

Institution: Canterbury Christ Church University		
Unit of Assessment: Sport and Exercise Sciences, Leisure and Tourism (24)		
Title of case study: ICS24.02 Delivering the First UK Chief Medical Officers' National Perinatal Physical Activity Guidelines, and New National Medical and Healthcare Training and Industry Standards.		
Period when the underpinning research was undertaken: 2010 to 2019		
Details of staff conducting the underpinning research from the submitting unit:		
Name(s):	Role(s) (e.g. job title):	Period(s) employed by submitting HEI:
Dr Hayley Mills Dr Marlize DeVivo Dr Mark Uphill	Reader Senior Research Fellow Senior Lecturer	November 2008 - present March 2018 - present September 2003 - present
Period when the claimed impact occurred: 2016 to 2020		
Is this case study continued from a case study submitted in 2014? N		
<p>1. Summary of the impact</p> <p>Significant new research and insights into what impacts women's engagement and experiences of <i>perinatal physical activity</i> (that which takes place before, during, after and between pregnancy) identifying the need for clear national guidance, consistent pre-qualification and in-service training, and improved and collaborative interprofessional communication has led to:</p> <p>(I) The first UK Chief Medical Officers' National Perinatal Physical Activity Guidelines</p> <p>(II) New National Medical and Healthcare Pre-Qualification and In-Service Training, Interventions and Industry Standards for Perinatal Physical Activity, reaching 160,000 medical students per annum and 1.5 million health professionals, plus 50,000 GP surgeries, in doing so increasing the confidence of health professionals to advise perinatal women, and the physical activity levels of perinatal women.</p>		
<p>2. Underpinning research</p> <p>Since 2012, Dr Hayley Mills and Dr Marlize DeVivo have led research at Canterbury Christ Church University into <i>perinatal physical activity</i> (that which takes place before, during, after and between pregnancy). The research has focused on the factors that contribute to low levels of perinatal physical activity, despite the benefits of physical activity across the perinatal period being well evidenced and well established for both mother and child [R1]. This work has included the first meta-analysis of factors that impact physical activity behaviour during pregnancy [R2], with this and empirical work focusing on pregnant women [R2, R3, R4], health professionals [R4,R5], post-partum women [R4, R6] and clinical policy makers [R1]. In doing so, it has developed significant new insight into what impacts women's engagement and experiences of perinatal physical activity.</p> <p>Both the context and the empirical work with women and health professionals [R2, R3, R4, R5] reinforced the extant literature in showing that physical activity is low during pregnancy, particularly in the earlier stages of pregnancy which are perceived by women to be higher risk [R3], and continues to be low after pregnancy, rarely returning to pre-pregnancy levels. Substantively, findings relate to the experiences of perinatal women and the practice of health professionals.</p> <p>Firstly, the research identified a number of real and perceived barriers experienced by pregnant and post-partum women, as well as those trying to become pregnant for either the first or subsequent times:</p> <ol style="list-style-type: none"> 1. The physical and psychological demands of both pregnancy and post-natal caring responsibilities are experienced as all-encompassing, leaving little time to focus on what are often perceived to be less relevant concerns, such as physical activity [R2, R5]. 2. The perceived risk of physical activity (especially when described as 'exercise') to the 		

pregnancy [R2, R3, R4], particularly in the perceived higher risk early stages [R3], and to post-partum health [R6] of both mother (e.g. pelvic health) and baby (e.g. perceived impact on ability to breast-feed).

3. The psychological pressures to become pregnant are also experienced as all-encompassing (therefore crowding-out physical activity) for some women [R5], as is a perceived risk of physical activity to becoming pregnant [R3].
4. A tendency to conform with the views of others, including significant others such as partners, parents, wider family and other women at the same perinatal stage, who often advise against, or frown upon, physical activity [R2, R3, R4, R5].
5. Exacerbating 2-4 above, a lack of clear, consistent, and trusted advice across the perinatal period, from health professionals and in public guidance [R1, R2, R3], and a lack of access to resources for perinatal physical activity [R2].

Secondly, the research identified issues and barriers for health professionals and clinical policy-makers in the provision of advice for perinatal physical activity:

1. Midwives and related-health professionals felt vulnerable and lacked confidence to provide physical activity advice, and therefore frequently did not do so, often underpinned by fears of exposure to risk and subsequent litigation and liability [R5].
2. Health professionals identified a lack of pre-qualification and in-service training as impacting their ability and confidence to provide physical activity advice at all stages of the perinatal journey [R4, R5].
3. There is a lack of interprofessional collaboration to link up health professionals and exercise professionals, and to link professionals at each perinatal stage (i.e., before, during, after and between pregnancies), resulting in inconsistent messages and advice [R4, R5], and a lack of knowledge and resources about how to advise women to access physical activity across the perinatal period [R5].
4. Neither national physical activity guidance [R2, R3], nor clinical guidance [R1], addressed the issue of perinatal physical activity.

Consequently, the research identifies the need for and recommends:

- a) Clear national guidance on physical activity across the perinatal period.
- b) Development of consistent pre-qualification and in-service training for midwives and other health professionals (including exercise professionals), as well as clear industry standards for such training.
- c) Improved and collaborative communication to both health professionals and women at all stages of the perinatal period.

Collectively [R2, R3, R4, R5, R6] and specifically [R4,R5], Mills and DeVivo's research emphasises a lifecourse approach to supporting perinatal physical activity, and notes that advice during pregnancy is vital and necessary, but not sufficient, for the immediate and long-term health of both mothers and their children.

3. References to the research

- R1. Mills, H. et al. (2020). Bump start needed: linking guidelines, policy and practice in promoting physical activity during and beyond pregnancy. *British Journal of Sports Medicine*, 54(13).
- R2. De Vivo, M., Hulbert, S., Mills, H & Uphill, M (2016). Examining exercise intention and behaviour during pregnancy using the Theory of Planned Behaviour: A meta-analysis. *Journal of Reproductive and Infant Psychology*. 34 (2) 122-138.
- R3. Walker, C, Mills, H & Gilchrist, A (2017). Experiences of physical activity during pregnancy resulting from in vitro fertilisation: An interpretative phenomenological analysis. *Journal of Reproductive and Infant Psychology*. 35, (4) 365-379.
- R4. Gilroy, V., De Vivo, M., & Lawson, R. (2019). Insight Report: Educational campaign to support pregnant women and new mothers in enjoying and benefitting from an active lifestyle. Report to Department of Health and Sport England.
- R5. De Vivo, M. & Mills H. (2019) "They turn to you first for everything": Midwives' perspectives on

roles, responsibilities, and barriers in providing physical activity advice and guidance during pregnancy. BMC- Pregnancy and Childbirth. 19:462.

R6. Donnelly, G.M., Rankin, A., Mills, H., DeVivo, M. et al. (2020). Guidance for medical, health and fitness professionals to support women in returning to running postnatally. British Journal of Sports Medicine, 54(18).

Outputs R1, R2, R3, R5 and R6 were each published in journals with established peer-review processes and standards, and all were blind peer-reviewed. Output R4 derives from contracted research commissioned by competitive tender. Following commissioning, research designs were subject to scrutiny by research analysts in the commissioning organisation and its funders (ukactive, Sport England and the Department of Health), with the final report subject to a process of review, critique and feedback prior to endorsement and release.

Funding

£33,000, Sport England: Educational campaign to support pregnant women and new mothers in enjoying and benefitting from an active lifestyle (2018-2019) [R4].

4. Details of the impact

(I) THE FIRST UK CHIEF MEDICAL OFFICERS' NATIONAL PERINATAL PHYSICAL ACTIVITY GUIDELINES.

The four UK Chief Medical Officer's (CMO's) previous national guidance on physical activity, issued in 2011, contained no content or advice referring to physical activity in pregnancy, post-partum, or across the perinatal period. An initial scientific consensus meeting in 2018 to initiate a review of national physical activity guidance, convened at the request of the four UK CMOs and attended by Mills, considered Mills and DeVivo's research and recommendations on both the need for consistent, trusted guidance across the perinatal period, and the lack of confidence among health professionals in supporting perinatal physical activity behaviours. The Chair noted *"it was clear Dr Mills expertise regarding issues surrounding perinatal physical activity guidance, knowledge and training would provide a valuable contribution to our new guidelines"* [S1].

At this meeting *"findings by Mills and DeVivo regarding health professionals' lack of confidence and knowledge in supporting physical activity behaviour, alongside additional insights into the need for consistent, trusted guidance, was persuasive"*. As a direct consequence, the four UK CMO's commissioned the first national guidelines for physical activity to span the perinatal period, both before and after childbirth [S1].

Mills was invited to Chair the Expert Group to develop the guidelines for post-partum physical activity, which also included DeVivo as a member [S1, S2].

The recommendations of Mills' Group were subsequently adopted by the four UK CMOs and included for the first time in the UK CMO's Physical Activity Guidelines, published in September 2019 [S2]. The Chair noted, *"findings by Mills and DeVivo, and their support from the start, was fundamental in this decision to include new guidelines"* [S1].

Mills' Group also developed communication materials to be circulated and disseminated with the UK Guidance to inform and support both health professionals and post-partum women in relation to perinatal physical activity [S3].

Following the publication of the UK Guidance, Mills was invited to join the CMO's Physical Activity Communications Committee, to which DeVivo also served as a Specialist Advisor [S1], which continues to provide evidence-based advice to the four UK CMO's on the effective communication and implementation of the UK Guidance.

In 2020, Mills and DeVivo worked with physiotherapy colleagues and Sports Medicine Northern Ireland to align previous recommendations for returning to running after childbirth with the UK CMO's perinatal physical activity guidance [R6]. These new recommendations, endorsed by the Chartered Society of Physiotherapy and the Association of Chartered Physiotherapists in Sports and Exercise Medicine [S5], expanded the reach of Mills' and DeVivo's research and recommendations beyond guidance for immediate post-partum moderate physical activity into recommendations for post- or inter-pregnancy vigorous activity which further supported the full perinatal period and lifecourse approach.

(II) NATIONAL MEDICAL AND HEALTHCARE PRE-QUALIFICATION AND IN-SERVICE

TRAINING AND INDUSTRY STANDARDS FOR PERINATAL PHYSICAL ACTIVITY

Research and recommendations by Mills and DeVivo have led directly to the development of new pre-qualification and in-service training for doctors, midwives and other health professionals (including exercise professionals) regarding perinatal physical activity, as well as industry standards. The training and standards have been endorsed, accredited, adopted and delivered by national government agencies and professional, statutory and regulatory bodies (PSRBs).

The research and recommendations have informed and supported both the initial development of healthcare training and interventions, and the subsequent alignment of training with the UK CMO's Physical Activity Guidelines for perinatal women, developed by Dr Mills' Expert Group [S2,S3] and commissioned as a result of Mills' and DeVivo's research [S1]. It is the first time that national training and interventions, and industry standards, have been developed to include clear and consistent messages and materials, aligned to UK CMO Guidance, to support consistency and advice for perinatal physical activity at all stages of the perinatal period:

- **Pre-qualification Training:** *Movement For Movement*, the physical activity curriculum resource endorsed and distributed by the UK Council of Deans of Health for use in UK Medical Schools and Faculties of Health has been updated to include perinatal physical activity content developed by Mills and DeVivo, and informed by their research, to align with the UK CMO Guidance [S5]. Its reach is approximately 160,000 UK healthcare students per annum [S6(i)], and in 2020 it was funded to be extended to Medical Schools in five EU countries – Lithuania, France, Portugal, Greece and Estonia [S6(ii)].
- **In-service Training and Toolkits:** Based on their research, Mills and DeVivo were invited to update a wide-range of national in-service training and toolkits for health professionals in the UK and home nations to include training on perinatal physical activity aligned with UK CMO Guidance. A Royal College of General Practitioners (RCGP) Clinical Priority Steering Group member, and Medical Advisor to Public Health Wales, notes: *“The involvement of the considerable expertise of Dr Mills and Dr De Vivo in the development of these resources, has been crucial in ensuring that the research evidence is accurate, up to date and relevant to pregnant woman. This is critical when these resources are used in educating our medical workforce with the benefits of physical activity in pregnancy”* [S7]. The resources [S8] include:
 - *e-Learning for Healthcare* (for Public Health England & Health Education England, endorsed by The Active Pregnancy Foundation and the Chartered Institute for the Management of Sport and Physical Activity (CIMSPA)), reaching over 1.5million healthcare professionals as registered users.
 - *Motivate2Move* (for Health Education and Improvement Wales, endorsed by the Royal College of Nursing), accessed by over 100,000 health professionals annually.
 - *RCGP Active Practice Charter and Physical Activity and Lifestyle Toolkit*, provided to 50,000 UK Doctors in general practice to support the provision of lifestyle advice to their patients.
 - *Moving Medicine* (for Public Health England and Public Health Scotland, endorsed by the Academy of Medical Royal Colleges) a resource of online courses, toolkits and consultation guides for UK healthcare professionals, launched by the Secretary of State for Health and Social Care, who said *“I am delighted to launch this brilliant web tool for healthcare professionals – I hope it will help pave the way for a culture shift in medicine”*.
- **National Intervention:** *This Mum Moves*, ukactive's national resource for healthcare professionals and perinatal women, funded by Sport England, developed with the Royal College of Obstetricians and Gynaecologists, accredited by the Institute of Health Visiting (iHV) and endorsed by the RCGPs and Royal College of Midwives [S9(i)], was written and developed by DeVivo based on Mills and DeVivo's research [S9(ii)]. ukactive note *“combatting underrepresentation is a key part of our mission – women, and pregnant women in particular, are an underrepresented group in terms of physical activity... this knowledge and research experience has been foundational in educating and equipping healthcare professionals with the relevant information in order to discuss being physically active throughout this time in a woman's life”* [S9(ii)]. The iHV note, *“...without this expertise and research we would not have had the insight into the needs of these women to support the development of rich and accessible resources”* [S9(iii)]. An initial evaluation of the intervention found more than two-thirds of health professionals felt more confident to offer advice after training, with one saying

"I'm so glad to have training on this as I don't think I ever had before. I know it's so important but I lack confidence on how best to advise women... I am looking forward now to being able to give the correct advice" [S9(iv)]. In addition, 60% of women taking part in the intervention increased physical activity mid pregnancy AND post-partum, with one saying *"Building good habits during pregnancy has helped me to continue good habits in my recovery after birth"* [S9(iv)].

Industry Standards: *Health Matters: Physical Activity*, Public Health England's guidance for healthcare professionals, local authorities and NHS organisations, has adopted and included the UK CMO's Physical Activity Guidelines for perinatal women, developed by Mills' Expert Group [S10(i)]; *CIMSPA Professional Standards*, now include a standard for Working with Antenatal and Postnatal Clients [S19] which aligns with the UK CMO Guidelines, and for which DeVivo served on the Development Committee [S10(ii)].

5. Sources to corroborate the impact (indicative maximum of 10 references)

- S1) Testimonial from the Chair of the UK Chief Medical Officer's Expert Committee for Physical Activity (31/03/2020).
- S2) DHSC. (2019). UK Chief Medical Officers' Physical Activity Guidelines. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/832868/uk-chief-medical-officers-physical-activity-guidelines.pdf
- S3) DHSC. (2019). Physical activity for women after childbirth. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/841936/Postpartum_infographic.pdf
- S4) Chartered Society of Physiotherapy (2020). PRESS RELEASE: Postnatal running guidance recognised and aligned with government advice. <https://www.csp.org.uk/news/2020-06-03-physios-postnatal-running-guidance-recognised-aligned-government-advice>
- S5) Testimonial from the UK Council of Deans' Movement for Movement Project Lead (22/02/2021).
- S6) Council of Deans of Health Press Releases: (i) <https://councilofdeans.org.uk/2019/12/the-2020-movementformovement-physical-activity-exercise-and-noncommunicable-diseases-pregnancy-and-perioperative-care-resource-update/> (05/12/19); (ii) <https://councilofdeans.org.uk/2020/11/launch-of-the-erasmus-movementformovement-resources/> (30/11/20).
- S7) Testimonial from RCGPs Clinical Priorities Steering Group Member and Medical Advisor to Public Health Wales (15/03/21).
- S8) National Training: (i) e-Learning for Healthcare – Pregnancy and Postnatal Period: Being Active <https://portal.e-lfh.org.uk/Component/Details/604251>; (ii) Motivate 2 Move – Physical Activity & Pregnancy <https://gpcpd.heiw.wales/clinical/motivate-2-move/chapter-11-exercise-during-pregnancy/>; (iii) RCGPs Active Practice Charter Physical Activity and Lifestyle Toolkit – Physical Activity and Pregnancy <https://www.rcgp.org.uk/clinical-and-research/resources/toolkits/-/media/9AF0C35D81854B6B8B8FEA915DE25B09.ashx>; (iv) Moving Medicine (2020). <https://movingmedicine.ac.uk/consultation-guides/condition/adult/common-pages/#pregnancy>
- S9) This Mum Moves: (i) <https://thismummoves.co.uk>; (ii) Testimonial from Director of Policy, Research & Communication, ukactive (08/03/21); (iii) Testimonial from Projects and Evaluation Lead, Institute of Health Visiting (2/3/21); (iv) This Mum Moves Annual Evaluation, 2020 (Centre for Sport, Physical Education and Activity Research).
- S10) Industry Standards: (i) Public Health England (2020). Health Matters: Physical Activity. <https://www.gov.uk/government/publications/health-matters-physical-activity/health-matters-physical-activity-prevention-and-management-of-long-term-conditions#call-to-action>; (ii) Chartered Institute for the Management of Sport and Physical Activity Professional Standard: Working with Antenatal and Postnatal Clients. <https://www.cimspa.co.uk/standards-home/professional-standards-library?cid=18&d=326>