'Provide clarity and consistency'

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‘Provide clarity and consistency’: the practicalities of following UK national policies and advice for exercise and sport during pregnancy and early motherhood

Abstract

In June 2017 the Chief Medical Officers of the United Kingdom released guidelines for exercise during pregnancy to be used by those in the healthcare and sport sectors when providing advice to pregnant women. These recommend pregnant women should take part in at least 150 minutes of moderate exercise per week. This qualitative study employed a social-ecological framework to investigate the experiences of new mothers based in the UK and the practicalities of engaging in regular exercise during pregnancy and the postpartum period. An online qualitative questionnaire was completed by 200 UK-based women who had recently given birth. Ten of these participants then took part in a semi-structured interview. Qualitative data from the questionnaires and interviews were thematically analysed and 3 themes were generated as recommendations to the sector. The first theme was the importance of providing ‘trusted advice’ from reputable sources. The second theme was the need for provision of ‘safe, affordable sport and exercise options’. The final theme was the need for more ‘considered postpartum support’ for exercise, through further childcare options and a range of supportive environments for women to exercise within postpartum. The findings suggest that women’s sport participation tends to decrease during and after pregnancy. Women are officially recommended to maintain participation throughout these life-stages, but the current UK sport and leisure environment is not ideally suited to support this. Collectively the UK healthcare and sport sectors should work to provide trusted advice and considered sport and exercise options for pregnant and postpartum women.

Keywords: *postpartum, physical activity, women, health, sport development, pregnancy*

Introduction

In June 2017 The United Kingdom (UK) Chief Medical Officers of Scotland, England, Wales and Northern Ireland jointly issued guidelines to health professionals on imparting physical activity advice to expectant mothers (Department of Health 2017). An infographic and 8 page guidance document were released online to be freely available to those engaging with pregnant women in the health sector, as well as professionals in the leisure industries. The guidance was based on a series of systematic reviews of randomised controlled trials as well as qualitative studies on views and experiences of pregnant women and medical professionals. In the resultant published national recommendations from the Department of Health a variety of activities are either recommended (150 minutes per week of moderate intensity activity) or not recommended (contact sports; activities involving lying in supine positions after the 1st trimester), with the take-home safety messages including 'no evidence of harm'; 'listen to your body and adapt'; and 'don't bump the bump'. The view is that standardised policy and easily accessible national guidance should ease worries of healthcare, leisure, and sport industry professionals called upon for advice from pregnant women wishing to maintain involvement in exercise and sport. Yet the practicalities for expectant mothers of interpreting and implementing this advice within the current sport and leisure environment have yet to be explored. Moreover, postpartum women also require advice about safely returning to sport and exercise after labour. At present it is unclear what opportunities there are to access support for postpartum exercise within the current UK context. Employing a social-ecological framework (Sallis *et al.* 2008) to guide an exploration of the experiences of new mothers, this study aimed to investigate how this national advice can be practically interpreted by women engaging with the current UK leisure and sport sector, to understand whether development of the sector is needed. This research should thus inform the sport development sector to provide for any current gaps in provision that might make these national guidelines difficult to follow.

Literature Review

Globally a considerable volume of studies have explored patterns of exercise participation during pregnancy, as well as sources of trusted advice, and barriers to participation. These studies have been published in journals aligned to midwifery, obstetrics and gynaecology, or sport medicine, and their focus has thus been more on the physical impact of exercise during pregnancy rather than the practicalities of access to such exercise. For example, researchers have argued that maintaining moderate exercise during pregnancy is not only safe but should be encouraged for benefits such as improved mental health and wellbeing (Da Costa *et al.* 2003, Robledo-Colonia *et al*. 2012); prevention of excessive weight gain (Mudd *et al.* 2013); reduced risks of developing gestational diabetes (Ruchat and Mottola 2013); and improved or maintained physical fitness (Prather *et al.* 2012). Yet despite this evidence, studies have also shown that exercise and sport participation tends to decrease during pregnancy, and this decrease tends to endure into the postpartum period, though the barriers to exercise undoubtedly shift throughout these pre and post labour stages (Pereira *et al.* 2007, Gaston and Cramp, 2011).

Researchers such as Nash (2011) and Malatzky (2017) have conducted qualitative research with pregnant women and new mothers in Australia to explore the impact of pregnant and postpartum 'body ideals' on this population. Malatzky has argued that whilst women are often aware of and critical of unrealistic body ideals in the media, they can still have a damaging impact as 'resisting these discourses is no easy task' (Malatzky 2017, p.32). This strand of research has been important in terms of understanding the social and cultural context within which women experience pregnancy and motherhood, including the media messages directed towards women during these stages of life. Over the past twenty years a range of other studies

have explored the sources from which women gain information and advice on exercise during and after pregnancy (Clarke and Gross 2004, Duncombe *et al*. 2009, Ferrari *et al.* 2013). Research conducted by Clarke and Gross (2004) with a sample of 57 pregnant women in England reported that 46% of these women received advice on exercise during pregnancy. This advice came from a variety of sources (health professionals, books, friends and family), and the main source of discouragement towards exercise came from friends and family. A UK-based qualitative study in the journal *Pregnancy and Childbirth* explored beliefs about exercise during pregnancy through interviews with 65 women (Weir *et al.* 2010). The researchers concluded that there has not been enough advice about pregnancy and exercise, with existing conflicting advice in magazines, books, and websites serving to confuse or plant enough doubt to deter altogether. Collectively this body of research has pointed towards a policy intervention providing tighter recommendations and more standardised national advice, of the form released in the UK in 2017.

Mixed messages and conflicting advice on exercise during pregnancy were themes that were also uncovered by Evenson and Bradley's 2010 research in the USA. This explored beliefs of pregnant women regarding physical activity, and whilst most (98%) of the 1306 women in their study agreed that light activity was beneficial during pregnancy, fewer (73%) agreed there were benefits of moderate activity. Evenson and Bradley therefore argued that there were mixed understandings of what might be classified as light and moderate activity during pregnancy. They also indicated that there needed to be further exploration of how to enhance uptake of exercise during pregnancy, and this is something which the present study explores. Saligheh *et al.* (2016) have used the social-ecological model as a framework through which to identify personal and environmental barriers and enablers to exercise for postpartum women in Australia. They stressed the importance of partner support, affordable exercise options, and

easily accessible information about where these options can be taken up as key enablers to participation. A similar design approach is taken in the present study but with focus on the UK rather than Australia.

McGannon, McMahon and Gonsalves (2018) investigated the experiences of North American competitive recreational athlete mothers in juggling motherhood and sport. McGannon and others have also explored elite and recreational athlete mothers and how they manage the 'athlete mother' identity, yet to date much of this research has been conducted outside of the UK and has not focused on development of the sport sector itself - a gap which this present study addresses (McGannon *et al*. 2012, McGannon and Schinke 2013, Palmer and Leberman 2009). As well as a need for improved official advice on the safety and types of exercise that might be engaged in during and after pregnancy, it is important to understand the practicalities of this within the current context of provision within the sport and leisure sector. Moreover, all of this must be considered within a cultural environment where exercising pregnant women are a relatively unusual sight; where sport and leisure industry professionals may fear repercussions and liability when imparting exercise advice; and where — despite the recently released official guidance — policy and governance in this area has been limited.

UK health policy and maternal care

Whilst care of pregnant women can be considered a policy priority for the UK, it does vary case to case. Those with uncomplicated pregnancies find advice and guidance to be minimal and centred on diet and nutrition advice, with physical activity an afterthought. Where national guidance has been most readily available has been in terms of 'weight management' during pregnancy, targeted towards overweight and obese women with BMIs of 30 or more and thus with 'at risk' pregnancies (NICE 2010). In these cases, all healthcare practitioners (midwives,

general practitioners, nurses) who engage with pregnant women are advised to give 'specific and practical advice' to overweight and obese women to encourage recreational exercise (NICE 2010, p.13). For the population of women who are already physically active and 'healthy' when they become pregnant, there was previously limited targeted advice on maintaining exercise (Reid *et al.* 2017). Instead, diet and nutrition of pregnant women have been policy priorities throughout the UK, as shown by the gradual implementation of 'Healthy Start' from 2011 onward, where pregnant women claiming state funded benefits can access free fruit, vegetables and vitamins (NHS 2018). In some areas, such as Scotland, all pregnant women receive free vitamins, not just those eligible for state funded income support. At the launch in April 2017 Public Health and Sport Minister Aileen Campbell noted: 'We are committed to giving every child in Scotland the very best start in life and helping women to enjoy a healthy pregnancy is a key part of this' (Scottish Government 2017). Despite this UK policy focus on improving nutrition and tackling obesity in pregnancy, exercise for all pregnant women has only recently come to the fore, and the sport and leisure sector must be primed to provide for this policy shift.

Sport development for women in the UK

Since 1975 when the European Sport for All Charter was established, the varied benefits of sport and exercise have been lauded by governments throughout the West (Council of Europe 2001). Opportunities to maintain and enhance sport participation levels are generally supported politically. However, often the strategic practicalities of implementing and supporting participation growth within the context of the current UK sport sector are not fully appreciated by those setting targets or providing funding. For example in the context of mega-events and legacies it has been shown that the UK sport structure often struggles to deliver on sport participation targets set by governments (Macrae 2017). The majority of organised sport in the UK takes place through voluntary sports clubs (VSC) accredited by the non-profit national

governing body (NGB) for their sport (Pappous and Hayday 2016). Recreational sport and exercise through local authority provision is also an option to engage in subsidised exercise locally (Widdop *et al.* 2017). Commercial providers (private gyms or health clubs, such as 'David Lloyd' or 'PureGym') separately offer sport and exercise options at a range of price points to suit consumers. For women's sport and exercise participation there are, on the surface, numerous options in the private, public and third sectors. Yet, research has shown personal and structural barriers which make it more difficult for women to access these resources and maintain participation throughout life (Hamilton and White 2010, McGannon *et al.* 2015).

Various sport development programmes and strategies have been put in place to improve exercise and sport access and experiences for women in the UK. The government-funded national agencies for sport—responsible for coordinating sport in the respective home nations—have had varied attempts to make improvements for women through campaigns and evidence-based recommendations to the sport sector. Sport England have published reports outlining gendered barriers, with recognition that pregnancy and motherhood can negatively impact on participation rates, and with a call to the sport sector to recognise barriers and adapt provision accordingly (Sport England 2016). Sport Northern Ireland have called for considered local provision to be made to fit the needs of new mothers, though there is little information provided online about support and options for exercise during pregnancy (Sport Northern Ireland 2018). Within national governing bodies there are varied levels of guidance for maintaining participation during pregnancy. For netball, a female-dominated sport popular with women of all ages in the UK, responsibility falls to the pregnant woman herself to gain approval from her doctor before participating, and it is noted that the NGB will not be held liable for any damage to the woman or her baby (England Netball 2016). British Rowing have provided guidance from their medical panel and note that while they warn of potential sport-

specific risks, such as accidental blows to the stomach by an oar, generally they do not prohibit participation and 'there are no reports of such an injury resulting in any damage to a pregnant woman' (British Rowing 2015).

For women who wish to maintain their exercise and sport participation, the 2017 national advice states that continued participation through pregnancy and into motherhood is recommended. With the national policy in mind, this study explored the practicalities of following this advice within the current UK sport and leisure sector context.

Method

The aim of this study was to explore recent experiences of mothers in the UK in terms of their exercise patterns, any shifts in these pre and post pregnancy, and the barriers and enablers experienced in relation to exercise and sport throughout pregnancy and the early years of motherhood. Working from Veal and Darcy's (2014) definition of qualitative studies, this followed a social-ecological theoretical framework depicted by Sallis *et al.* (2008). The approach used online open-ended questionnaires, individual semi-structured interviews, and group interviews to explore experiences of exercise before, during and after pregnancy, with particular focus on any shifts in exercise habits pre and post pregnancy and the reasons for these. Full ethical approval was granted by the researcher's institution.

Theoretical framework

This research was framed within a socio-ecological model to facilitate a holistic understanding of the current situation and potential practical developments. The social-ecological model suggests that health behaviours, barriers and enablers to exercise should be interpreted in relation to relevant intrapersonal, interpersonal, environmental, organisational, and policy

barriers (Sallis *et al.* 2008). The social-ecological model has been applied by numerous researchers in sport studies when seeking to understand the complexities of barriers to participation and to reveal areas to target in future interventions (McGannon *et al.* 2014, Coll *et al*. (2017). Through application of this model, the researcher develops an appreciation of the distinctions between personal barriers, social barriers, or environmental and community barriers, which should allow for a more comprehensive form of development to be put in place. The social-ecological model informed the design of the study and development of the data collection tools, data analysis process, and conclusions.

Online questionnaire

After review of the current literature in this field, an online questionnaire was developed using the online survey tool QuestionPro. This questionnaire aimed to gather basic demographic data as well as information about trends in exercise habits before, during and after pregnancy. The inclusion criteria were that participants were over 18 years of age and had at least one child that they had personally carried to full term. There was no age restriction but, perhaps due to the recruitment techniques (noted below) the majority of participants (80%) had experienced pregnancy relatively recently and were aged 26-40. Following a similar approach to that of Toerien and Wilkinson (2004), the majority of the questions were open-text form rather than multiple choice, apart from questions regarding age, basic demographic details and specific questions such as 'key barriers to exercise', where a few options were provided as well as 'other' to allow for unprompted responses. Other questions were open-ended, for example:

Before your first pregnancy what types of exercise (if any) did you take part in? How often?

During your first pregnancy, what types of exercise (if any) did you take part in? How often?

After your first pregnancy (in the following year), what types of exercise (if any) did you take part in? How often?

Questions were also posed about any specific barriers experienced; how long it took to return to 'vigorous' exercise after giving birth; and whether any specific advice was given in relation to exercise during pregnancy, and if so which advice sources were most trusted. At the end of the questionnaire there was an open comment box for *'any other comments or thoughts regarding exercise during pregnancy and motherhood'*. Participants were also asked to provide their contact details if they were happy to take part in the next stage of the research which involved a semi-structured interview.

Semi-structured interviews: individual and group

The second stage of data collection involved semi-structured interviews (Veal and Darcy 2014) with a sample of participants who had voluntarily agreed to take part. These were conducted either as individual or group interviews, as will be explained further below. The interview schedule was developed through review of both the existing literature base and the preliminary findings from the online questionnaires. The interviews allowed for more detailed exploration of the experiences raised in the online data collection.

Procedure

After review of the literature, the online questionnaire was designed using QuestionPro as outlined above. The online questionnaires could be accessed via a web-link, using any device with internet access. The questionnaire was piloted—showing that it took on average 3-5 minutes to complete—before going live in June 2017, and it was accessible online until early 2018. Organisers of various classes for new parents (such as 'baby sensory' classes) were

contacted to request their cooperation with distribution of the online questionnaire link to their users through social media groups. A range of classes were targeted throughout all home nations within the UK. The researcher also attended six classes in person to explain the research in more detail and distribute the link to potential participants via a QR code. In the online questionnaire it was clear that participation was voluntary and consent was requested at the outset. Through these techniques the online questionnaire was completed by 200 participants based throughout the UK.

Around 50% of questionnaire respondents agreed to provide their contact details to be invited to take part in the subsequent semi-structured interviews. From these, a convenience sample (Patton 2002) of 10 participants was included in the interview stage, based around interviewee location, and mutual availability. Given the topic of the research many of the individuals who agreed to be interviewed were either currently on maternity leave or in part-time employment, and though daytime availability was high, they struggled to find childcare to allow them to engage in a private, one-to-one interview. Consequently, the research design for this stage was flexible to fit the needs of the participants. Some interviews took place in groups, and/or in a research environment suitable for infants to be present. The details of all interview settings are noted below, and these convey some of the time barriers faced by this target group when trying to engage in activities postpartum.

- Interview 1: Individual interview, held in participant's home while infant slept.
- Interview 2: Individual interview, held in public café while infant slept and fed at the table.
- Interview 3: Group interview with 3 participants, held in 1 participant's home with all 3 infants present in the room and feeding or playing.

- Interview 4: Group interview with 3 participants, held in 1 participant's home in evening, childcare for 3 infants provided by partners.
- Interview 5: Group interview with 2 participants, held in public café immediately after a baby sensory class, while 2 infants fed at the table and slept.

Data Processing and Analysis

Data from the completed questionnaires were analysed to establish basic trends and descriptive statistics. As the majority of the questionnaire was qualitative with open-ended responses there was no detailed statistical analysis. 114 of the 200 respondents provided lengthy qualitative comments in the open-text sections of the questionnaire, and these were thematically analysed with the assistance of NVivo 11 software to establish key codes, which were then further reduced to thematic categories (Veal and Darcy 2014). The social-ecological model was used as a guiding tool in the thematic analysis to assign barriers and enablers into categories of the personal, social or environmental. The questionnaire data also informed the content of the subsequent interviews.

The interviews were audio-recorded using a digital recorder and transcribed verbatim by the researcher. Transcripts were thematically analysed using NVivo 11 software. The interpretation of the qualitative interview data took a hybrid approach involving both inductive and deductive thematic analysis (Fereday and Muir-Cochrane 2006, Braun and Clarke 2006) as the social-ecological framework informed the process, but without rigidly enforcing categories. Data was deductively compared to existing literature and social-ecological frameworks, while also being open to new interpretations as presented by this novel data set. Initial codes (or nodes) were established by reading, then re-reading the transcripts before highlighting key excerpts and assigning them to appropriate titles or generating new titles as

required (Lorelli *et al.* 2017). This produced a large number of codes which were then merged and reduced to form the key themes reported in the following section.

Results and Discussion

Participant characteristics

Of the 200 respondents who completed the online questionnaire, 88% noted their ethnicity as White British; 4% were Indian; 3% were mixed race (White & Black Caribbean); 2% were British Asian; 2% were Black Caribbean; and 1% noted 'other' but did not specify. Employment status was noted with 40% in full-time employment; 35% part-time; 13% on maternity leave; 12% unemployed, out of work due to sickness or disability, or in full-time education. 57.5 % of participants had only 1 child, 32% had 2 children, and 10.5% had 3 or more children. All of the 200 respondents were residents in the UK at the time of completing the questionnaire.

Throughout the following sub-sections, the findings from the questionnaires and interviews have been presented together by theme with integrated discussion. Elements of the social-ecological model have informed the themes, particularly acknowledgement of 'environmental' enablers that should be taken on board as recommendations for health policy and sport sector development. Throughout the analysis process there was an attempt to identify the role that policy change and sport sector development could play to encourage and improve access to exercise for pregnant and postpartum women. In practice this meant that some 'environmental, policy and organisational' barriers which were aligned originally to the interpersonal and intrapersonal aspects of the social-ecological model (such as struggles with childcare access) have been discussed below in terms of being potential *enablers* to exercise, if the right policy

and development is put in place by the health and sport sector. The three themes which will be covered in turn are:

1. Trusted advice (during pregnancy and postpartum)
2. Safe, affordable sport and exercise options (during pregnancy)
3. Considered postpartum support (childcare and trusted supportive environments)

Theme 1 – trusted advice (pregnancy & postpartum)

The first theme aligned strongly to the environmental, policy and organisational strand of the social-ecological model and concerned sources of trusted advice within the sport and health sectors. A large number of participants in the questionnaires and interviews noted that they received a mixed range of 'official' advice about exercise during pregnancy, and found it difficult to know what was right for them. This was the case even when medical professionals were consulted, such as midwives:

> Participant A: *The advice to me was 'keep up gentle exercise' […] But I didn't realise that my friend did running up until quite late in her pregnancy […] but then when I mentioned it to my midwife she was like 'hmm, no, you must be very careful, things can go wrong and you really should just take it easy'. So there's a lot of mixed advice about fitness. There's a lot of 'protect your baby'. No specific advice like 'this is what you could be doing if you're very fit, or moderately fit', it was only, 'if you did it before you can do it in your pregnancy, but use common sense'. It doesn't really encourage people to get fit.*
>
> Participant B: *For me there wasn't that emphasis on strengthening yourself, just 'maintain gentle exercise'. And you're a bit like 'well, what is that?' Is that going for*

a walk because surely that's gentle for some people, but if some people are used to more, then that's nothing. It was just too vague. (Interview 5 - Group)

Participant C: *Quite mixed opinions, some people just stop everything, some people say you shouldn't be exercising you should be slowing down.*

Participant D: *There's a lot of fear created from these things. That's where you get the ideas of you shouldn't exercise 'cause it's dangerous for your baby.* (Interview 3-Group)

Participant K: *The advice online and in the books all said running was ok throughout pregnancy, but at my first midwife appointment I was told to stop all strenuous activity that caused my uterus to "bounce". Conflicting advice made me nervous to continue any activity*. (Online questionnaire response)

Participant L: *I only trusted my pregnancy yoga teacher about exercise advice. I was given a very stern word from a midwife that I should be stopping running and not starting back too quickly.* (Online questionnaire response)

The 2017 national guidance was designed to 'provide clarity and consistency' for those seeking advice about exercise during pregnancy, however, this suggests that women still receive mixed messages. Previous findings from Weir *et al.* (2010) showed that sound advice regarding exercise during pregnancy was either lacking altogether or inconsistent in the UK. The data presented here suggest this remains the case for the majority of UK-based women in this sample. As well as this, some participants felt health professionals were more focused on the

health of the baby rather than the mother, with the woman an afterthought. They suggested that self-care should be more of a consideration from those imparting professional advice:

> Participant E: *But the next step is not just saying it's fine but actually encouraging it, for physical and for mental health as well. 'Cause I never felt that message was directed at me at all.* (Interview 3 - Group)

> Participant B: *I lot of these things were very much focussed on the baby and not focussed on you at all.* (Interview 5 - Group)

> Participant D: *But it does make you a wee bit scared, you think 'I don't want to do anything for just me that's then going to damage my baby'.* (Interview 3 - Group)

> Participant C: *A lot of the advice you get when you're pregnant is about the baby and what to do for the baby, whereas exercising is about you, so I think it's quite important that people get the message that there's things you need to do to look after you and not just the baby. And then into maternity and the first couple of years of the baby's life it should be a well published message that if you do this it's going to look after you.* (Interview 3 - Group)

These findings suggest that as well as more consistent advice on exercise during pregnancy, some women may respond well to a reframing of this advice in terms of engaging in exercise to maintain their own health and wellbeing – not just that of their baby. Yet, there needs to be a careful balance struck when framing this advice. Nash (2011) and Malatzky (2017) have explored experiences of pregnancy and motherhood for women in Australia, with particular

focus on the negative impact felt by women exposed to unrealistic pregnancy and postpartum body ideals presented in the media. Thus, whilst more targeted advice and encouragement for exercise is advisable, healthcare or sport professionals imparting such advice should be careful to frame this in terms of the benefits for physical and mental wellbeing, whilst being wary of imparting any damaging messages regarding body ideals (Nash 2011; Malatzky 2017). Advice for returning to exercise postpartum was also minimal for most of the women who engaged with the research. This postpartum stage was something a few participants had difficulty with, resulting in some cases with injury from engaging in strenuous physical activity too soon. More guidance from a specifically trained postpartum sport and exercise professional may have been beneficial to these participants:

> Participant E: *I had a tear and my stitches burst in the first week, and if I'd seen a physio I don't think that would have happened 'cause I would have known what I should and shouldn't do... If I'd been told more maybe?* (Interview 3 - Group)

> Participant F: *In terms of exercise now I'm only allowed to do walking because I suffered a prolapse, stage 3 where my bowel, my womb and my bladder have all collapsed. After the birth, I went for my check-up and the doctors told me that I was fine to go back to the gym. So I went back to all my regular classes ... and then the prolapse.* (Interview 2 - Individual)

When this is coupled with the data from the questionnaires it is clear that a shift in tone is needed from health professionals and the sports sector if women are to be encouraged to maintain exercise throughout their lives. Of the 200 questionnaire respondents, when asked about pre-pregnancy exercise habits 55% self-reported that they exercised 3 times a week or

more, and 20% exercised twice a week, so this was a relatively active cohort, with only 25% noting they exercised less than once a week. For habits during pregnancy, this switched, with 50% of respondents noting they exercised less than once a week. After pregnancy (in the first year after giving birth) the number of respondents noting they exercised 3 times a week or more dropped from 55% pre-pregnancy, to 29% postpartum, and those exercising less than once a week rose from 25% pre-pregnancy to 50% postpartum. Pregnancy and motherhood had a major impact on the exercise habits of this relatively active cohort of the population. If women are to be encouraged to keep active throughout life, adjustments need to be made in the health and sport sectors to support this. Evidently, conflicting advice and a lack of consistency from health professionals has acted as a barrier to exercise for some women in the UK. This should be improving since the implementation of the 2017 national guidance, however comments regarding receiving 'conflicting advice' were made by questionnaire respondents who had engaged with the pregnancy healthcare system since the new guidance was put in place in June 2017, and they evidently still felt advice was too vague. Building on previous research by Weir *et al.* (2010), these findings show that whilst things are improving, there need to be more resources aligned to this with further guidance and support in place from the healthcare and the sport sectors.

Moreover, the tone of advice from healthcare providers has had a focus on 'the baby, not the mother'. The data from the questionnaires show that this is a major event in terms of disrupting the exercise habits of what was otherwise an active cohort of the UK population. These individuals could be supported to maintain engagement in sport and exercise, for the numerous physiological and psychological benefits that it can bring (Da Costa *et al.* 2003, Robledo-Colonia *et al*. 2012, Mudd *et al.* 2013, Ruchat and Mottola 2013, Prather *et al.* 2012). Thus, as well as consistent, clear advice and encouragement from health professionals, there must also

be further cooperation within the sport and exercise sector to provide supportive exercise environments. Of the 200 respondents to the online questionnaire, 27% noted that they trusted midwives the most for advice on pregnancy and exercise, 11% trusted their doctor, 16% trusted a specialist exercise instructor (such as a pregnancy yoga instructor), whilst the remaining 46% noted other sources such as friends and family, or books and websites. Women are being encouraged and advised to engage in 150 minutes of moderate intensive activity through the new national guidance, and some of them (16% in this case) trust more in specialist exercise instructors than medical professionals to provide advice on the specifics of this. If women are to maintain engagement with exercise during pregnancy they need to be supported to do so by both the health sector and the sport and leisure sector. Therefore, an environmental and policy-focussed recommendation would be for there to be more structured advice from trusted sources, which would include both those working within the healthcare sector and sport professionals. Yet, as the following section shows, at present this support from the sport and leisure sector is inconsistent.

Theme 2 - safe, affordable sport & exercise options (pregnancy)

Currently advice to pregnant women is to continue with their pre-pregnancy exercise routines as far as possible, without starting anything new. Led-fitness classes and running are popular with physically active adult women (Audickas 2017) and so it can be assumed that women are being encouraged to continue with regular led-fitness classes in gyms and leisure centres. However, the below findings show that some participants felt very uncomfortable doing this, for a variety of reasons.

Interpersonal and intrapersonal barriers

Participant G: *I swapped running for spin classes because I felt embarrassed about how big my bump was […] I felt really self-conscious and like everyone was watching me. So I stopped going to spin classes.* (Interview 4 - Group)

Participant N: *It still seems frowned upon and a rarity to be exercising during pregnancy, almost a bit taboo!* (Online questionnaire response)

Participant M: *Running has become my time and I don't think I could have coped with life's challenges in the past 9 months without it. But I often got 'looks' when going to the gym with a large bump.* (Online questionnaire response)

Participants noted feeling as though they were being negatively perceived for continuing to exercise in their regular, pre-pregnancy environments once pregnant. The above examples are not occasions where the women were discouraged from exercising, but rather where they perceived others to be judging their actions. This has been noted as a key barrier within international research on this subject to date (Coll *et al.* 2017). A pregnant woman exercising is still an unusual sight within society, and indeed it was only in 2017 that official guidance was set to encourage exercise during pregnancy. The ideal situation is inclusive classes and environments where women can be supported to maintain their activity during pregnancy in any safe environment that they wish. However, until fully inclusive classes are a reality, more specialist classes and environments should be provided by the sector where women can feel comfortable and safe.

Environmental enablers

These data indicate that there are specific ways in which current pregnancy exercise provision could be improved to enable participation and enhance experiences:

> Participant B: *I felt a bit frightened when I was at the Pilates class that wasn't specifically for pregnant women, because although she was giving me alternatives, sometimes you're thinking 'am I doing this wrong, am I not pushing enough, or am I pushing too hard' [...] I wondered 'should I be more careful?'* (Interview 5 - Group)

> Participant L: *I think there are insufficient personal trainers who are properly qualified in pre- and post-natal training.* (Online questionnaire response)

> Participant C: *[Yoga] is the one that's orientated towards pregnancy and you kind of feel like it's ok. And when it's your first pregnancy you're kind of, you're very cautious so you're not wanting to do anything that might upset things.*
>
> Interviewer: *So was it quite important that this was a specialist class then?*
>
> Participant C: *Yeah, I had tried other yoga classes and because I was pregnant they were like, 'oh no, go to this.'[...]*
>
> Participant D: *I quite liked that I went to a specialist class. Just knowing that the instructor was a bit more clued up on pregnancy, 'cause every feeling was kind of new to me. So I had that reassurance that I was going to someone that knew what they were doing. I'd done gym classes with others where the instructor wasn't as clued up on pregnancy, and so the specialist knowledge was important.* (Interview 3 - Group)

The evidence presented in this sub-theme shows the worries that can be present during 'regular' classes; the call for more 'qualified trainers'; and the experience of a participant who attended

a specialist class for exercise during pregnancy. Evenson and Bradley (2010) showed that women in North America had misconceptions of what might be considered light and moderate activity, and this affected their interpretation of exercise guidance given to them during pregnancy. The findings here suggest that a safe, specialist space is currently the ideal for many women, and this would also help to mitigate some of the previous issues noted by Evenson and Bradley. Yet, though there are specialist classes offered for exercise during pregnancy, many participants noted these to be either limited in terms of activity options (primarily yoga) and often too light in intensity for those with a strong fitness base. Providing a more diverse range of pregnancy specific classes is a key finding here, and a strong recommendation to the sector. However, at present, those classes on offer also tend to be prohibitively expensive:

> Participant O: *If you can afford swimming and classes that's great. I couldn't afford the gym so I used to try to walk as often as I could.* (Online questionnaire response).

> Participant A: *We need more discounted rates for these kinds of things because people have got, you know, they're saving for maternity and everything else and these classes do cost, some of them are really expensive, £10 or more a class, and that can deter people from wanting to do exercise*. (Interview 5 - Group)

> Participant C: *I knew yoga would be good and I did a lot of yoga before, and I kind of knew my limitations and thought I would be able to manage myself, but they were quite strict about sending me to these other classes [which were] very expensive.* (Interview 3 - Group)

These findings show the impact that pregnancy and motherhood can have upon exercise habits.

Therefore a call to the sport sector is to provide exercise classes not as an expensive afterthought but as a part of standard provision. Whilst specialist classes are offered, provision is currently fragmentarily placed throughout the UK, with participants reporting varied experiences of finding local options. A similar situation was found within the evidence collected on postpartum exercise.

Theme 3 – considered postpartum support (childcare and trusted supportive environments)

The final theme concerned access to more considered postpartum support and options to aid postpartum exercise, and therefore interlinked with the personal strands of the social-ecological framework. This theme showed that personal circumstances were particularly important, such as access to childcare, but also that access to trusted, tailored advice during the postpartum stage was sporadic. Yet it was apparent that with considered, affordable sport and exercise provision put in place as standard, these personal barriers could be diminished through structural community developments designed to provide enablers to exercise. Current UK recommendations from the National Institute for Health and Care Excellence (NICE) note:

> Local authority leisure and community services should offer women with babies and children the opportunity to take part in a range of physical or recreational activities. […] These need to be affordable and available at times and areas suitable […] Affordable childcare (for example, a crèche) should be provided. (NICE, 2010, p.17)

Saligheh *et al*. (2016) have recommended there to be more affordable exercise options for postpartum women in Australia. The experiences of my participants show that accessing suitable, affordable sport and physical activity options (as outlined in the above NICE guidelines) is similarly challenging in the UK, with regional variations in offerings. From the

online questionnaire responses, 30% of participants noted limited childcare support as a barrier to postpartum exercise, 10% stated options were prohibitively expensive, 5% felt there were no attractive options in their area, and 28% stated they personally felt too tired to exercise. Participants in the interviews and online qualitative responses also noted limited childcare options as barriers:

> Participant Q: *I enjoyed the group physio exercise class after my first baby provided by the maternity unit, as I could take my baby along. However I could only go for 6 weeks. I would have enjoyed going to a similar class longer term where I could take the baby after this. I could not attend after my second child as my first child was only 18 months and I could not take both babies along.* (Online questionnaire response)

> Participant R: *I never appreciated how difficult it would be to exercise with a baby in tow with limited child care options… Or how big an impact having a baby has on your metabolism or joints.* (Online questionnaire response)

These findings hint at the subtheme mentioned earlier in terms of accessing sound advice about postpartum exercise. Many participants noted worries and a personal lack of knowledge, with simultaneous social pressures to 'bounce back' to pre-pregnancy fitness levels, but with some noting a lack of support on how to safely take part:

> Participant S: *I miss exercise but I can't afford the training I was doing previously. I'm also worried that anything I do might cause me long-term damage instead of being beneficial as I've read some exercise after pregnancy is not good, but I don't know enough about what types of exercise is* [sic] *safe?* (Online questionnaire response)

> Participant F: *'Cause if you go to your local gyms, they're not really trained on pregnancy and post-pregnancy, they're not educated in that sense, apart from the odd PT.* (Interview 2 - Individual)

> Participant T: *After the birth there is a big drive from society for women to 'get back' to pre pregnancy state as quickly as possible. […] I think a graded return to activity should be advocated, tailored to women. […] All women should be able to discuss this with a physiotherapist at their 6 week postnatal check.* (Online questionnaire response).

This suggests there is a need for further support not only from the health profession, where structured guidance is needed to counteract societal pressures to return to pre-pregnancy fitness routines, but support and structured advice is also required beyond this within the sport sector itself. Malatzky (2017) has stressed that within the Australian health and sport sector women struggle to live up to the societal expectations and dominant media representations of slim postpartum women. In any case, beyond the negative societal pressures, many women also wish to return to exercise as something which makes them feel physically and mentally healthy, but they need support to do so safely. Participants offered up their own solutions for how best to improve this situation, for example, through access to a physiotherapist 6 weeks postpartum to provide tailored guidance, but also through provision of more 'baby welcome classes' for new mothers, or affordable crèche options designed specifically to overcome the childcare barriers. There are already options for this and some participants noted they had accessed local volunteer-led options such as 'buggy-fit' but, as with the pregnancy specific exercise classes, provision is regionally varied and often prohibitively expensive:

> Participant H: *You have to pay extra for it [at my gym]. It's about £5 an hour per child [Q: and you've got twins] yes, everything's doubled, yeah. So you can book for an hour and the maximum you can get is two hours at a time, so it's 20 quid to put them in there, plus your gym membership on top, so that's too much…The one thing I did look at was, you know the buggy-fit class type thing, but there's not one. I think if you maybe live closer to a city I think they have more things like that where you can go along and you can bring the kids and do an activity, but there's no things round here* (rural area) *where you can bring your kids with you and still exercise at the same time.* (Interview 1 – Individual)

Thus, there are evident environmental, organisational and policy enablers that could be developed to encourage participation and enhance experiences of postpartum exercise. Key areas for focus should be the provision of more considered support for postpartum exercise in the form of trusted advice from healthcare and sport professionals, as well as more affordable exercise options which incorporate childcare provision for those who lack such support in their personal environment.

Conclusion

National advice released by the Chief Medical Officers of the UK in June 2017 recommended that pregnant women should engage in at least 150 minutes of moderate exercise per week and continue with the majority of pre-pregnancy exercise habits. This research has shown that continuing with pre-pregnancy exercise habits during pregnancy and the postpartum period can be difficult within the UK system. Yet, often currently environmental barriers could be shifted to become enablers if considered sport provision is developed with sufficient resources and

policy support. This paper argues that further support, guidance and more considered provision within the sport sector itself is a necessity. Current options are often prohibitively expensive, unattractive, or lacking altogether in certain localities throughout the UK. Specifically, for the sport sector, there is a need to address the lack of affordable, varied, pregnancy-specific classes, beyond yoga and Pilates, as a number of participants noted that they felt safer within pregnancy-specific environments.

In the postpartum period current barriers included lack of childcare, or unattractive or expensive childcare options, and this was also regionally varied with some rural participants noting further barriers. Moreover, participants stressed a need for further structured advice and support postpartum, for example with specific postpartum classes and check-ups involving physiotherapists – these resources were regionally varied, and ultimately absent for many. Given the existence of a national policy and official recommendations which encourage exercise during pregnancy and postpartum, it is thus recommended that the health sector, UK national agencies of sport, local authorities, and national governing bodies work to address these issues and provide further trusted advice and safe, affordable, considered sport and exercise options for pregnancy and for the postpartum period.

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