

Institution: University of the West of England, Bristol		
Unit of Assessment: 3		
Title of case study: Improving the management of osteoarthritis		
Period when the underpinning research was undertaken: 2004 – 2020		
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:
Nicola Walsh	Professor of Knowledge Mobilisation and Musculoskeletal Health	April 2004 – present
Fiona Cramp	Professor in Musculoskeletal Health	January 2005 – present
Shea Palmer	Professor of Musculoskeletal Rehabilitation	July 2005 – present
Rachel Thomas	Senior Lecturer in Physiotherapy	December 2005 – present
Jen Pearson	Senior Lecturer in Physiotherapy	June 2016 – present
Sonia Phillips	Lecturer in Physiotherapy	September 1996 – present
Period when the claimed impact occurred: 01.08.2013 – 2020		
Is this case study continued from a case study submitted in 2014? No		
1. Summary of the impact		
<p>Osteoarthritis (OA) affects over 300 million people globally. Research led by Professor Nicola Walsh contributed to the development of an exercise and education intervention facilitating self-management of OA called <i>ESCAPE-pain</i>. In the UK, the intervention was recommended in National Institute for Health and Care Excellence (NICE) <i>Guidelines</i> (CG177) and has been implemented both nationally and internationally across clinical and community settings. <i>ESCAPE-pain</i> resulted in demonstrable benefits for patients, NHS cost savings and reduced pressure on clinical services. An online version of the intervention became an integral part of the NHS care pathway, enabling wider patient access and reduced face-to-face delivery; this became critical, in particular, during the NHS response to COVID-19, as clinical provision continued despite in-person restrictions.</p>		
2. Underpinning research		
<p>OA is a leading cause of disability and source of societal cost in older adults, affecting approximately 8,750,000 people in the UK. OA causes pain, reduced function and decreased quality of life. The condition most often causes problems in the knees (approximately 4,110,000 people affected) and hips (approximately 2,460,000 people affected). Prof Walsh (University of the West of England), in collaboration with Prof Hurley (St George's University of London/Kingston), devised a series of interventions that integrate self-management and coping strategies with an exercise regimen. During this longstanding collaboration, Walsh contributed to the study design, development of patient materials, data acquisition and analysis (R1-R6). Her research contribution was recognised through an Individual Arthritis Research UK Career Development Fellowship (2011-2016) (G1, R3-R6).</p> <p>In 2007, Walsh and Hurley developed the <u>E</u>nabling <u>S</u>elf-management and <u>C</u>oping with <u>A</u>rthritic <u>P</u>ain using <u>E</u>xercise (<i>ESCAPE-pain (knee)</i>) intervention (R1-R3). Along with the aforementioned contributions, Walsh led the physiotherapy training to deliver the intervention (R2). The <i>ESCAPE-pain (knee)</i> research demonstrated benefits in reducing patient pain,</p>		

improving physical function, mental health and quality of life compared to usual physiotherapy (R2) and continued GP-led management (R1, R3, R4, G1). At six months post-intervention, participants on the intervention arm demonstrated a clinically meaningful difference in function, which was comparable to that achieved by traditional pharmacological management (R1). Additionally, patients gained significant clinical benefits in mental health, pain, and self-efficacy for exercise outcome measures (R1). In comparison with traditional outpatient physiotherapy for chronic knee pain, *ESCAPE-pain (knee)* showed improvements in clinical outcomes and cost effectiveness (R1-R3, G1). Furthermore, long-term follow-up studies (2.5 years post-intervention) demonstrated that participants retained better physical function, lower community-based health care costs, medication costs, and total health and social care costs compared with usual primary care led GP treatment (R3, G1).

In 2011, the intervention was extended to include hip pain management (*ESCAPE-pain (hip)*) (R4, G1, G2). Walsh led on developing the funding application and delivering the staff training on the feasibility study (R4, G1, G2). *ESCAPE-pain (hip)* was found to be feasible, acceptable, clinically beneficial and easily implemented into a primary healthcare facility over a reduced number of sessions (a net reduction of 20%) (R4, G1, G2). Subsequently, Walsh and Pearson undertook work to develop a prototype online version of *ESCAPE-pain*, enabling this innovation to reach a larger number of patients (R5, G3).

To meet the needs of patient populations affected by multiple joint OA, Walsh led a team from UWE (Palmer, Cramp, Thomas, Phillips) to investigate the effectiveness of an exercise and self-management programme *Facilitating Activity and Self-Management of Arthritis (FASA)* (R6, G4). Based on *ESCAPE-pain*, this new intervention was designed to support those with knee, hip and lower back pain. Walsh was the chief investigator on the randomised control trial of the clinical and cost effectiveness of *FASA* (R6, G1, G4). This intervention resulted in better patient function at six months compared to those receiving continued GP-led management alone (R6, G4).

3. References to the research

R1 Hurley, M., Walsh, N., Mitchell, H., Pimm, J., Patel, A., *et al.* (2007) Clinical effectiveness of a rehabilitation program integrating exercise self-management and active coping strategies for chronic knee pain: A cluster randomized trial. *Arthritis Care and Research* 57 (7), pp. 1211-1219. <https://doi.org/10.1002/art.22995>

R2 Jessep, S., Walsh, N., Ratcliffe, J., Hurley, M. (2009) Long-term benefits and costs of an integrated rehabilitation programme compared with out-patient physiotherapy for chronic knee pain. *Physiotherapy* 95, pp. 94-102. <https://doi.org/10.1016/j.physio.2009.01.005>

R3 Hurley, M., Walsh, N., Mitchell, H., Nicholas, J., Patel, A. (2012) Long term outcomes and costs of an integrated rehabilitation program for chronic knee pain: A pragmatic, cluster randomized control trial. *Arthritis Care and Research* 64(2), pp. 238-247. <https://doi.org/10.1002/acr.20642>

R4 Bearne, L., Walsh, N., Jessep, S., Hurley, M. (2011) Feasibility of an Exercise-Based Rehabilitation Programme for Chronic Hip Pain. *Musculoskeletal Care*. <https://doi.org/10.1002/msc.209>

R5 Pearson, J., Walsh, N., Carter, D., Koskela, S., Hurley, M. (2016) Developing a web-based version of an exercise-based rehabilitation programme for people with chronic knee and hip pain: A mixed methods study. *Journal of Medical Internet Research* 5(2): e67. <https://doi.org/10.2196/resprot.5446>

Impact case study (REF3)

R6 Walsh, N., Jones, L., Phillips, S., Thomas, R., Odoni, L., Pollock, J., Palmer, S., Cramp, F., Salmon, V., Hurley, M. (2020) Facilitating Activity and Self-management for people with Arthritic knee, hip or lower back pain (FASA): A cluster randomised controlled trial. *Musculoskeletal Science and Practice*, 50, 102271.

<https://doi.org/10.1016/j.msksp.2020.102271>

Evidence of the quality of the supporting research

G1 Walsh, N. *Developing effective, deliverable and affordable models of care for the management of chronic knee pain and osteoarthritis within a community setting*, Arthritis Research UK, 2011 – 2015, £345,822.

G2 Walsh, N. *Effective physiotherapy management of hip osteoarthritis: a preliminary study*, Physiotherapy Research Foundation, 2005 – 2006, £39,351.

G3 Walsh, N. *Helping more people to ESCAPE-pain: Early development of an online exercise-based rehabilitation programme for people with chronic knee and hip pain*, Arthritis Research UK, 2014, £1,967.

G4 Walsh, N. *Exercise and self-management for people with chronic musculoskeletal pain and osteoarthritis. A study of clinical and cost-effectiveness*, Physiotherapy Research Foundation, 2011 – 2014, £249,999.

4. Details of the impact

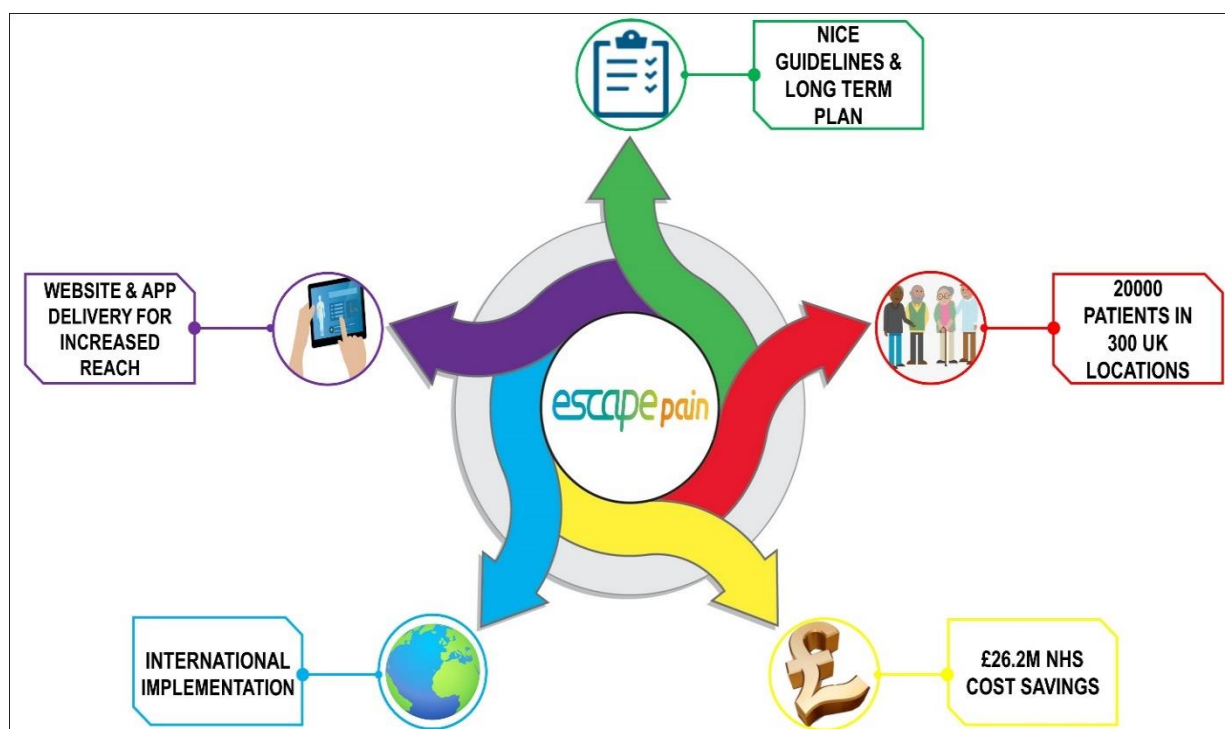


Figure 1. Impact of the interventions

Adoption of the *ESCAPE-pain* intervention into evidence-based guidelines

Walsh's research (R1-R3) provided compelling evidence for *ESCAPE-pain (knee)* clinical efficacy, cost-effectiveness, acceptability to patients and the beneficial impact on the wider healthcare system in the long-term. This led to the inclusion of *ESCAPE-pain (knee)* in the NICE guidelines (CG177) for lower limb OA in 2014 (S1, p143-145). The NHS has recognised the patient benefits of *ESCAPE-pain (knee&hip)*, naming it in their Long-Term Plan to redesign

patient services (S2). The NHS will expand availability of the online version of *ESCAPE-pain (knee&hip)* to improve access to planned care (S2, p73).

Patient benefit and cost savings to the NHS

ESCAPE-pain (knee) (R3) was one of only seven interventions for musculoskeletal conditions identified by Public Health England (PHE) in 2017 as producing significant savings for the NHS. PHE reported that each GBP1 spent on *ESCAPE-pain (knee)* led to a GBP5.20 return on investment, and estimated the net savings per patient at GBP1,309.78 (S3, p24). The Academic Health Science Networks (AHSNs), led by South London in partnership with Versus Arthritis, drove the implementation of *ESCAPE-pain (knee&hip)* across the UK (S4), delivering it in approximately 300 locations between 2017-2019, with approximately 20,000 participants receiving the intervention (S5). Based on PHE's estimated net saving per person, the intervention has saved the NHS approximately GBP26,200,000.

ESCAPE-pain (knee&hip) (R4, R5) interventions were included in the NIHR 'Moving Forward' review on 'Important current and impactful musculoskeletal (MSK) research.' The review was published in 2018 for NHS Clinical Commissioning Groups, local authorities and Sustainability and Transformation Partnerships to support implementation of best practice in MSK services (S6, p2). *ESCAPE-pain (knee&hip)* has become an integral part of the NHS care pathway for people with MSK conditions (S6, p12). The 'Moving Forward' review states 'It saves money for the NHS as it reduces GP consultations, medical referrals and investigations like X-rays and MRI scans. In addition, participants take fewer pain killers' (S6, p26). In recognition of the innovation, *ESCAPE-pain (knee&hip)* was awarded the MSK Care Initiative of the Year in the Health Service Value Awards 2020 (S5).

In the West of England AHSN, *ESCAPE-pain (knee&hip)* was made available in two formats. The first was free of charge to patients, delivered in healthcare or council settings by physiotherapists. The second format was delivered at a small charge to patients by exercise professionals in leisure centres (S7). The training of non-healthcare professionals in leisure centres and community facilities formed part of early developmental work by Walsh in her Arthritis UK Career Development Fellowship (S8). As of November 2019, the Health Innovation Network (AHSN South London) has trained almost 400 fitness instructors to become *ESCAPE-pain (knee&hip)* programme facilitators, who are in turn delivering the intervention in multiple non-NHS sites across the UK, benefiting over 4,000 people (S9). Evaluation of leisure centre-based provision in the West of England demonstrated improvements in patients' self-management skills and reduced GP visits post-intervention, reducing pressure on healthcare staff and services (S10, p48).

International adaptation and adoption of the interventions

The Health Authority of Hong Kong translated and culturally adapted the *ESCAPE-pain (knee&hip)* and *FASA* interventions (S11) for delivery to the Hong Kong Chinese population. Known locally as the Integrated Self-Management and Exercise Programme (*ISEP*), the intervention was implemented into the knee OA care pathway in three large hospitals within the Health Authority in 2018. To facilitate implementation, Walsh was invited by the Health Authority to deliver three days' training to 50 physiotherapists (S11). As of October 2020, 1,162 patients with knee OA have received the intervention, and have demonstrated clinically significant improvements in pain, function, quality of life and ability to self-manage. The *ISEP* intervention was recommended by the physiotherapy unit to the Hong Kong Health Authority for wider implementation across the Territory and was piloted in two further centres in 2019 (S11).

International online resource during COVID-19

As a response to the COVID-19 situation, provision of the online version of *ESCAPE-pain (knee&hip)* has become a priority. The Joint Effort Initiative Implementation Group endorsed by Osteoarthritis Research Society International (OARSI), developed an online repository for healthcare professionals worldwide seeking to access and signpost patients with OA to remote, high-quality programmes that do not require face-to-face contact (**S12**). *ESCAPE-pain* features prominently in this repository providing programmes for knee, hip and chronic low back pain (**S12**, p4).

5. Sources to corroborate the impact

- S1** National Institute for Health and Care Excellence (2014) *Osteoarthritis: care and management in adults. Clinical guideline CG177*. Available from: www.nice.org.uk/guidance/cg177/evidence/full-guideline-pdf-191761311 see pp. 143-145
- S2** NHS (2019) *NHS Long-Term Plan*. London: NHS. Available from: www.longtermplan.nhs.uk see p. 73
- S3** Public Health England (2017) *Return on investment of interventions for the prevention and treatment of musculoskeletal conditions. Final Report*. London: Crown Publications. Available from: www.gov.uk/government/publications/musculoskeletal-conditions-return-on-investment-tool See p. 24
- S4** Versus Arthritis (2019) *Escape Pain the story of scale up. A developmental evaluation report* [online]. Chesterfield: Versus Arthritis. Available from: <https://www.versusarthritis.org/media/14672/escape-pain-the-story-of-scale-up-2019.pdf>
- S5** HSJ (2020) HSJ value awards 2020: MSK initiative of the year. *HSJ* [online]. 04 September. Available from: <https://www.hsj.co.uk/hsj-value-awards/hsj-value-awards-2020-msk-care-initiative-of-the-year/7028300.article>
- S6** NIHR Dissemination Centre (2018) *Moving Forward: Physiotherapy for Musculoskeletal Health and Well-being* [online]. Available from: <https://content.nihr.ac.uk/nihrdc/themedreview-02995-MF/Moving-Forward.pdf> See p. 2, p. 12, p. 26
- S7** Supporting impact data from ESCAPE-pain Programme Manager at the West of England Academic Health Science Network.
- S8** ESCAPE (2020) *Real world evidence*. Available from: <https://escape-pain.org/about-escape/evidence>
- S9** Health Innovation Network (2019) *ESCAPE-pain trains 1000 trainers*. Available from: <https://healthinnovationnetwork.com/insight/1000-trainers/>
- S10** Moule, P., Mitchell, M., Lockyer-Sheppard, R. Lockyer, L. (2018) *Evaluation of ESCAPE Pain, Commissioned by the West of England Academic Health Science Network*. See p. 48.
- S11** Supporting impact statement from Physiotherapist at Prince of Wales Hospital, Hong Kong
- S12** Osteoarthritis Research Society International (2019) *JEI COVID Repository Osteoarthritis Management Programmes*. Available from: <https://www.keele.ac.uk/pcsc/research/impactacceleratorunit/oamps/JEI%20COVID-19%20repository.pdf> See p. 4.