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Experience of the menopause transition in Irish women and how it impacts motivators, facilitators, and barriers to physical activity engagement

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Abstract

Background Research shows a decline in physical activity (PA) in women during the menopause transition (MT). Therefore, the purpose of this study was to explore experiences of the MT in Irish women and how it impacts motivators, facilitators, and barriers to PA engagement.

Methods Twelve Irish women (age: 49 ± 4 years) who were in the MT participated in individual, online, semi-structured interviews. During each interview participants were asked about their experience of the MT and its influence on PA engagement to identify motivators, facilitators and barriers. All interviews were digitally recorded and transcribed *verbatim*, resulting in ≈ 72,610 words for descriptive and thematic analysis.

Results The MT had a notable influence on PA engagement in Irish women. The main motivators to engage in PA throughout the MT included managing menopause symptoms, optimising future health, the opportunity for social engagement and rewards, as well as relatable role models. Many women discussed that menopause fraternities focused on community and collective experience, adapting and modifying PA, and medical supports were key factors that facilitated engagement in PA throughout this life stage. There were a multitude of barriers that women in midlife faced before they could engage in PA, such as perceived reduced capability, symptoms associated with the MT, the busyness of life and competing demands, as well as a lack of supportive environments.

Conclusion The motivators, facilitators, and barriers to PA engagement throughout the MT are unique. These factors are important considerations for stakeholders when facilitating women to either continue or (re)introduce PA during this life stage.

Keywords Perimenopause, Midlife, Sport, Exercise, Qualitative

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Introduction

The menopause transition (MT) refers to the time between experiencing regular menses to menopause, which refers to the point in time when females experience 12 consecutive months of amenorrhea because of the cessation of normal ovarian function and that is not because of any other medical reason [1, 2]. Although every woman's experience of the MT is individual, research has shown that during the MT most women experience accompanying symptoms, both physical, such as hot flushes, night sweats, muscle and joint pain, fatigue, changes in body weight and psychological, for example mood changes, depression, irritability, anxiety, and changes in memory or 'brain fog' [3, 4]. Importantly, these symptoms along with any resulting physical and psychological challenges, can persist after the MT into post menopause, continuing to affect a woman's health and wellbeing beyond menopause [4]. Additionally, the changes in sex hormone concentrations that occur during and after the MT can also increase the risk of other health-related conditions, including osteoporosis and cardiovascular disease [5]. The current literature suggests that health behaviours, including physical activity (PA), can help to support women in maintaining optimal health and wellbeing as they progress throughout the MT and beyond [6–11]. Indeed, there is a body of research showing that regular PA has been associated with numerous physical and psychological health benefits, including improved cardiometabolic and musculoskeletal health, healthy weight management and increased mental wellbeing [12, 13].

Despite the well-recognised benefits of PA engagement, available research shows a decline in PA during the MT years. For example, data shows that a third of women in the United Kingdom, aged between 41 and 60, are not meeting the recommended guidelines of 150 min of PA per week including muscle strengthening exercise on two occasions [14]. More specifically, the latest Irish Sports Monitor Report [15] shows a decreased participation in sport and/or PA among women across midlife, whereby 61% are not meeting PA guidelines. While the drop off in PA during this life stage is well-documented, identifying the unique motivators, facilitators and barriers to PA is an important consideration in mitigating the reduction in PA observed during the MT, as well as inform the development of future PA interventions that reflect the needs and preferences of this population. Indeed, it is thought that the many biological, psychological, behavioural, and social changes experienced throughout the MT might influence PA during this time [16, 17]. For instance, a recent survey showed that 70% of women in the MT felt that their symptoms had a moderate to severe impact on their quality of life, including preventing them from taking part in regular PA [17]. This supports findings from the first known research on women throughout the MT in Ireland which revealed that 67% of women reported symptoms interfere regularly with their daily activities [18]. Whilst this life stage presents an important window of opportunity to enhance women's lives through PA, existing research examining the experiences of the MT and how this impacts motivators, facilitators, and barriers to PA engagement, in Irish women, is non-existent. As such, the purpose of this study was to explore experiences of the MT of Irish women and how it impacts the motivators, facilitators, and barriers to PA engagement.

Method

Participants

Twelve Irish women experiencing the MT volunteered to take part in the study (mean±standard deviation [SD]: age, 49±4 years; self-reported height, 166±7 cm (n=11); self-reported weight, 71±12 kg). Participants self-categorised themselves within the MT, as described by Marlatt et al. [19]. The MT refers to the time during which the body makes the natural transition to menopause and women might experience symptoms, such as changes to the menstrual cycle and vasomotor symptoms [1]. Additionally, all participants were experiencing a natural, and not surgically and/or chemically induced, MT. Women who were pregnant or lactating within the last 12 months were excluded as they might have an atypical experience of the MT. Four participants reported the use of hormone replacement therapy (HRT), and a further two participants reported the use of hormonal contraception (e.g., Mirena coil). All participants were fluent in English. Full ethical approval was granted from the Ethics Committee at the Technological University of the Shannon (reference number: 20220301; date of approval: 7th March 2022), and the study was conducted in accordance with the Declaration of Helsinki. Informed consent (electronic) was obtained from all participants prior to participation in the study. This study uses the term 'woman' for people who self-reported identifying with the sex they were assigned with at birth [20].

Research design

To address the aims of this study and facilitate an in-depth understanding of the experiences of the MT in women, and how it impacts motivators, facilitators, and barriers to PA engagement, a qualitative descriptive study was conducted. Participants were recruited via emails, social media, and word-of-mouth. Those interested in participating were directed to an online information sheet and provided with contact details of the principal researcher if they had any further questions. Following informed consent, to ensure all participants met the *a priori* inclusion and exclusion criteria, participants completed a screening questionnaire. If eligible, participants

were contacted using the details provided to the research team, and suitable times for an interview were arranged. The interviews were conducted individually, online (i.e., Zoom), with the lead investigator present, and followed a semi-structured interview guide (Supplementary Material 1). Additionally, demographic data (e.g., self-reported health status and symptoms experienced during the MT) was collected at the time of the interview to provide a description of the cohort. Following introductions and discussions regarding the purpose of the study, all interviews lasted between 29 and 56 min (average: 41 min).

Data analysis

Each interview was audio-recorded and transcribed by the lead investigator, who had received specific training in qualitative data collection and analysis, including interview techniques, data transcription and thematic analysis. All transcripts were checked for accuracy and any personal identifying information was removed and instead all participants were given pseudonyms. Three members of the research team (KLM as well as PT and AL with extensive qualitative experience) collaborated throughout the process of analysis to minimise any bias. The framework analytical approach was applied through the steps of familiarisation, developing initial codes and establishing themes. All three team members independently read and reread the transcripts to ensure immersion in the data and identify preliminary patterns. This was followed by a discussion through which patterns were agreed upon. Basic codes were assigned to all patterns related to the research aims of the study, which were then arranged using a mind map to establish overarching themes and subthemes. The whole process was underscored by frequent conversations between team members to refine the mind map until a representation of the whole dataset was produced, with little or no overlap between each of the themes identified. The final author acted as a 'critical friend' providing an alternative viewpoint and questioning of the themes and initial interpretation of the data [21]. After debate, discussion and iterative refinement, the preliminary thematic structure was presented to the full research team and was agreed upon. The research team were cognisant that their positionality, including their identities as white, women academics influenced their analysis as data are not coded in an ontological or epistemological vacuum [22]. Additionally, the lead researcher was a Sport Scientist with a background in Women's Health, but no lived experience of perimenopause. Where appropriate, descriptive statistics (mean ± SD, for normally distributed, continuous data) and number and percentages (for categorial data) were used for demographic data.

Table 1 Self-reported descriptive data for the participants included in the study

Characteristics	Mean/n (%) *n* = 12
Age (years)	49.1 ± 3.8
Height (cm) (n = 11)	165.5 ± 6.7
Weight (kg)	70.6 ± 11.5
BMI (kg/m^2) (n = 11)	25.1 ± 2.9
BMI Category	
Normal (18.5 to 24.9 kg/m^2)	5 (45%)
Overweight (25 to 29.9 kg/m^2)	5 (45%)
Obese (30 kg/m^2 or greater)	1 (10%)
Average weekly engagement in 30 mins or more of physical activity (days)	4.6 ± 2.0 (range 1–7 days)
Marital Status	
Married	10 (83%)
Single	2 (17%)
Children	
Yes	10 (83%)
No	2 (17%)
Highest Level of Education	
Third level master's or PhD	8 (67%)
Secondary school to inter-certificate	1 (8%)
Technical/ vocational qualification	1 (8%)
Other (not specified)	2 (17%)
Smoker	
Yes	0
No	10 (83%)
occasional Smoker	1 (8%)
Vape-e-cigarettes	1 (8%)
Standard alcohol consumption per week (number of drinks)	
0–3	10 (83%)
3–6	2 (17%)
Overall healthy diet rating (1–10 with 10 being excellent)	7.0 ± 1.2
Overall health rating (1–10 with 10 being excellent)	7.5 ± 1.3

BMI: Body mass index

Results

Participant characteristics

Self-reported, descriptive data for the participants included in the study are displayed in Table 1. Most participants were either classified as having a BMI of either 'normal' (n = 5) or 'overweight' (n = 5). Typically, participants engaged in 30 min or more of moderate intensity PA on 4.6 ± 2.0 days per week, including walking, running, strength training, yoga, swimming, cycling, golf and fitness classes (e.g., 'core fitness'). The majority of participants were 'Married' (n = 10) with two participants self-classified as 'Single'. Most participants had children (n = 10). For many participants, the highest level of education was classified as 'Third Level Masters or PhD' (n = 8), with the remaining categorised as 'Technical or Vocational Qualification' (n = 1), 'Secondary School to Inter Certificate' (n = 1), and 'Other' (n = 2). Generally, participants were categorised as 'Non-Smokers' (n = 10),

but one participant self-reported as an 'Occasional Smoker' and another as a 'Vape/E-Cigarette Smoker'. Most participants ($n=10$) reported consuming between '0–3' alcoholic drinks per week. Participants rated their overall diet and health as 'Good' (7.0±1.2 Au and 7.5±1.3 Au, respectively on a Likert scale ranging from 1 to 10, with 10 being 'Excellent').

Menopause transition symptoms

All participants self-reported experiencing symptoms relating to the MT, both physical and psychological (Table 2), including 'Weight gain/body shape changes' ($n=9$), 'Lack of energy, tiredness and fatigue' ($n=7$), 'Anxiety, depression and mood changes' ($n=6$), 'Changes to menstrual cycle length' ($n=6$), 'Changes to periods (e.g., heavier/lighter blood flow)' ($n=6$), 'Brain fog and cognitive changes' ($n=5$), 'Changes to and difficulties sleeping' ($n=5$), 'Hot sweats, flushes, and changes in temperature regulation ($n=4$)', 'Joint pain, aches and pain' ($n=4$), 'Pelvic floor dysfunctions (e.g., leaking urine)' ($n=3$), 'Self-doubt and reduced confidence' ($n=2$), 'Heart palpitations' ($n=2$), 'Vaginal dryness' ($n=2$), 'Reduced libido and sex drive' ($n=2$), 'Breast changes' ($n=1$) and, 'Headaches and migraines' ($n=1$).

Table 2 Self-reported symptom data for the participants included in the study

Symptom	*N*
Weight gain/body shape changes	9
Lack of energy, tiredness and fatigue	7
Anxiety, depression and mood changes	6
Changes to menstrual cycle length	6
Changes to periods (e.g., heavier/lighter blood flow)	6
Brain fog and cognitive changes	5
Changes to and difficulties sleeping	5
Hot sweats, flushes and changes in temperature regulation	4
Joint pain as well as muscle aches and pain	4
Pelvic floor dysfunctions (e.g., leaking urine)	3
Self-doubt and reduced confidence	2
Heart palpitations	2
Vaginal dryness	2
Reduced libido and sex drive	2
Breast changes	1
Headaches and migraines	1

Table 3 Categories and themes

Categories	Themes
Motivators to engage in PA	Managing menopause symptoms Future health Social engagement and reward Role models
Factors that facilitate engagement in PA	Fraternity Adaptation and modification Medical supports
Barriers to PA engagement	Perceived reduced capability Symptoms associated with the menopause transition Busyness of life and competing demands Lack of supportive environments

PA, physical activity

Experience of the menopause transition

A total of 492 min of audio data was collected, resulting in a word document of ≈72,610 words of transcribed text which was analysed. Following thematic analysis of the interviews, 12 themes were identified which fell under the three main categories (Table 3): (1) motivators to engage in PA; (2) factors that facilitate engagement in PA; and (3) barriers to PA engagement; discussed in detail below.

Motivators to engage in physical activity

Four themes were identified: 'managing menopause symptoms', 'future health', 'social engagement and reward', and 'role models', which related to motivators to engage in PA.

Managing menopause symptoms Most women were experiencing menopausal symptoms that impacted their health and wellbeing to some extent and this was a key motivator for engaging in PA. For example, many of the women had experienced changes in their mental health throughout the MT and recognised and discussed the immediate influence of PA on improving psychological symptoms, such as mood changes, anxiety, and depression. Additionally, there was consensus that although PA feels difficult in the moment, attributed mostly to menopause related symptoms, such as a lack of energy and tiredness, their mindset improved following PA. Thus, this instant gratification and symptom improvement often motivated them to keep coming back to and participating in PA regularly.

> *"I walk for half an hour every day and I make myself walk even when I feel tired, because I know I'm going to feel better. Whereas I think initially when this (the menopause transition) first hit, because I was so wrecked, I would just sit, and I didn't correlate that moving as being one of the answers to my symptoms, whereas now I know it is." (Lindsay).*

Physical symptoms were frequently discussed, with weight gain being the main physical symptom that women spoke about in terms of motivating them to engage in PA. Indeed, some women discussed that they wanted to engage in PA to manage their weight and prevent any further changes to their body size/shape. Interestingly, of the women who regularly engaged in PA throughout their life, many believed that this had shielded them from experiencing symptoms, namely

somatic symptoms, such as hot flushes, and/or improved their experience of these symptoms, which ultimately helped them to navigate an easier path and/or gave them something to focus on during the MT.

Future health Most women were not currently experiencing any major health-related issues; however many spoke about being more aware of their health at this life stage, and the specific benefits PA could bring to counteract any potential increased health risk. Consequently, most women were motivated to engage in PA to protect their future health and reduce the risk of chronic health-related conditions.

> *"This (exercise) is an asset to me for the rest of my life. The physical activity for me isn't just to get me through menopause, but beyond. It's important for health reasons, the physiological and the psychological reasons I suppose. I've always felt it (exercise) was important, but now for me, it's even more important to keep being active for health reasons getting older". (Roisin).*

For some women this awareness of their future health came from seeing older relatives, namely parents and siblings, struggle with ageing by losing their movement over the years, which subsequently provided them with the motivation to participate in PA to future-proof their health and maintain independence. Moreover, it appeared that the motivators to engage in PA had changed for many women during this life stage as women reflected on, and redefined, their understanding of health. For instance, instead of engaging in PA when they were younger to look good and improve body image, women reported engaging in PA at this life stage to take control of their health and optimise healthy ageing.

Social engagement and reward Most women expressed that the social benefits from participating in PA increased their motivation to engage regularly. Specifically, there was a consensus that the opportunity to socialise with friends during PA was highly valued at this life stage more so than at any other point in their life, with it being almost as important as engaging in PA itself for some women. The increased social aspect of PA engagement at this life stage could have contributed to most of the women enjoying PA more at midlife compared to previously, providing them with further motivation to keep returning. For instance, most participants expressed that a key motivator for engaging in PA was that it brought enjoyment to their life now. Moreover, several women expressed that their children or family members, such as their sister and/or husband, had a positive influence on motivating them to participate in PA through both encouragement and the opportunity to socialise with them. Indeed, for some women having a family member as an anchor to engage in PA provided them with external motivation to overcome some of the typical barriers to engaging in PA during this life stage.

> *"He (son) trains with me a lot… Since the pandemic we keep each other motivated. It's an anchor to have to go together. Just having that somebody to encourage you to go as well. I'm able to motivate myself, but I can find excuses, especially since menopause is kicking in." (Julia).*

Furthermore, many women mentioned they were motivated by a sense of achievement, whether this was through achieving short and long-term goals, such as running a half-marathon and receiving external validation, for instance a medal or seeing results, including developments in PA competence and/or progressive physical and psychological improvements which provided internal validation. Interestingly, those who engaged regularly in PA reported that their sense of achievement also come from proving people wrong. The MT is a time of life that is often perceived negatively, and many women were motivated by the opportunity to break these perceptions and change the PA narrative for women during this life stage.

Role models Many participants also discussed the significance of role models and the part they play in encouraging them to engage in PA. Most women felt they benefited more from, and were drawn more to, relatable role models. For example, the participants in the current study were more inclined to respond to women in midlife who had the same lifestyle and common obstacles to overcome at this time, rather than role models they could not see themselves in.

> *"It's always really inspiring to hear what other people are doing or what other people are capable of, or what they've found works for them" (Sarah).*

In addition, many women perceived themselves as a role model to others particularly their children, which was an extra motivating factor to PA engagement.

Factors that facilitate engagement in physical activity

Three themes that related to factors that facilitate engagement in PA were identified: 'fraternity', 'adaptation and modification', and 'medical supports'.

Fraternity A sense of community and collective experience, particularly with women like them who are going through the MT, facilitated many women to engage in PA

at this life stage. Indeed, many women stated that finding their 'fraternity' of other women at the same life stage provided them with a space where they could support, and be supported, by others, specifically in relation to sharing information about the MT. Whilst the majority discussed support in person others did comment on a virtual 'fraternity', through an online community, such as WhatsApp and Strava, as well as social media.

> *"You know, you meet your little tribe of people. I think, in the running club all of us are in our 40/50s. We've all either been through menopause or are going through it. We all have different symptoms, so we're able to talk about things." (Alison).*

Additionally, many women discussed that this type of woman-only space and atmosphere that focuses on collective empathy and understanding, was preferred at this life stage when compared to other environments for PA, such as the gym, which most women viewed as intimidating, unaccommodating, and unwelcoming. Another important facilitator was the accountability resulting from pre-planned activities as part of a collective. For example, some women discussed the driving force of making a commitment to others within their group, and how this facilitated their engagement in PA, particularly on days where their motivation might be low.

Adaptation and modification Across all women there was a sense that adapting their PA to make it relevant at this life stage was key in facilitating their engagement in PA. For instance, some women discussed adapting their PA by taking part in tailored activities, for example menopause-specific group classes which were built for them at their level, whereas others discussed adapting their PA through modifying their previous PA, such as altering the intensity and type of activity, to a level that was more manageable throughout the MT.

> *"I can't do that (specific exercise in group class) now, so I do something else instead. I just do whatever I can do. If I can't do something in that moment, I just change what I'm doing, or I adapt it. I listen to my body." (Eimear).*

Similarly, many women discussed the importance of having flexibility in their engagement in PA, for example, shortening PA duration or changing the type of activity to fit some form of movement into their day when they might be struggling with symptoms related to the MT. Interestingly, it appeared that women who reported taking part in regular PA were able to self-regulate and adapt/modify their PA daily to suit their needs, by listening to their body. Furthermore, some women also talked about making bitesize individual modifications to their day-to-day life by adding PA wherever possible, rather than PA being a structured activity, such as taking the stairs over the lift, and parking further away from work and choosing to walk the extra journey instead. Additionally, often these modifications were tailored around their children, whereby some women participated in activities, such as walking or running, whilst watching their child's football game, or swimming whilst their child was at their swimming lesson.

Medical supports For some women medical supports, such as the use of hormonal contraception and HRT were necessary to get to a point in which they could then focus on lifestyle interventions, such as taking part in PA. For example, for some women these supports greatly improved their quality of life during the MT whereby they could then focus on, and engage in, PA, rather than suffering from debilitating symptoms related to the MT which prevented PA engagement.

> *"I went to the doctor, and she gave me HRT. I got some oestrogen into me, and I was a new person. I was not doing this (exercise) until I started HRT. I couldn't have committed to actually being somewhere to do something or been organised enough. Without HRT, I would not have been able to do that. These exercise habits that I have now are definitely HRT related." (Sinead).*

Barriers to engagement in physical activity

Four themes for barriers to engaging in PA were identified: 'perceived reduced capability', 'symptoms associated with the MT', 'busyness of life and competing demands', and 'lack of supportive environment'.

Perceived reduced capability Many women believed they were no longer capable or as capable of engaging in certain activities, namely high intensity activities, such as running, and this was attributed mostly to ageing and/or injuries. For some this resulted in a reluctance to try new forms of PA, or continue to engage in certain forms of PA, at this life stage compared to previously.

> *"I wouldn't be trying anything like a dance class or, you know, aerobics or anything like that now. At this stage, I'd kind of feel as if I wouldn't be as able now as I would've been before… I did think about doing running, but I think I've come past the age for it. I might damage myself at this stage if I start running." (Sue).*

Some women reported experiencing injuries, such as wrist and back injuries, often amplified by the MT, and

illnesses, for example long COVID, which acted as a barrier when it came to engaging in PA. Additionally, for some women who engaged in PA regularly throughout their life, there was now a tendency to either stop taking part in previous PA activity or adapt and modify these activities as they were not as good as they once were. For example, some of the women who were previously engaged in a lot of PA and experienced a decline in their physical performance during the MT stated that this created feelings of self-doubt and imposter syndrome. In contrast, some of the participants who had never engaged in PA and/or had negative experiences of PA since childhood stated that this led them to perceive that PA was not for them and/or that they were not good enough, which subsequently put them off engaging in PA at this life stage.

Symptoms associated with the menopause transition Although the symptoms experienced during the MT acted as a motivator to engage in PA, experiencing these symptoms also created a significant barrier to engagement in PA for some women.

> *"It's more the effects of the menopause rather than anything else that would limit me (in engaging in physical activity)." (Carol).*

Whilst some physical symptoms such as heavy menstrual bleeding, premenstrual syndrome, and weight gain were discussed as barriers to PA engagement, many women focused on psychological symptoms as the key barrier to PA, such as low motivation and reduced energy. Indeed, many women spoke about the dichotomy that exists between engaging in PA to alleviate these symptoms, while also being disinclined to engage with PA because of these symptoms. Likewise, it was evident that many women lacked education and awareness around menopause in general and of the impact of PA on potentially managing menopause symptoms which likely contributed to further reinforcing this barrier to PA.

Busyness of life and competing demands Many women were mostly in part- or full-time jobs/education, whilst also looking after both children and ageing relatives (e.g., the sandwich generation) alongside dealing with their own experience of the MT. As such, whilst most women were aware of the benefits of PA at midlife, competing demands created a barrier to engagement in PA. Additionally, many women reported putting their family's welfare above their own, and therefore did not prioritise time for themselves to engage in PA, as their own needs get distracted by caring for everybody else's needs.

> *"It's all time related. It's just getting yourself to get that half an hour to just focus on yourself. It's very easy to not focus on yourself." (Debbie).*

Lack of supportive environments Many women felt like they did not belong in certain environments, namely gym environments, which acted as a barrier to PA engagement. Specifically, most women expressed that gym environments were intimidating, male-orientated, and not interesting. As a result, this left some women with a perception that there were minimal opportunities to engage in PA. For example, most women discussed a lack of menopause specific related opportunities in PA environments and generally felt overlooked as a population.

> *"I think generally my feeling is it's never been mentioned at my running, and there's never modifications in my core classes at all around women or menopause… So, yeah, I'm a bit annoyed recently thinking that sometimes the expectation for women is that you keep up and you do the same as men. You know, this is one of the difficulties with our society as it moves forward. I totally get that people are equal, but we're different." (Janet).*

Similarly, some women suggested that those working in PA environments lacked awareness and understanding which presented as another barrier to PA. For example, most PA environments are dominated by male instructors, who might not be aware of or understand the physical and psychological changes occurring throughout the MT and thus are not able to cater fully for women in midlife. Moreover, other commonly reported barriers to PA related to the environment, such as location and cost, were also apparent within this group of women. For example, many women discussed that they often had to travel to access a location where they could engage in PA. Likewise, some women expressed that the cost of certain activities can prevent their engagement in PA.

Discussion

The purpose of this study was to explore experiences of the MT in a group of Irish women and how it impacts the motivators, facilitators, and barriers to PA engagement. Most women stated that the MT influenced their engagement in PA. The main motivators to engage in PA throughout the MT included managing menopause symptoms, optimising future health, the opportunity for social engagement and rewards, as well as relatable role models. Additionally, many women discussed that menopause fraternities focused on community and collective experience, adapting and modifying PA, and medical supports were key factors that facilitated engagement in PA throughout this life stage. In contrast, there were

a multitude of both MT specific and non-specific barriers that women in this life stage faced before they could engage in PA, such as perceived reduced capability, symptoms associated with the MT, the busyness of life and competing demands, as well as a lack of supportive environments, alongside other practicalities, including location and cost. Collectively, these findings demonstrate that some of the motivators, facilitators, and barriers to PA engagement throughout the MT in Irish women are unique to this life stage which is an important consideration for key stakeholders when facilitating these women to either continue or (re)introduce PA during this time.

Motivators for engagement in physical activity

Mitigating the experience of menopause related symptoms, in particular weight gain, mood changes, and fatigue in addition to optimising future health; by wanting to proactively safeguard against long term health conditions due to both the MT and the process of ageing, were key motivators to engage in PA by most women in the present study. This supports previous research demonstrating that symptoms, both physical and psychological, are commonly reported throughout the MT and act as both motivators and barriers to PA engagement [16, 17]. Indeed, many of the women included in this study reported that PA helped to limit the experience of some symptoms during the MT providing them with motivation to continue to engage in PA. Although it is important to note that whilst the perceived beneficial effect of PA on attenuating symptoms experienced at this life stage has been highlighted in previous qualitative studies [23–26], the current quantitative evidence is conflicting and limited [13]. For example, while several randomised controlled trials investigating the influence of physical activity on menopause symptoms, have shown positive effects of increases in physical activity, namely yoga, aerobic exercise and resistance exercise on attenuating symptoms [27–30], some studies have reported mixed findings [31, 32] and other have reported no effect [33, 34].

Previous studies in similar cohorts have shown that middle-aged women are aware of and report an increase in health conditions, such as osteoporosis, cardiovascular disease, and mental health conditions, and thus engaging in PA is a key motivator for them to take control of their health and optimising outcomes into later life due to the numerous physical and psychological benefits of PA [16, 17]. Of interest is how these findings differ to other life stages across a woman's life cycle. For example, although research investigating the motivators to exercise in teen girls showed that this population appeared to be motivated by self-improvement, teen girls mostly recognised the benefits of PA through the lens of physical attractiveness [35, 36]. Whereas, in the present study women discussed redefining their meaning of health from focusing on the aesthetic benefits that come with PA to instead focusing on the health benefits of engaging in PA that would help promote healthy ageing and protect against negative health conditions.

Whilst awareness of the benefits of PA in reference to promoting healthy ageing and managing menopause symptom is essential, it is important to note that solely focusing on this narrative might not be the most optimal approach to improving PA engagement. Certainly, another key motivator that emerged in the present study was the enjoyment brought from both social engagement and the sense of achievement experienced during PA. This is reflective of research across all stages of a woman's life cycle from puberty to post menopause, which indicates that the opportunity for social engagement and fun as well as internal goals are key motivators for engaging in PA [35, 37, 38]. Finally, relatable role models were a key motivator for PA engagement in the current study. Previous research by Women in Sport [16], demonstrated that real stories from women in the same stage of life are needed to help show that PA is beneficial and suitable during the MT.

Facilitators to engage in physical activity

Fraternities and the feeling of community were key facilitators for PA engagement for women during the MT. Indeed, many women felt empowered through sharing their experiences with other women going through the MT, which made menopause feel like a collective rather than isolated experience. This allowed many women to normalise their experience, offer advice, and receive emotional support. As such, menopause fraternities appear to be an essential component of PA during this life stage. Similarly, previous research in middle-aged women has demonstrated the positive impact of MT-specific groups on PA engagement [17, 23, 39, 40]. Specifically, studies have shown that the sense of camaraderie and shared goals within these menopause groups facilities a sense of belonging which is essential for sustaining engagement in PA. Interestingly, studies investigating facilitators to PA across other stages across a woman's life cycle, such as during adolescence [35, 41] and pregnancy [37, 42] have shown similar findings.

Adapting and modifying PA to make it relevant to their experiences during the MT was another key facilitator for PA engagement in the present study. Whilst many women noted a lack of MT-specific PA initiatives, providing a call to action for future studies, women reported making their own adaptations and modifications to their PA to be able to continue to participate in activities that they enjoy. This finding is echoed in similar previous studies that noted that personalised PA programmes during midlife [16, 17, 23, 40], as well as across other life

stages in women, such as pregnancy [43], are essential to facilitate regular engagement in PA. This underscores the need for key stakeholders to consider the unique challenges faced by women during the MT and to provide guidance on adapting PA. Finally, another key facilitator to engage in PA, was the use of medical supports. Specifically, many women highlighted the role HRT had played in getting them from a place in which it was impossible to take part in PA, to being able to regularly commit to PA. Indeed, research shows that HRT is the most effective method to help treat the symptoms experienced during this life stage [1, 44]. Therefore, by removing a key barrier in the form of menopausal symptoms, these women were able to engage in PA.

Barriers to engagement in physical activity

The concurrent changes occurring at midlife, such as ageing and throughout the MT (i.e., symptoms and health-related concerns) lead to some women perceiving themselves as less capable, and in some cases fragile and at an increased risk of injury. Ultimately, this resulted in the belief that certain activities were no longer suitable for them at this life stage, which presented as a barrier to engagement in PA in the present study. This is consistent with previous research, which indicated that the physical and psychological changes that occur during the MT and deteriorating health from the process of ageing leads to low confidence in a woman's ability to exercise [16]. Interestingly, this finding also aligns with previous literature across other key life stages in women, such as puberty and pregnancy. For example, studies highlight that during puberty, girls often experience a decline in PA due to body image concerns and social pressures [35, 45], while during pregnancy, women frequently modify or reduce their exercise routines due to fears about harming the baby or themselves, despite the known benefits of staying active [37, 46]. These parallels suggest that key life transitions in women often bring about similar barriers to PA, emphasising the need for tailored support and education to help women navigate these life stages whilst engaging in PA.

The symptoms experienced, such as low motivation and reduced energy during the MT were frequently cited as a barrier to PA engagement in the current study. These findings are consistent with previous research indicating that menopausal symptoms, such as hot flushes, fatigue, and joint pain as well as anxiety, mood swings, and depression negatively impact a woman's willingness and ability to engage in regular PA [16, 17]. It is possible that the reported lack of education and awareness around menopause reported in previous studies [25, 47–49] might have further reinforced this barrier, as many women might be unaware of the potential benefits of PA on managing symptoms during this life stage.

Whilst the aforementioned barriers are unique to women during the MT, other barriers, for instance business of life and competing demands and a lack of supportive environments, highlighted within the present study were less specific to the MT yet appear to remain consistent across a woman's life cycle. Indeed, most women included within the present study were working or in education full/part-time. Additionally, many of these women were part of the sandwich generation whereby they are caring for both their own children and older relatives. As such, competing demands were placed upon their time, energy, and resources leaving limited time for themselves to engage in PA. This finding aligns with previous studies that have shown that women's participation in PA is affected by the multiple responsibilities they have at both home and work [23, 50, 51]. Finally, in the current study, women reported feeling largely ignored, particularly in relation to PA environments, which acted a barrier to PA engagement. Specifically, many women felt they did not belong in certain environments, namely those such as the gym that appeared intimidating and male orientated, and there were few activities directly relevant to them. This agrees with previous research showing that women often perceive PA environments as unwelcoming and not tailored to their needs, especially during key life stages [35, 37]. Together, these findings highlight the need for future PA interventions that address these specific barriers to help women engage in PA during the MT.

Limitations and future directions

It is important to acknowledge that the current study has several limitations. Indeed, data was collected from a small group ($n=12$) of Irish women, therefore the implications of this study are unlikely to be meaningful to all women during the MT. As such, further research across a more diverse population, such as women in different countries, socio-economic status, ethnicity etc., is warranted. Moreover, sampling bias might also have influenced results. For example, most women were relatively active and healthy and thus there is a call for more qualitative research to be conducted within inactive subgroups of women during the MT to understand their specific needs. Furthermore, it is important to acknowledge the potential for subjectivity and researcher bias within data collection and analysis. For instance, the perspectives and lived experiences of the researchers might have shaped the framing of interview questions and the interpretation of responses. Future studies could implement strategies such as, member checking and/or triangulation to enhance the credibility and trustworthiness of findings. Additionally, only one interview was completed with each participant in the study which might have limited the comfort of conversations for some individuals,

thus additional interviews might have enhanced the depth of discussion collected. Finally, data was not collected on the timing of the MT which might have provided different responses, as well as the symptoms and health-related conditions experienced at the time of the interview. Despite these limitations, this dataset provides a new insight into the experience of the MT in Irish women and how this relates to engagement in PA, which should be considered when developing and delivering future PA interventions for this population.

Practical implications

The findings from the present study could have several practical implications for key stakeholders when developing and delivering future PA interventions specific to Irish women during this life stage. Firstly, PA needs to be social, fun, and engaging during this time. Indeed, whilst knowledge and awareness are essential it is important to reframe the conversation from focusing solely on the health benefits of PA during the MT, for example symptom mitigation and a reduced risk of health-related conditions, to instead highlight the enjoyment PA can bring to this life stage. Likewise, community should be at the core of PA for women during the MT. For instance, creating a sense of shared experience and an opportunity to connect with like-minded women is essential. This could be achieved through, buddying up to work together during PA, offering PA sessions alongside menopause support groups, as well as continuing communication post PA through the likes of virtual communities.

Most women reported feeling overlooked in PA environments, thus there is a need to increase the opportunities available for women during the MT through targeted and tailored interventions. It is also important, to ensure that these women know that they are still capable of taking part in new and different types of activities throughout this life stage. This could be achieved by widening their perception of what PA can consist of rather than being limited to the likes of walking, running, and gym-based activities. Additionally, it is important that these types of initiatives offer flexibility within their approach. For example, the choice of affordable pay as you go sessions rather than those requiring an expensive up-front cost, the option between in-person and online activities, as well as shorter duration sessions, might help limit some of the practical barriers to PA engagement that women during the MT experience.

It is important to ensure that the environment in which these women take part in PA is non-judgemental and welcoming to optimise PA engagement. Specifically, most women in the MT responded positively to all-inclusive and woman-only environments. This should also be communicated clearly through the language and imagery used in advertisements to reassure women that this is a supportive space. Importantly, where imagery is used it should feature women during the MT. Indeed, during this life stage women need role models who are relatable to act as a motivator to inspire them to increase PA and/or present them with ways to overcome their own barriers to PA engagement. Finally, it is crucial to move beyond a one-size-fits-all approach to PA in women during the MT. Certainly, whilst there are some uniting factors, this study highlights the many different experiences of the MT, as well as unique motivators, facilitators, and barriers to PA engagement during this time. As such, it is important to instead identify, where possible, what approach fits each individual woman. The above recommendations are intended to ensure that women's needs are met throughout the MT when it comes to PA which will allow them to make the most of this opportune window.

Conclusion

This study demonstrates that the specific experiences of the MT in a group of Irish women can influence PA engagement. From a practical perspective, it is important to raise awareness and understanding of these specific and unique, motivators, facilitators, and barriers to PA engagement that women experience throughout the MT. These should be acknowledged by key stakeholders when considering PA in women during the MT, as this will facilitate women to make the most of this window of opportunity. Finally, further research should expand upon the findings presented herein to investigate the effectiveness of a bespoke PA intervention which is shaped to maximise the specific motivators and facilitators, whilst minimising the barriers to PA engagement in Irish women during the MT.

Abbreviations

HRT	Hormonal replacement therapy
MT	Menopause transition
PA	Physical activity
SD	Standard deviation

Supplementary Information

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Supplementary Material 1

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Author contributions

Conceptualisation: AL, RK and PH; Methodology: KLM and PH; Analysis: KLM and PH; Project administration: KLM. Supervision of project administration: PH. Writing (original draft preparation): KLM and PH; Writing (review and editing): All authors. All authors read and approved the final manuscript.

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Data availability
Data presented in this study are available on request from the corresponding author. The data are not publicly available due to privacy.

Declarations

Ethics approval and consent to participate
Full ethical approval was granted from the Ethics Committee at the Technological University of the Shannon (reference number: 20220301; date of approval: 7th March 2022), and the study was conducted in accordance with the Declaration of Helsinki. Informed consent (electronic) was obtained from all participants in the study.

Consent for publication
Not applicable.

Competing interests
The authors declare no competing interests.

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