffer, 2001; Luttik, 2000) and so healthy blue spaces may be more likely in affluent areas. As a result, people living in more deprived areas may have the added burden of having to pay to travel. Entry to lakes and outdoor swimming pools is also often expensive and requires internet access book (Bates and Moles, 2022). Although lidos enable non-swimmers to engage in outdoor blue water, to safely access many other locations some swimming ability is required. People

from minoritised ethnic and lower socio-economic backgrounds are more likely to be non-swimmers (Williams et al., 2023), and therefore excluded.

The experience of being part of an accepting community, often highlighted as a key aspect of outdoor swimming and blue space, is not shared by everyone. Beaches can be judgemental spaces, and particularly uncomfortable for female bodies (Britton et al, 2018). The 'judging gaze of others' can 'transform "therapeutic blue space" into the opposite - landscapes of anxiety' (Doughty, 2019 p89). People from minoritised ethnic groups are less likely to visit blue spaces (e.g. CRT 2017), which can perpetuate a belief they are White spaces (Burdsey, 2016). Although the 'dryrobe' can be a way of identifying other outdoor swimmers (Bates & Moles, 2022), it can also exclude as it is too expensive to purchase. All places are experienced differently, depending on the person, and therefore should not be uncritically understood as always beneficial for everyone (Milligan and Bingley, 2007). People who have felt 'othered' may always experience that blue spaces are 'not for them' (Bell et al., 2018).

Outdoor swimming provides an opportunity for participants to challenge themselves. The potential impact on wellbeing of undertaking challenging adventurous activities may not be fully recognised (Clough et al., 2016). These activities may help people to be able to greater tolerate risk and uncertainty in their everyday lives (Moreton et al., 2022) and enhance resilience (Buckley & Westaway, 2020). It seems important, however, that the level of challenge is appropriate for the person engaging in the activity. Participants of nature-based interventions may be seeking out different experiences; for some it might be the calm tranquillity, whilst others may be seeking exhilaration (Garside et al., 2020). For the greatest benefit, the blue space activity needs to match the level of challenge required by the participant.

Not having access to the necessary information may deter people less familiar with outdoor swimming to engage in the activity. Those who promote the benefits of blue space immersion, may have a 'situated and taken-for-granted, or tacit, knowledge of practice' (Atkinson, 2018 p199) which is not necessarily shared by everyone. If you do not have this understanding, being in blue space may elicit a very different response. For those who cannot swim, outdoor water is likely to be associated with fear and danger (Wheaton et al., 2020). Also, people perceived as lacking the knowledge of how to behave 'properly' (Puwar, 2004) may even be actively excluded by regular users of blue space.

### Learning for an RCT

The qualitative component undertaken as part of the feasibility RCT indicated a number of ways the design could be developed for a full-scale RCT. These changes would potentially improve the experience of taking part, support recruitment and retention and increase accessibility and inclusion.

Theme	Improvements
Accessibility	<p>Introduce a number of new locations that include</p> <ul style="list-style-type: none"> <li>- Locations that are easily accessible by public transport</li> <li>- Different bodies of water including lidos</li> <li>- Locations with shallow areas for participants who want to remain within depth</li> <li>- Some locations with disabled access</li> <li>- Good facilities including sheltered spaces for discussions</li> </ul> <p>Evening and weekend sessions for people who are working Clarity regarding travel expenses reimbursement</p>
Belonging	<p>Develop a range of resources to support recruitment to the full RCT that include people who are often under-represented within the outdoor swimming community. Share information about the research with community groups in each location. Continue to involve social prescribers where possible as they might encourage participants who would otherwise not attend Recruit coaches of different genders / ethnicities / language / with lived experiences Maintain contact with control participants throughout the study period Develop some bespoke courses for groups of participants who would otherwise struggle to attend</p>
Challenge with support	<p>Provide additional training for the swim coaches about how best to support the participants when tackling challenges Be available to provide additional advice and support to swim coaches Have an open door for participants to gain support if struggling with any aspect of being involved in the study including randomisation and completing questionnaires</p>
Benefiting and Enjoying	<p>Develop a manual for swim coaches, to share ideas that can help support participants to enjoy the experience as much as possible Encourage the use of diaries so that participants can keep a record of their experiences</p>
Clarity of Information	<p>Develop a website as central hub for the study, that includes info about the study and FAQs about outdoor swimming Record a podcast that provides information about the rationale for randomisation and the importance of the control group Create an animation for the participant information sheet to ensure the design is clearly explained Include detailed information about each location including how to get there and course dates Create short films introducing each location with information about the water, accessibility, what to expect, what to bring and an introduction to the swim coaches Include a blog to share study updates</p>

### Limitations

Despite the attempts made to increase inclusivity and diversity, by including a lido and promoting within different groups on social media, the majority of the participants of the feasibility RCT were White and women. The participants had also agreed to be involved in an outdoor swimming study, and, whilst they were not confident swimmers as they were engaging in an introductory course, they were interested in trying. Additional stakeholder's viewpoints were invited, including people who did not sign up, however the study participants were the main contributors included in the analysis. Further studies are needed, using methods that can elicit the perspectives of those who do not swim, to better understand the barriers to participation.

Information was gathered from participants using online forms and focus groups. This meant that only people with internet access were able to join. As most of the focus groups had multiple members, for participants to offer their perspective they also needed to feel comfortable sharing their experiences in front of others. Consideration about how to include a variety of data collection tools would be of benefit to future studies.

Finally, the analysis was primarily undertaken by a White, able-bodied woman who is an experienced outdoor swimmer. The members of the research team who supported the analysis and acted as critical friends were, however, from a variety of backgrounds including different genders, ethnicities, level of disability and experience of outdoor swimming.

### Conclusion

This paper outlines the understanding gained into barriers and facilitators to participating in a feasibility RCT in outdoor swimming research. This includes highlighting factors that might discourage participation and potential changes to the design of the full RCT that would support recruitment and retention. The framework that resulted from the analysis, also reflects previous research exploring participation of immersion in blue space.

It should not be assumed that all people will want to engage and would benefit from blue space activities (Bell et al., 2019). Not everyone has the same experience of blue space locations (Finlay et al., 2015), underlining that no single approach to support wellbeing and mental health will be helpful for everyone. However, a 'concerted effort' (Dashper & King, 2022) is required to overcome the barriers that might deter people who would like to visit. If some groups are unable to access the benefits that blue space can offer, 'there are fundamental issues of environmental justice and health inequality that needs to be addressed' (Bell et al., 2019 p154).

Through listening to participant voices and engaging PPI throughout, we have identified a number of changes that supports the creation of a design for the full-scale RCT that recognises and values individual participants' unique experiences and circumstances. Furthermore, by developing the research in ways that encourages participation by people from different backgrounds, our aim is to contribute to increasing the accessibility of outdoor swimming for anyone who might benefit.

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